

#### **ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	23	Ft
110E1010	Remove Asphalt Concrete Pavement	106.6	SqYd
110E1700	Remove Silt Fence	110	Ft
110E7510	Remove Pipe End Section for Reset	1	Each
120E0010	Unclassified Excavation	20	CuYd
120E4100	Reprofiling Ditch	2.5	Sta
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E2010	Gravel Cushion	31.1	Ton
380E1000	6" Miscellaneous PCC Pavement	35.9	SqYd
450E9001	Reset Pipe End Section	1	Each
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	216.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
650E4360	Type D46 Concrete Curb and Gutter	235	Ft
650E4660	Type P6 Concrete Gutter	20	Ft
650E4689	Modified Type P9 Concrete Gutter	38	Ft
700E0310	Class C Riprap	23.3	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0131	Type 1 Turf Reinforcement Mat	27.2	SqYd
734E0170	Temporary Sediment Barrier	335	Ft
734E0604	High Flow Silt Fence	110	Ft
831E0110	Type B Drainage Fabric	17	SqYd
900E5147	Articulated Concrete Mattress	212.0	SqYd

#### **SPECIFICATIONS**

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

#### **ENVIRONMENTAL COMMITMENTS**

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <a href="https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf">https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf</a> >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

#### **COMMITMENT C: WATER SOURCE**

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

#### Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

- < https://sdleastwanted.sd.gov/maps/default.aspx>
- South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04 >

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#### **COMMITMENT E: STORM WATER**

Construction activities constitute less than 1 acre of disturbance.

#### Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

#### COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

#### **Action Taken/Required:**

Construction and/or demolition debris may not be disposed of within the Public ROW

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Agriculture and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

- 1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".
- 2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

#### **COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES**

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

#### **Action Taken/Required:**

All earth disturbing activities will require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

#### UTILITIES

The Contractor will 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.

#### WATER FOR GRANULAR MATERIAL

The cost of water for compaction of the granular material will be incidental to the contract unit price per ton for Gravel Cushion. Water for Granular Material will be applied at the rate of 20 gallons per cubic yard.

#### **UNCLASSIFIED EXCAVATION**

Unclassified Excavation is provided on the project for removing excess material to shape the area for Class C riprap placement near Sta. 1+50 L. The excess material will be used to fill the embankment behind the curb gutter, if needed, at no additional cost to the Department. The estimate of quantities provides 20 cubic yards of Unclassified Excavation for performing this work. Any excess material will be handled as waste, becoming the property of the Contractor, and hauled off the project at no additional cost to the Department.

Plans quantity will be the basis of payment for the Unclassified Excavation quantity. If changes are made in the field during construction, measurements will be taken and the quantity will be adjusted accordingly.

#### REPROFILING DITCH

The ditch will be reprofiled prior to installation of articulated concrete mattress. The ditch profile will be staked by the Engineer to ensure positive drainage is maintained to the channel downstream. The ditch will be shaped to a 4' wide flat bottom, 2:1 side slopes and depth of 1'. The Contractor will cut the ditch as needed to ensure positive drainage. The excess material generated from this shaping will be handled as waste. The ditch will be seeded and fertilized prior to installation of articulated concrete mattress.

Underground utilities will likely need protection and rearranging during the excavation work to reprofile the ditch. The Contractor will coordinate with the involved utility companies prior to construction to ensure delays to construction do not occur.

Disturbed areas will be restored to the satisfaction of the Engineer. Cost for the ditch reprofiling work, including labor and equipment necessary to remove and dispose of excess material and reshape the ditch will be included in the contract unit price per station for Reprofiling Ditch.

#### TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

				Quantity
Station	to	Station	L/R	(SqYd)
2+76		5+50	L _	106.6
			Total·	106 6

#### **TABLE OF PIPE QUANTITIES**

Station	Remove Pipe End Section for Reset	Reset Pipe End Section
Station	(Each)	(Each)
	(Eacii)	(Eacii)
1+50 L	1	1
Total:	23.3	16.7

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#### **TABLE OF RIPRAP AND DRAINAGE FABRIC**

		Type B
	Class C Riprap	Drainage Fabric
Station	(Ton)	(SqYd)
1+50 L	23.3	17
Total:	23.3	17

#### **ARTICULATED CONCRETE MATTRESS**

Articulated concrete mattress will be installed along the ditch as noted in the plans and at locations determined by the Engineer during construction.

Installation of the articulated concrete mattress will be in accordance with the manufacturer's installation instructions.

All costs for furnishing and installing the articulated concrete mattress including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per square yard for "Articulated Concrete Mattress".

