

PLOT SCALE - 200,000,000:1,000,000

PLOTTED FROM - TRRC12608

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

PROJECT NOS.  
014A-451 & 085-451  
US HIGHWAY 14A & 85  
LAWRENCE COUNTY

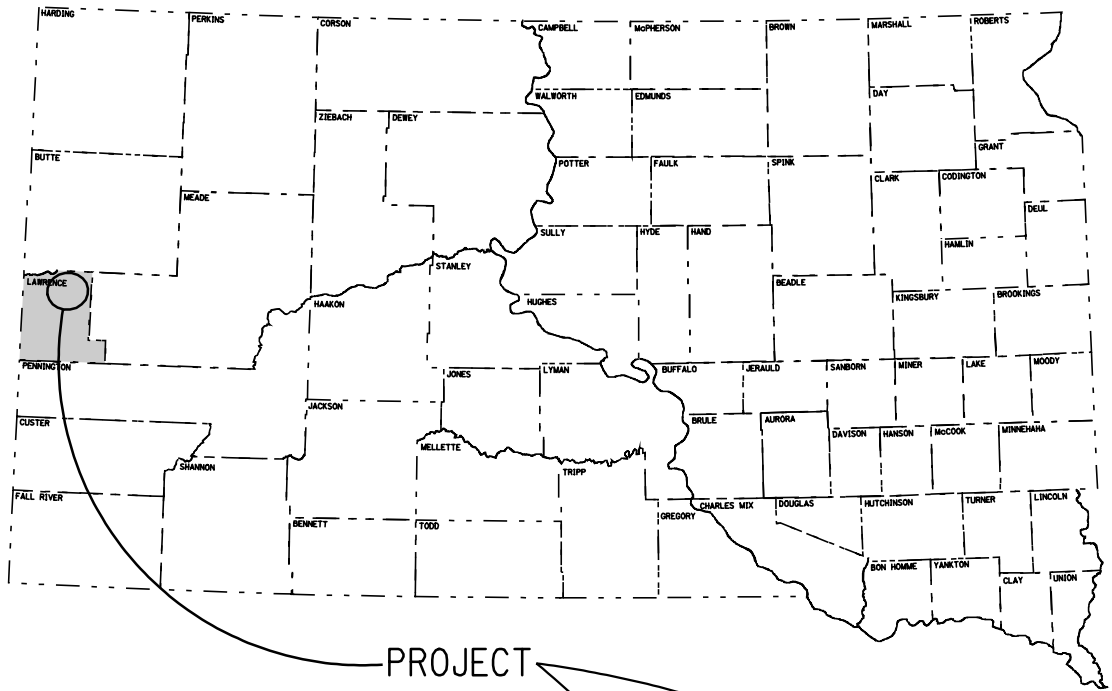
EROSION REPAIR  
PCN IIR0 & IIR1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	1	18

Plotting Date: 13-MAY-2010

INDEX OF SHEETS

Sheet No.	1:	Title Sheet and Index
Sheet No.	2:	Estimate of Quantities
Sheets No.	2 - 6:	Plan Notes and Tables
Sheet No.	7:	Typical Sections
Sheets No.	8 - 11:	Traffic Control
Sheets No.	12 - 14:	Plan Sheets
Sheet No.	15:	Special Details
Sheets No.	16 - 18:	Standard Plates