The articulated concrete mattress will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
Standard Flexamat	Flexamat Permanent Site Solutions Cincinnati, Ohio Phone: (513) 772-6690 www.flexamat.com

Product	<u>Manufacturer</u>
ShoreFlex	ShoreFlex
	Denham Springs, Louisiana
	Phone: (800) 575-7293
	www.shoreflex.com

#### TABLE OF ARTICULATED CONCRETE MATTRESS

	Width			Quantity
Station	(Ft)	Location	_	(SqYd)
1+57 to 2+30	8	Ditch	_	65
3+15 to 4+80	8		_	147
			Total:	212

#### **TABLE OF QUANTITIES**

Station to	Station	Gravel Cushion Ton	Remove Concrete Curb and/or Gutter Ft	Type D46 Concrete Curb & Gutter Ft	Type P6 Concrete Gutter Ft	Modified Type P9 Concrete Gutter Ft	6" Misc PCC Pavement SqYd	Type 1 Turf Reinforcement Mat SqYd
2+76	3+06	5.1	8	48				
3+06	3+09	0.3		3				
3+09	3+28	2.0				19	21.0	
3+28	3+60	3.4		32				
3+60	3+80	2.1			20			27.2
3+80	4+85	11.2		105				
4+85	5+04	2.0				19	14.9	
5+04	5+50	5.0	15	47				
	Totals:	31.1	23	235	20	38	35.9	27.2

#### **SEQUENCE OF OPERATIONS**

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

#### **GENERAL TRAFFIC CONTROL**

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

#### **INVENTORY OF TRAFFIC CONTROL SIGNS**

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUM BER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	1	30"	5.2	5.2
R3-2	LEFT TURN PROHIBITION (symbol)	1	24" x 24"	4.0	4.0
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16.0	16.0
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W16-2P	FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	3	48" x 48"	16.0	48.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
			/ENTIONAL C CONTROI SQFT		216.8

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#### **REMOVE AND REPLACE TOPSOIL**

Prior to beginning curb and gutter installation, a 4" depth of topsoil will be removed or bladed down the respective inslope and left in a windrow a maximum of 10' from the edge of the existing shoulder. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

All costs associated with removing and replacing the topsoil along areas to be resurfaced will be incidental to the contract lump sum price for "Remove and Replace Topsoil".

#### **EROSION CONTROL**

All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, mulching, and fertilizing will be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

#### **Mycorrihizal Inoculum**

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies In Gilroy, CA Phone: 1-800-784-4769 www.reforest.com
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 www.lallemandplantcare.com

#### Fertilizing

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13, 18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer will be applied to all areas designated for permanent seeding.

The application rate of fertilizer will be 3 pounds per 1,000 square feet.

#### Permanent Seeding

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways.

Type E Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Lodorm, AC Mallard Ecovar	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Canada Wildrye	Mandan	2
Wild	flowers	
Dotted Gayfeather (Liatri	s punctata)	0.5
Black-eyed Susan (Rudb	eckia hirta)	0.5
Blue Flax ( <i>Linum lewisii</i> )		0.5
Pale Purple Coneflower (	Echinacea angustifolia)	0.5
	Total:	20

#### **Fiber Mulching**

Fiber mulch will be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

The Contractor will allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials will be incidental to the contract lump sum price for "Erosion Control".

The fiber mulch provided will be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

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#### TEMPORARY SEDIMENT BARRIER

The Temporary Sediment Barrier provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

Temporary sediment barriers will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Installation of the temporary sediment barrier will be in accordance with the manufacturer's installation instructions. It is the Contractor's responsibility to select product(s) best suited as perimeter control, slope interrupters, and ditch checks based on site conditions.

All costs for furnishing, installing, and maintaining the temporary sediment barrier including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per foot for "Temporary Sediment Barrier".

#### TABLE OF TEMPORARY SEDIMENT BARRIER

Station	Location	Quantity (Ft)
1+40 to 2+25 L	Perimeter Control	85
3+00 to 5+50 L	Perimeter Control	250
	Total:	335

#### **HIGH FLOW SILT FENCE**

The high flow silt fence fabric provided will be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

High flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

#### TABLE OF HIGH FLOW SILT FENCE

Location	Location	Quantity (Ft)
Sta. 1+45 L	Inlet Protection at Twin Pipe	110
	Total:	110

## HORIZONTAL ALIGNMENT DATA

Type	Station			Northing	Easting
PC	1+00.000			143291.408	1094100.492
PI	3+26.488	R = 32696.355	Delta = 0.794 L	143497.162	1094005.823
PT	5+52.969			143701.584	1093908.313

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# CONTROL DATA

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
KE1	REFMRK (Rebar)	143706.481	1093880.833	3673.901
KE2	REFMRK (Spike)	143410.902	1094035.151	3666.752

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83); epoch 2010.00; Geoid 12A; SF = x.xxx

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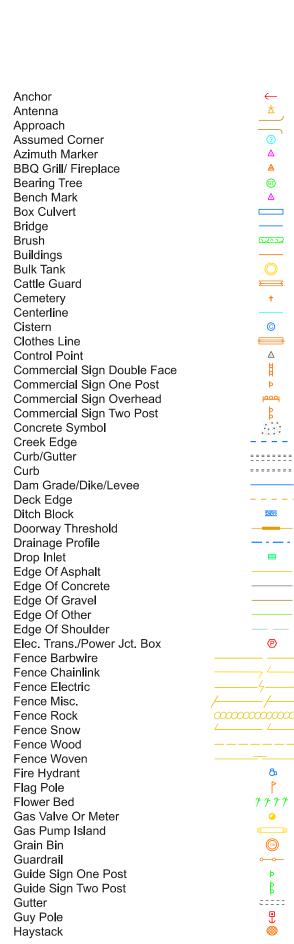
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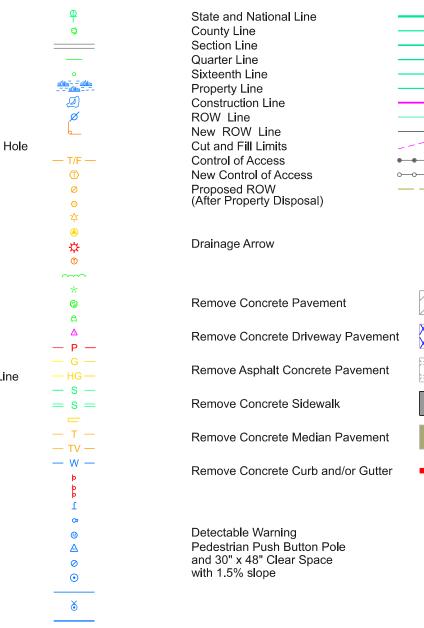


Hedge
Highway ROW Marker
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler
Mailbox Manhole Electric
Manhole Gas
Manhole Misc
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Misc. Line Misc. Property Corner
Misc. Post
Overhang Or Encroachment
Overhead Utility Line
Parking Meter
Pedestrian Push Button Pole
Pipe With End Section
Pipe With Headwall
Pipe Without End Section
Playground Slide
Playground Swing Power And Light Pole
Power And Telephone Pole
Power Meter
Power Pole
Power Pole And Transformer
Power Tower Structure
Propane Tank
Property Pipe
Property Pipe With Cap
Property Stone
Public Telephone Railroad Crossing Signal
Railroad Milepost Marker
Railroad Profile
Railroad R.O.W. Marker
Railroad Signs
Railroad Switch
Railroad Track
Railroad Trestle
Rebar
Rebar With Cap Reference Mark
Regulatory Sign One Post
Regulatory Sign Two Post
Retaining Wall
Riprap
River Edge
Rock And Wire Baskets
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Rockpiles

Satellite Dish

O and 'a Tank	Ф
Septic Tank	<del>P</del>
Shrub Tree	<b>©</b>
Sidewalk	
Sign Face	
Sign Post	
Slough Or Marsh	<u></u>
Spring	2
Stream Gauge	Ø
Street Marker	6
Subsurface Utility Exploration Test Hole	
Telephone Fiber Optics	— T/F —
Telephone Junction Box	
Telephone Pole	Ø
Television Cable Jct Box	0
Television Tower	本
Test Wells/Bore Holes	
Traffic Signal	₩
Trash Barrel	•
Tree Belt	~~~
Tree Coniferous	*
Tree Deciduous	3
Tree Stumps	A
Triangulation Station	Δ
Underground Electric Line	— P —
Underground Gas Line	— G —
Underground High Pressure Gas Line	— HG —
Underground Sanitary Sewer	— s —
Underground Storm Sewer	= s =
Underground Tank	
Underground Telephone Line	— T —
Underground Television Cable	— TV —
Underground Water Line	— W —
Warning Sign One Post	þ
Warning Sign Two Post	<b>b</b>
Water Fountain	ſ
Water Hydrant	O
Water Meter	<u> </u>
Water Tower	$\triangle$
Water Valve	0
Water Well	•
Weir Rock	
Windmill	8
Wingwall	
Witness Corner	<b>∞</b>





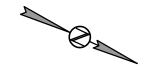
# **CURB AND GUTTER LAYOUT**

Note: All curb and gutter shown on this sheet is Type D46 except as noted.