PROJECT

US Highway 14 A  
MRM 42.0 to MRM 42.9

US Highway 85  
MRM 24.3

R 3 E

R 4 E



DESIGN DESIGNATION US 14A

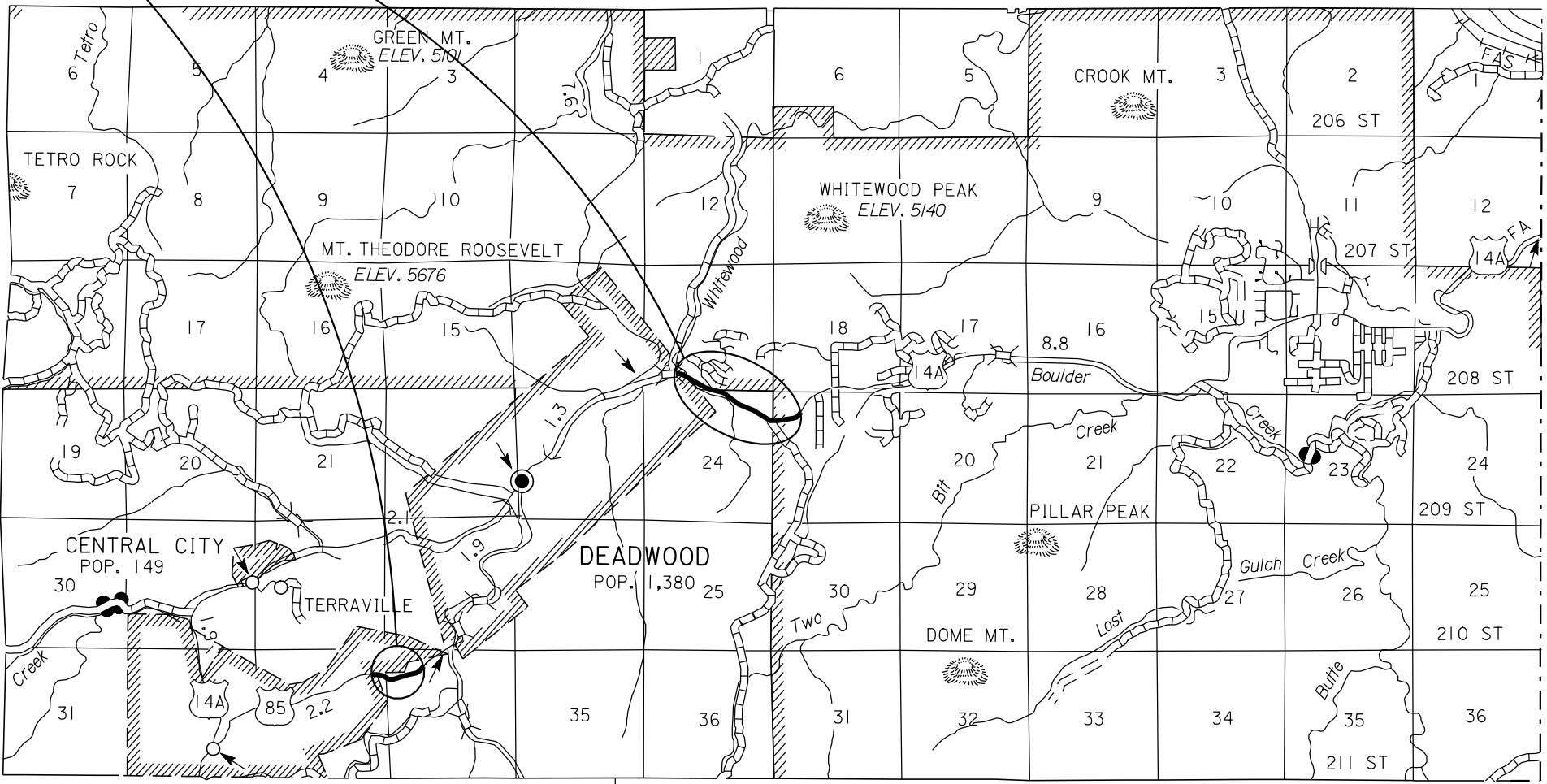
ADT (2009)	4265
ADT (2029)	5225
DHV	752
D	60%
T DHV	2.2%
T ADT	4.8%
V	55 mph

DESIGN DESIGNATION US 85 (LEAD)

ADT (2009)	5347
ADT (2029)	6574
DHV	947
D	60%
T DHV	3.2%
T ADT	7.0%
V	35 mph

STORM WATER PERMIT

Major Receiving	Gold Run Creek/
Body of Water:	Whitewood Creek
Area Disturbed:	0.01 ac / 0.85 ac
Total Project Area:	0.01 ac / 0.85 ac



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ESTIMATE OF QUANTITIES

US Highway 14A - PCN I1R0

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
120E0010	Unclassified Excavation	96	CuYd
120E0600	Contractor Furnished Borrow	2,102	CuYd
230E0020	Placing Contractor Furnished Topsoil	261	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
250E0010	Incidental Work	Lump Sum	LS
380E1000	6" Miscellaneous PCC Pavement	24.8	SqYd
634E0010	Flagging	20	Hour
634E0100	Traffic Control	408	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
650E1090	Type F69 Concrete Curb and Gutter	1,871	Ft
650E4060	Type C6 Concrete Gutter	96	Ft
650E4689	Modified Type P9 Concrete Gutter	40	Ft
700E1010	Special Riprap	56.0	Ton
730E0208	Type E Permanent Seed Mixture	17	Lb
732E0250	Fiber Mulching	1,750	Lb
734E0154	12" Diameter Erosion Control Wattle	200	Ft