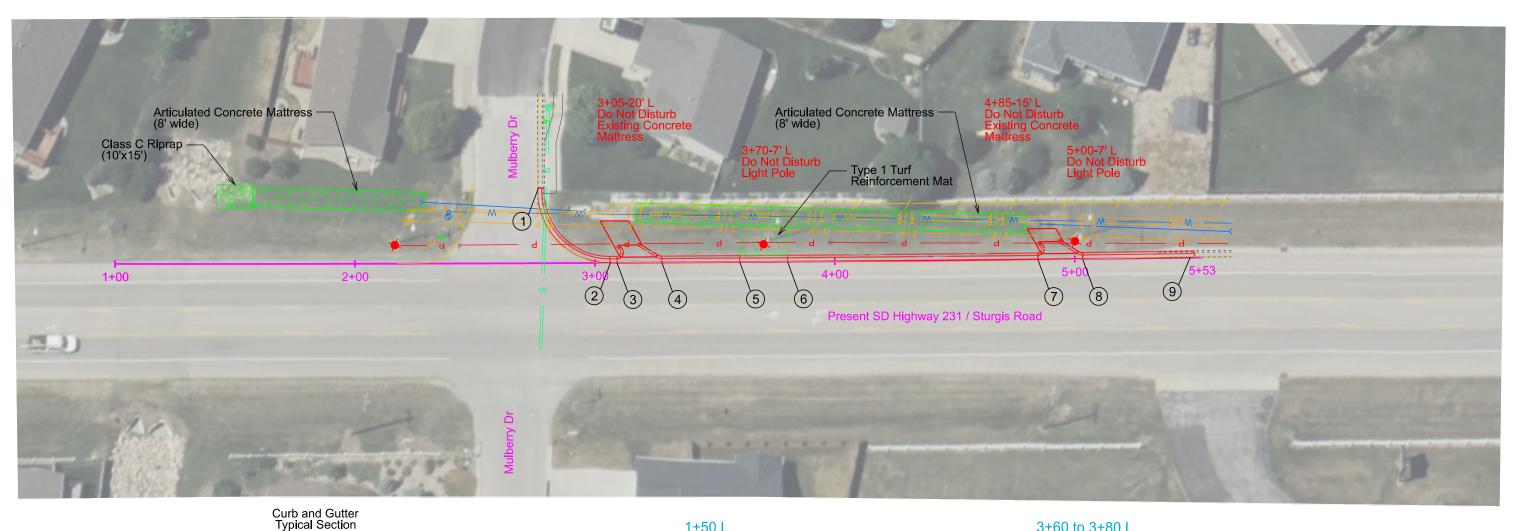
- 1 2+76-31' L Begin 30' Rad C&G TC Elev ±3666.74 (Match Existing)
- 2 3+06 L End 30' Rad C&G Begin Str C&G TC Elev 3668.00 (Theor)

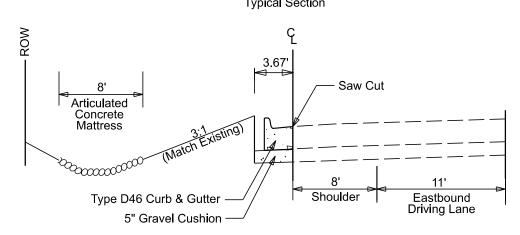
- 3+09 L End Str C&G Begin Modified Type P9 Gutter TC Elev 3668.03 (Theor)
- 4 3+28 L End Modified Type P9 Gutter Begin Str C&G TC Elev 3668.21 (Theor)
- 5 3+60 L End Str C&G Begin P Gutter TC Elev 3668.49 (Theor)
- 6 3+80 L End P Gutter Begin Str C&G TC Elev 3668.74 (Theor)

- 7 4+85 L End Str C&G Begin Modified Type P9 Gutter TC Elev ±3670.94 (Theor)
- 8 5+04 L End Modified Type P9 Gutter Begin Str C&G TC Elev ±3671.53 (Theor)



5+50 L End Str C&G TC Elev ±3673.05 (Match Existing)





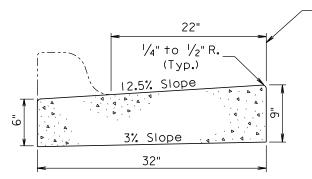
1+50 L Install Class C Riprap - 10'x15' (23.3 Ton) & Type B Drainage Fabric (16.7 SqYd)

Reprofiling Ditch at the following locations: 1+50 to 2+30 L (0.8 Sta) 3+15 to 4+80 L (1.7 Sta)

Install Articulated Concrete Mattress at the following locations: 1+57 to 2+30 (65 SqYd) 3+15 to 4+80 (147 SqYd) 3+60 to 3+80 L Install Type 1 Turf Reinforcement Mat (27.2 SqYd)

Plotted From - TRRC11626 File - ...\dgn\Design.dgr

## MODIFIED TYPE P9 CONCRETE GUTTER



The stated radii on the plans and cross sections refer to this line and it will also be the basis for horizontal linear foot measurement and payment.