US Highway 85 – PCN I1W1

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and Gutter	4	Ft
110E0320	Remove Concrete Gutter	138	Ft
120E0010	Unclassified Excavation	10	CuYd
120E0600	Contractor Furnished Borrow	10	CuYd
230E0020	Placing Contractor Furnished Topsoil	8	CuYd
250E0010	Incidental Work	Lump Sum	LS
634E0010	Flagging	10	Hour
634E0100	Traffic Control	476	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
650E1090	Type F69 Concrete Curb and Gutter	142	Ft
730E0208	Type E Permanent Seed Mixture	1	Lb
732E0250	Fiber Mulching	20	Lb

SPECIFICATIONS

Standard Specifications for Roads & Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

SCOPE OF WORK

The intent of the work on this project is to:

1. Install new Concrete Curb and Gutter, Concrete Gutter, and erosion control measures to eliminate erosion that is occurring on the inslopes and in the ditches.
2. Remove a length of Type P Gutter and replace with Curb and Gutter at an approach area between Lead and Pluma.

SEQUENCE OF OPERATIONS FOR EACH PHASE

1. Set up traffic control according to the Standard Plates in the plans.
2. Remove existing shoulder and various items, build embankment and grade subbase.
3. Install Curb Gutter, C-Gutter and bank and Special Riprap.
4. Remove in-place P-Gutter and replace wit Curb and Gutter at an old approach.
5. Restore disturbed areas affected by construction.
6. Install topsoil and erosion control measures.
7. Remove traffic control.

SEQUENCE OF OPERATIONS - GENERAL

1. The intent of the plan sequence of operations is to have the least amount of impact on the traveling public and adjacent landowners. Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate 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. An alternate sequence shall be submitted for review a minimum of two weeks prior to potential implementation.
2. All Contractors' vehicles or equipment entering or leaving a closed work area shall display a flashing amber light.

GENERAL MAINTENANCE OF TRAFFIC

1. Traffic control shall be in accordance with MUTCD Standards, the Standard Specifications and the layouts contained in these plans.
2. The Contractor shall at all times, keep the portion of the project being used by public traffic in a condition that will adequately and safely accommodate traffic.

GENERAL MAINTENANCE OF TRAFFIC CONTINUED)

3. Storage of vehicles, materials, and equipment shall not be closer than 30' from the edge of the driving lane. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.
4. Use Standard Plate No. 634.01, 634.03, 634.23, or 634.47 to safely control traffic through the work zone. The use of flagger(s) will be required where work activity and/or equipment encroach into a lane open to traffic. Flaggers shall control traffic past the work zone. Standards for flaggers and flagging practices shall be as set forth in Part VI of the Manual on Uniform Traffic Control Devices. The Contractor shall provide each flagger with a copy of the Traffic Flagging Handbook. These booklets are available from the South Dakota Department of Transportation.
5. The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
6. Non-applicable signing will be covered or removed and reset during periods of in-activity. All costs to do this work shall be incidental to Traffic Control, Miscellaneous.
7. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed supports, unless approved by the Engineer.
8. The quantity of signs paid for will be for the most installations per sign in place at any one time regardless of the number of set-ups.
9. The Contractor or designated traffic control subcontractor shall make night (after dark) inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the related contract items.
10. At the end of each days work, all traffic control devices shall be pulled off the roadway and taken down and traffic shall be opened to two lanes. Standard Plate 634.03 shall be used for traffic control at the end of each work day. The drop off at the edge of the pavement shall be backfilled to provide a safe slope at the end of each work day.

**GENERAL MAINTENANCE OF TRAFFIC CONTINUED)**

- 11. The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.
- 12. The Contractor shall coordinate his operations such that during non-working hours the roadway shall be open to two-way traffic on a uniform driving surface for the entire width of the roadway.
- 13. Work activities shall only be during daylight hours. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

**MAINTENANCE OF APPROACHES DURING GRADING OPERATIONS**

Grading operations shall be conducted such that access to individual entrances shall be maintained at all times throughout the life of the project.

**UTILITIES**

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.

**SAWING**

The existing surface shall be sawed full depth to a true line with a vertical face where Curb and Gutter is to be placed against existing asphalt or concrete.

The existing Curb and Gutter on the Highway 85 site shall be sawed full depth to a true line with a vertical face where Curb and Gutter is to be placed against existing Curb and Gutter.

All costs associated with this work shall be incidental to the contract lump sum price for Incidental Work.