Cu. Yd.	Lin. Ft.
Per	Per
Lin. Ft.	Cu. Yd.
0.062	16.1

TRANSVERSE SECTION

#### GENERAL NOTES:

The concrete for the Modified Type P9 Concrete Gutter will comply with the requirements of the Standard 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 380.20.

Transverse contraction joints will be constructed at 10' 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.

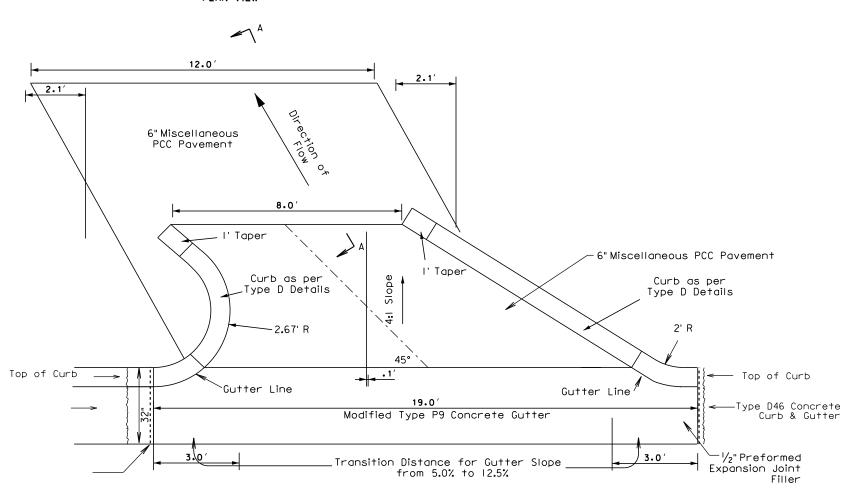
When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter will be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

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 I I/2 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 I/4 the thickness of the concrete.

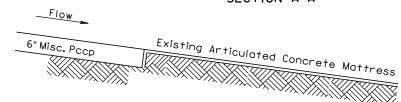
Curb along 6" Miscellaneous PCC Pavement will be poured monolithically and will be measured and paid as 6" Miscellaneous PCC Pavement.

## **CURB OPENING DETAILS**

PLAN VIEW



#### SECTION A-A



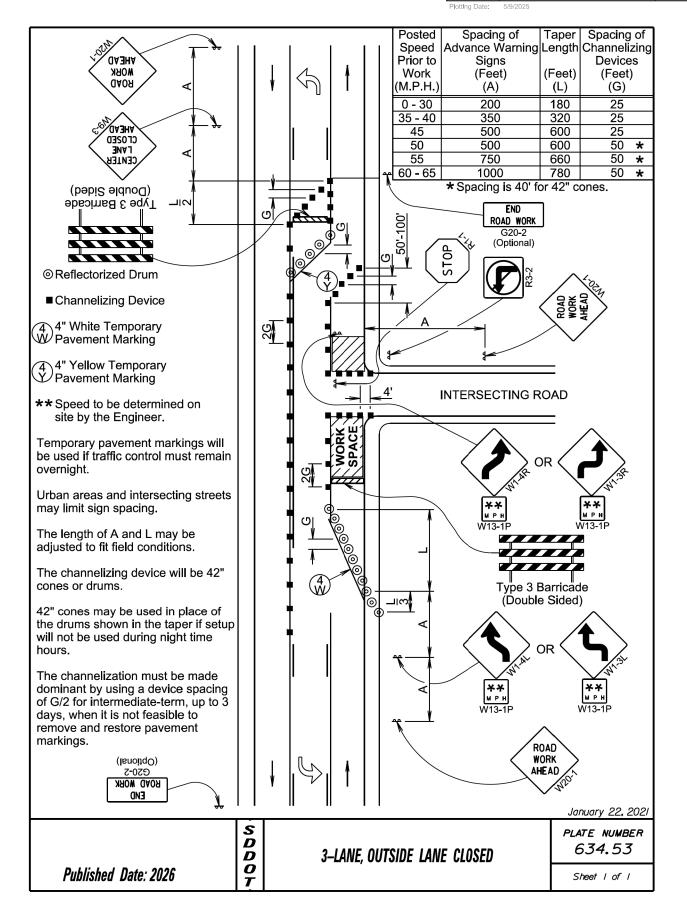
SD	PROJECT	SECTION	SHEET
DOT	090 EF-452	Non	10/16
Plotting Date:	5/9/2025		