**INCIDENTAL WORK**

Included in this item are the following:

- 1. All saw cutting for the installation of curb and gutter is to be placed against the existing asphalt.

**DAMAGE TO EXISTING ROADWAY SURFACE**

Damage caused by the Contractor to the existing asphalt roadway surface shall be repaired by the Contractor at no additional cost to the State.

**EXISTING CULVERTS UNDER THE ROADWAY**

In several locations, there are culverts under the roadway surface. It is the responsibility of the Contractor to locate these culverts and avoid damage to them. Any damage to these culverts caused by the Contractor shall be repaired by the Contractor at no additional cost to the State.

**WASTE DISPOSAL SITE**

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

Construction/demolition debris may not be disposed of within the State ROW.

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

The waste disposal site(s) shall 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 Engineer.

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

- 1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of 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 of time not to exceed the duration of the project. Prior to project completion, the waste shall 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.

**WASTE DISPOSAL SITE (CONTINUED)**

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) shall be incidental to the various contract items.

**CONTRACTOR FURNISHED BORROW**

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

Restoration of the Contractor furnished borrow site shall be the responsibility of the Contractor.

**GRADING OPERATIONS**

Excavation and construction of embankments for grading shall be performed in accordance with Section 120 of the Standard Specifications. Compaction of embankments shall be to the satisfaction of the Engineer.

The plans quantity for Unclassified Excavation shall be the basis of payment unless changes are directed by the Engineer. The Unclassified Excavation quantity above shall be used for final payment.

The removal and disposal of Asphalt Mix and Granular Base Material from cut sections shall be incidental to the contract unit price per cubic yard for “Unclassified Excavation”. Water for Embankment shall be incidental to the contract unit price per Cubic Yard for “Contractor Furnished Borrow.

TABLE OF EARTHWORK QUANTITIES

Location	Station	to	Station	Unclassified Excavation (CuYd)	Contractor Furnished Borrow (CuYd)
14A	71+00		82+00	55	1210
14A	88+25		96+36	41	892
				96	2102
85	MRM		24.3	10	10
			Total:	10	10

PLACEMENT OF TYPE C6 CONCRETE GUTTER

The locations for outlet ends of Type C6 Concrete Gutter as shown in the plans are approximate. The Contractor shall adjust the outlet end to match the ditch bottom.

6” MISCELLANEOUS PCC PAVEMENT

The Contractor shall place steel bars in the joints between the 6” Miscellaneous PCC Pavement and the back of the Modified Type P9 Concrete Gutter. The bars shall be installed in accordance with Standard Plate 380.11. All costs to furnish and place the steel bars shall be incidental to the contract unit price per square yard for 6” Miscellaneous PCC Pavement. The purpose of placing the steel bars is to prevent any settlement that may occur at the joint.

TABLE OF 6” MISCELLANEOUS PCC PAVEMENT

Location	Station	to	Station	L/R	Quantity (SqYd)
14A	71+10		71+20	L	6.2
	76+00		76+10		6.2
14A	88+35		88+45	L	6.2
	92+90		93+00		6.2
			Total:		24.8

TABLE OF TYPE C6 CONCRETE GUTTER

Location	Station	L/R	Quantity (Ft)
14A	71+10	L	24
	76+00		24
14A	88+35	L	24
	92+90		24
		Total:	96

TABLE OF MODIFIED TYPE P9 CONCRETE GUTTER

Location	Station	to	Station	L/R	Quantity (Ft)
14A	71+10		71+20	L	10
	76+00		76+10		10
14A	88+35		88+45	L	10
	92+90		93+00		10
			Total:		40

TABLE OF TYPE F69 CONCRETE CURB AND GUTTER

Location	Station	to	Station	L/R	Quantity (Ft)
14A	71+00		71+10	L	10
	71+20		76+00		480
	76+10		82+00		590
14A	88+25		88+35	L	10
	88+45		92+90		445
	93+00		96+36		336
			Total		1871
85	MRM		24.3	R	142
			Total		142

REMOVE AND REPLACE TOPSOIL

It is anticipated that very little topsoil exists on the project. However, the Contractor will be required to strip foliage and existing topsoil to a depth of 4” prior to the grading work.

All costs for removing and replacing topsoil shall be incidental to in the contract lump sum price for Remove and Replace Topsoil.

The estimated amount of topsoil to be removed and replaced is 472 Cubic Yards.

PLACING CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the new grade than can be salvaged from the existing grade. The Contractor will be required to furnish and place 2 additional inches of topsoil on roadway inslopes and areas as determined by the Engineer during construction. The topsoil shall be pre-approved by the Engineer.

Contractor Furnished Topsoil at the MRM 24.3, Highway 85 location shall be placed 4” deep.

PLACING CONTRACTOR FURNISHED TOPSOIL (CONTINUED)

All costs to furnish and place the topsoil shall be incidental to the contract unit price per cubic yard for “Placing Contractor Furnished Topsoil”. Placing Contractor Furnished Topsoil shall be measured in the hauling unit.

The estimated amount of Contractor Furnished Topsoil to be placed is as follows:

Location	Station	to	Station	Topsoil (CuYd)
14A	71+00		82+00	136
14A	88+25		96+36	125
			Total	261
85	MRM		24.3	8
			Total	8

DRILLS

In addition to the drills specified in Section 730 of the Standard Specifications, other types of drills including no-till drills will be allowed as long as the seed is planted at a depth of ¼” to ½”.

PERMANENT SEEDING

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

All permanent seed shall be planted in the topsoil at a depth of ¼” to ½”.

All seed broadcast must be drilled in (incorporated) within the top ¼” to ½” of topsoil when possible. This requirement may be waived by the Engineer during construction when drilling is deemed not feasible by conventional methods.

South Dakota native grown seed is an acceptable alternative to any of the seed varieties listed below. South Dakota native grown seeds used as an alternative shall conform to the same specification and requirements for that individual seed type.

PERMANENT SEEDING (CONTINUED)

Type E Permanent Seed Mixture shall

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Canada Wildrye	Mandan	2
Dotted Gayfeather (wildflower)		0.5
Blackeyed Susan (wildflower)		0.5
Blue Flax (wildflower)		0.5
Pale Purple Coneflower (wildflower)		0.5
Total:		20

FIBER MULCHING

Fiber mulch shall be applied in a separate operation following seeding. Fiber mulch shall be premixed with a guar gum tackifier or synthetic tackifier. The products shown below include 3% guar gum or synthetic tackifier. An additional 2% of tackifier shall be added to the fiber mulch. If the product selected has guar gum tackifier included, then the additional 2% tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% tackifier shall be synthetic. The additional 2% of tackifier shall be applied at the rate of 40 pounds per acre. Fiber mulch shall be applied at the rate of 2000 pounds per acre.

The Contractor shall 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 shall be incidental to the contract unit price per pound for “Fiber Mulching”.

FIBER MULCHING (CONTINUED)

The fiber mulch used on this project shall be one from the list below:

Product	Manufacturer
Mat-Fiber Plus	Mat, Inc. Floodwood, MN Phone: 1-888-477-3028 <a href="http://www.soilguard.com">www.soilguard.com</a>
Conwed Hydro Mulch 2000	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 <a href="http://www.conwedfibers.com">www.conwedfibers.com</a>
EcoFibre Plus Tackifier	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 <a href="http://www.profile-eco.com">www.profile-eco.com</a>
Terra-Mulch Wood with Tacking Agent 3	Profile Products LLC Buffalo Grove, IL Phone: 1-800-726-6371 <a href="http://www.terra-mulch.com">www.terra-mulch.com</a>
Excel Fiber Mulch II with Tackifier	American Excelsior Co. Arlington, TX Phone: 1-800-777-7645 <a href="http://www.curlex.com">www.curlex.com</a>

TABLE OF FIBER MULCHING

Location	Station	to	Station	Quantity (Lbs)
14A	71+00		82+00	1000
14A	88+25		96+36	750
			Total	1750
85	MRM		24.3	20
			Total	20

SPECIAL RIPRAP

The rock used for Special Riprap shall be 6” – 8” crushed rock. The Special Riprap shall be placed to form a channel for the water coming off the Type C6 Concrete Gutter down to the ditch bottom. The bottom of the channel shall be 6” below the sides.