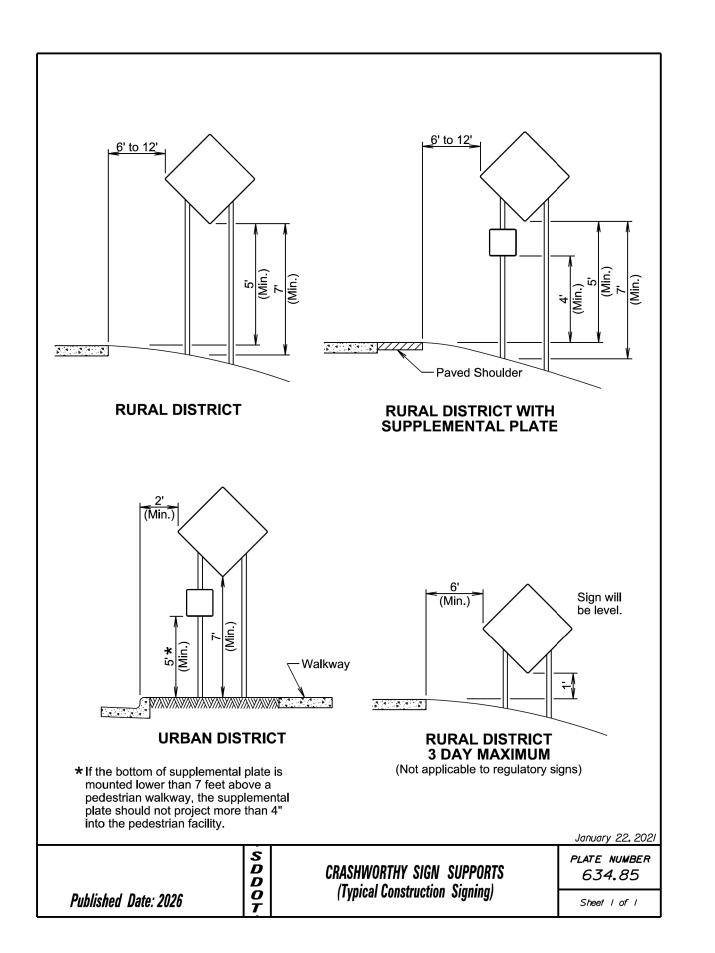
Spacing of Advance Warning The signs illustrated are not required Posted if the work space is behind a barrier, Speed more than 2 feet behind the curb, or 15 Prior to Signs feet or more from the edge of any (Feet) Work (M.P.H.) (A) roadway. 0 - 30 200 The signs illustrated will be used where there are distracting situations; such as: 35 - 40 350 45 - 50 500 vehicles parked on shoulder, vehicles 55 750 accessing the work site via the highway, and equipment traveling on or crossing 60 - 80 1000 the roadway to perform work operations. The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder. \* If the work space is on a divided WORK SPACE highway, an advance warning sign should also be placed on the left side of the directional roadway. For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used. January 22, 2021 S D D O T PLATE NUMBER 634.01 WORK BEYOND THE SHOULDER Published Date: 2026 Sheet I of I

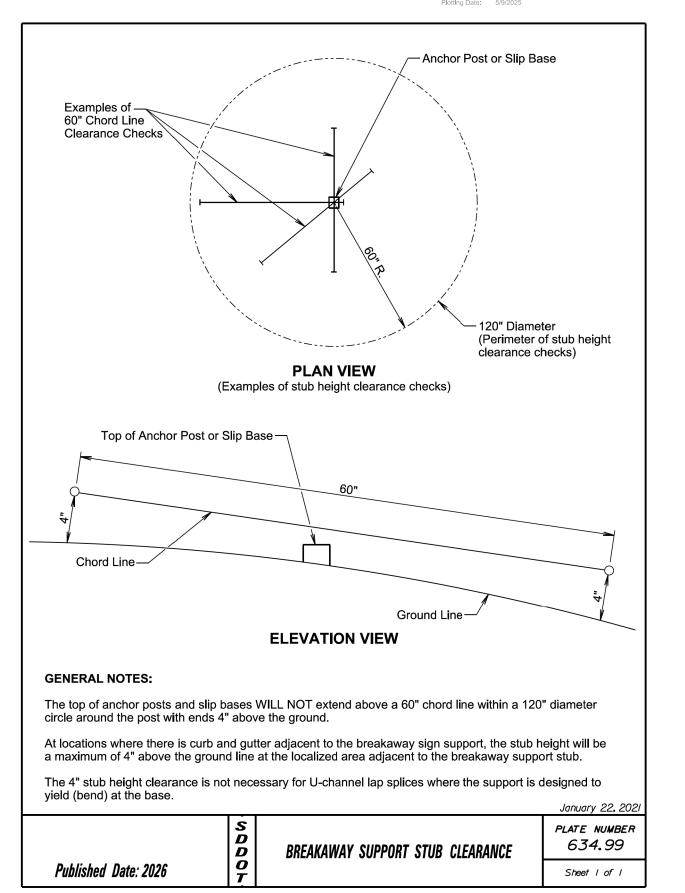
WORK WORK WORK WORK WORK WORK WORK WORK	†     	Speed Advance Warning L Signs Work (Feet) (M.P.H.) (A)  0 - 30	emain overnight.
SHOULDER WORK WORK WEST OF THE STATE OF THE	57 	For short duration operations channelizing devices may be with an activated flashing or rused.  Worker signs (W21-1 or W21 instead of SHOULDER WORK sign sleft side of a divided or one-wleft shoulder is affected.  The SHOULDER WORK sign roadway is not required if drivroadway will encounter anoth sign before they reach a work—WORK SPACE	eliminated if a vehicle revolving yellow light is  -1a) may be used the signs.  hould be placed on the yay roadway only if the ron an intersecting yers emerging from that her advance warning
WORK SPACE  Z-0Z9  BOYO  BOYO		SHOULDER WORK  ROAD WORK AHEAD	January 22, 2021
Published Date: 2026	V	VORK ON SHOULDERS	PLATE NUMBER 634.03  Sheet   of

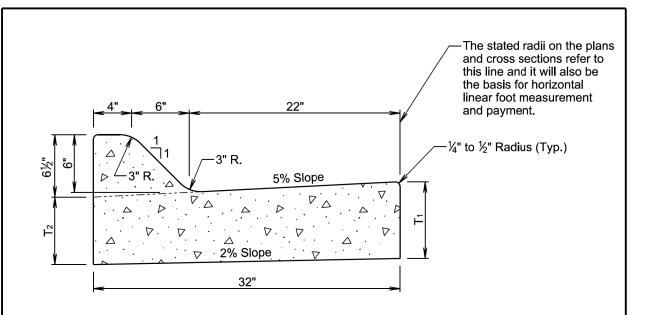
<b>DOT</b> 090 EF-452 Non 11/16	SD	PROJECT		SHEET	
L	DOT	090 EF-452	Non	11/16	

Posted   Spacing of   Spacing of   Channelizing   Prior to   Signs   Devices   (Feet)   (M.P.H.)   (A)   (G)	
Flagger	**************************************
For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.  The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).	Butter Co.
For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.  Flashing warning lights and/or flags may be used to call attention to the advance warning signs.	<u> </u>
Flashing warning lights and/or flags may be used to call attention to the advance warning signs.	Tract
The channelizing devices will be drums or 42" cones.	XXX FEET W16-2P
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for	Optional)  ONE LANE ROAD  AHEAD
Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.	ROAD WORK AHEAD
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.	<b>^</b> <i>u</i> .
The length of A may be adjusted to fit field conditions.	January 22, 2021
Bublished Date: 2026  LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER
Published Date: 2026	Sheet I of I









TYPE E CONCRETE CURB AND CUTTER							
TYPE F CONCRETE CURB AND GUTTER							
Туре	T <sub>1</sub>	T <sub>2</sub> (Inches)	Cu. Yd.	Lin. Ft.			
	(Inches)		Per	Per			
			Lin. Ft.	Cu. Yd			
F66	6	5¼ <sub>6</sub>	0.057	17.6			
F67	7	61/16	0.065	15.4			
F68	8	7½ <sub>6</sub>	0.073	13.6			
F68.5	8.5	7% <sub>16</sub>	0.077	12.9			
F69	9	81/16	0.082	12.3			
F69.5	9.5	8%6	0.086	11.7			
F610	10	91/16	0.090	11.1			
F610.5	10.5	9%6	0.094	10.7			
F611	11	101/16	0.098	10.2			
F611.5	11.5	10%	0.102	9.8			
F612	12	111/16	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.