TABLE OF SPECIAL RIPRAP

Location	Station to Station	L/R	Dimensions L x W x D	Quantity (Tons)
14A	70+65 to 70+90	L	25’ x 10’ x 1’	14
	75+50 to 75+75	L	25’ x 10’ x 1’	14
	87+90 to 88+15	L	25’ x 10’ x 1’	14
	92+25 to 92+50	L	25’ x 10’ x 1’	14
Total:				56

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

An additional quantity of 40 feet of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided shall be from the list shown below:

Product	Manufacturer
Curlex Sediment Log	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 <a href="http://www.amerexcel.com">www.amerexcel.com</a>
Aspen Excelsior Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 <a href="http://www.westernexcelsior.com">www.westernexcelsior.com</a>
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529

TABLE OF EROSION CONTROL WATTLE

Highway 14A

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
70+15	L	12	Ditch Bottom	20
70+40	L	12	Ditch Bottom	20
75+00	L	12	Ditch Bottom	20
75+25	L	12	Ditch Bottom	20
87+40	L	12	Ditch Bottom	20
87+65	L	12	Ditch Bottom	20
91+85	L	12	Ditch Bottom	20
92+10	I	12	Ditch Bottom	20
ADDITIONAL QUANTITY				40
Total				200

INVENTORY OF TRAFFIC CONTROL DEVICES

US Highway 14A - PCN I1R0

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	4	17	68
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	1	34	34
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	4	34	136
W20-5	48" x 48"	LT. OR RT. LANE CLOSED ##### FT. OR AHEAD	1	34	34
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					408

US Highway 85 – PCN I1W1

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	4	17	68
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	4	34	136
W20-4	48" x 48"	ONE LANE ROAD ##### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W20-7b	48" x 48"	BE PREPARED TO STOP (also shown as W3-4)	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					476