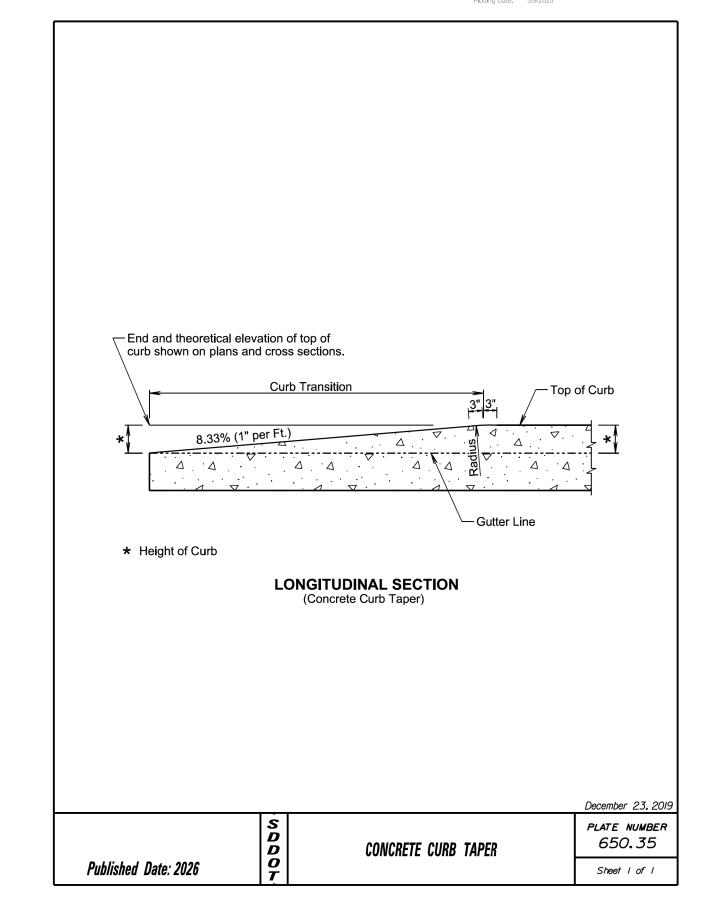
Published Date: 2026

Solution Type F Concrete Curb and Gutter

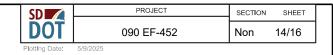
Type F Concrete Curb and Gutter

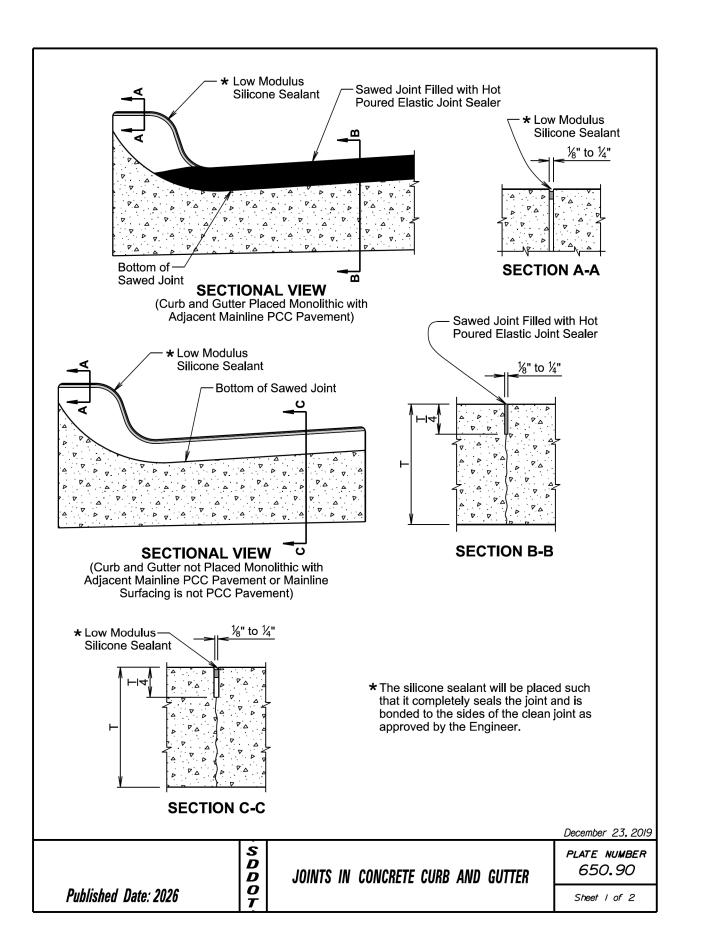
Type F Concrete Curb and Gutter

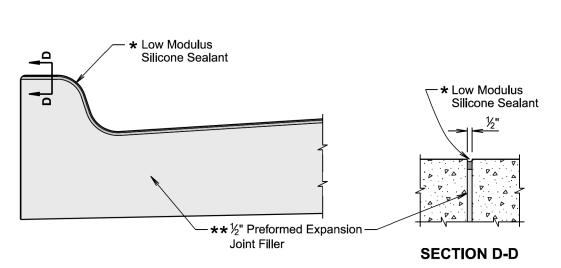
Sheet 1 of 1



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### SECTIONAL VIEW

(Curb and Gutter at ½" Preformed Expansion Joint Filler Location)

★ The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

#### **GENERAL NOTES:**

For illustrative reason, only the type B curb and gutter is shown.

\*\* A ½-inch preformed expansion joint filler will be placed transversely in the curb and gutter at the following locations:

At each junction between the radius return of curb and gutter, and curb and gutter which is parallel to the project centerline.

At each junction between new curb and gutter and existing curb and gutter.

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

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter will be  $1\frac{1}{2}$  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  $\frac{1}{4}$  the thickness of the concrete and the joint will be sealed in accordance with the details shown above.

December 23, 2019

PLATE NUMBER

650.90

Published Date: 2026

JOINTS IN CONCRETE CURB AND GUTTER

Sheet 2 of 2

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