PLOT SCALE - 8,10000011.000000

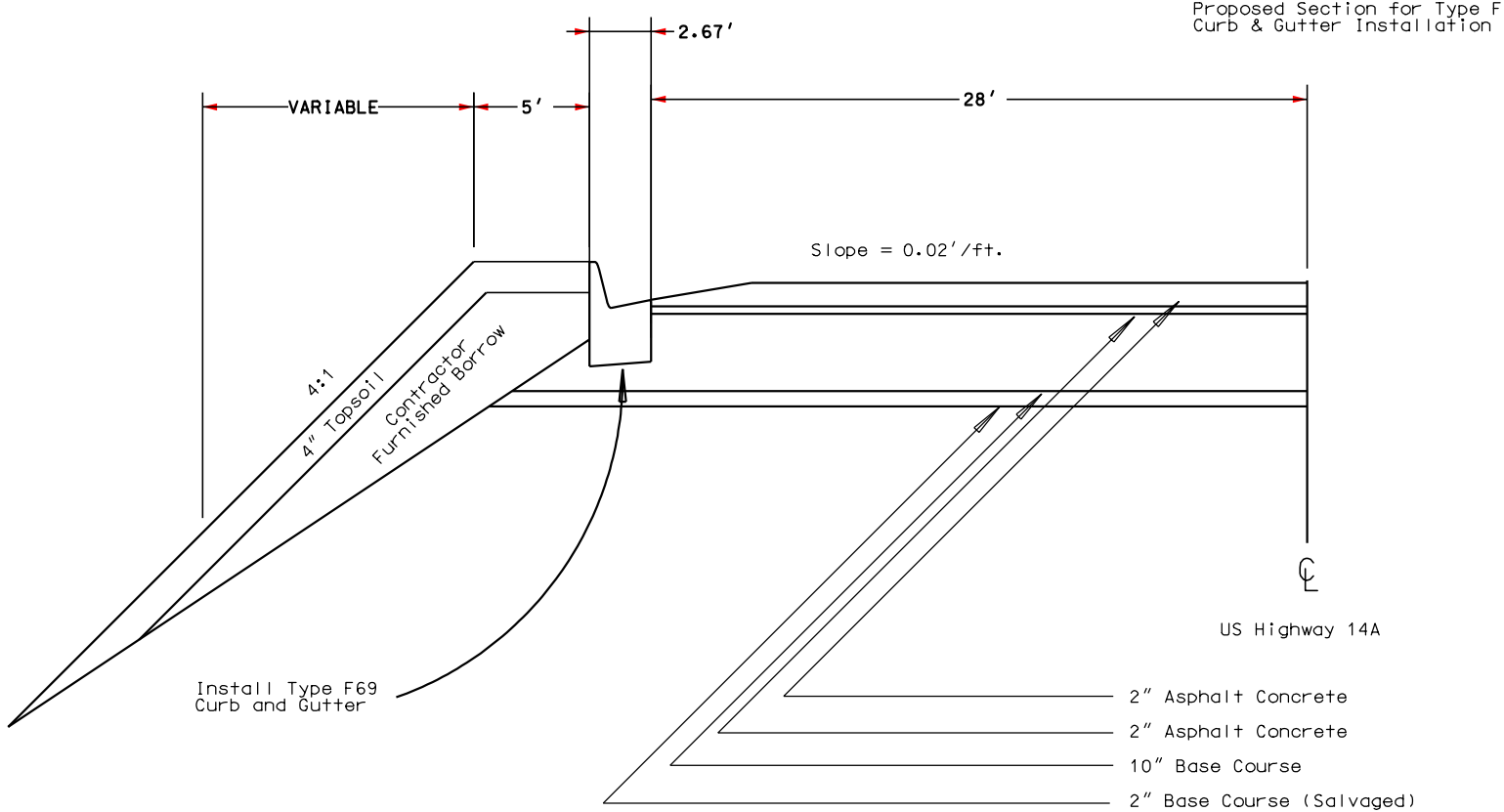
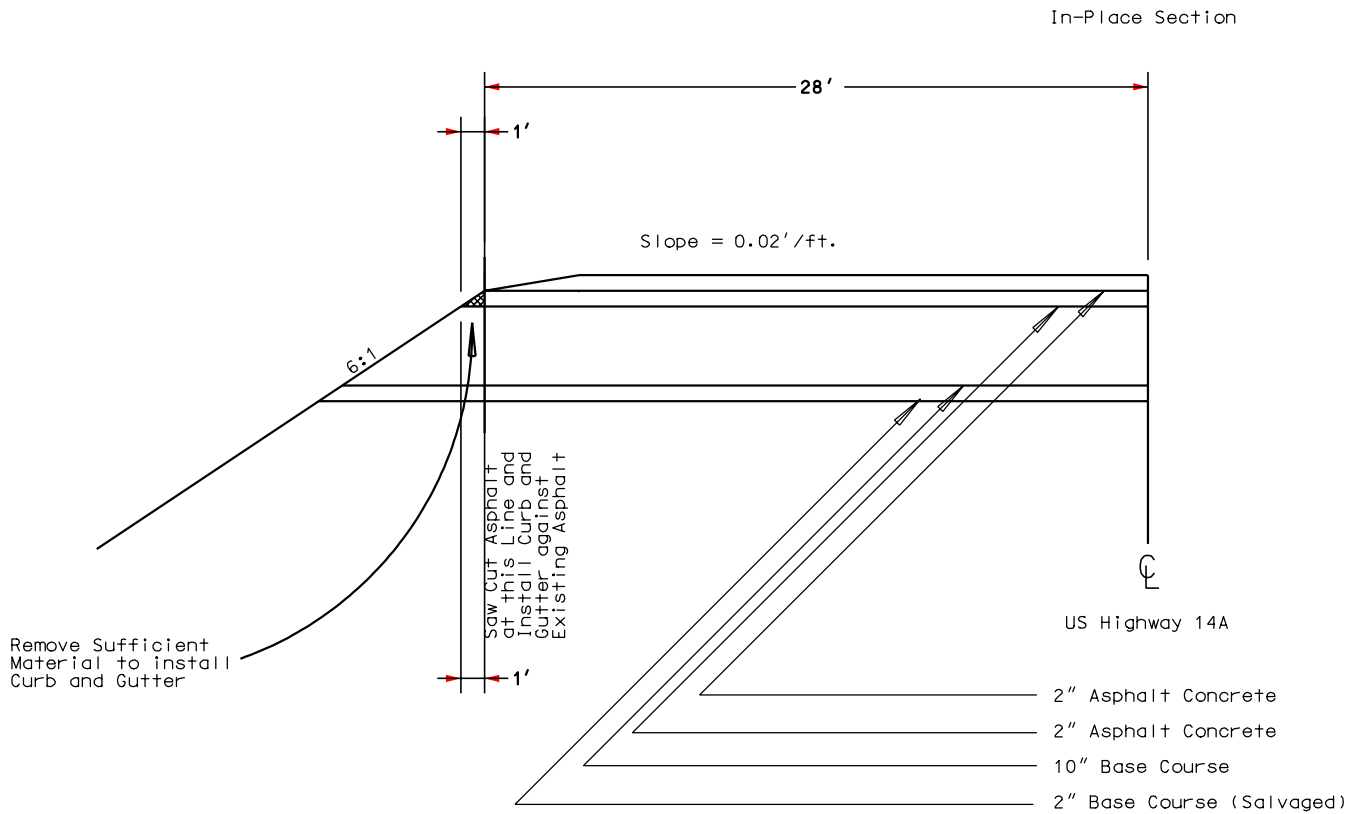
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	7	18

Plotting Date: 13-MAY-2010

# TYPICAL SECTIONS

US Highway 14A



FILE - U:\REGIONRC\PR\2010\RCREGMAINT\PLANS\014A-451\_EROSION\_REPAIR\TYP.DGN PLOT NAME - IIR0\_07



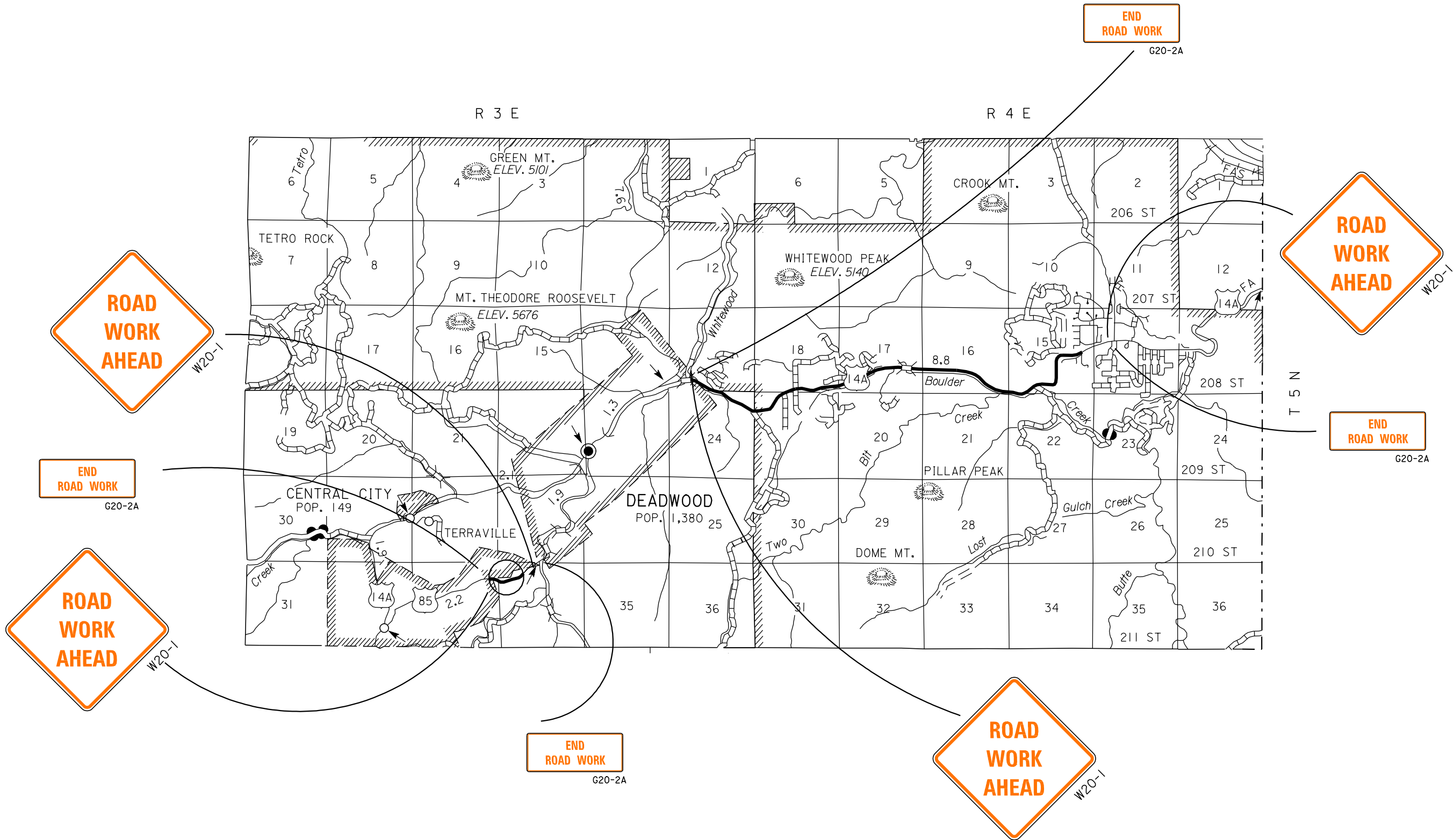
PLOT SCALE - 200,000,000:1,000,000

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# FIXED LOCATION SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	8	18

Plotting Date: 13-MAY-2010





Plotting Date: 13-MAY-2010

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing 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.

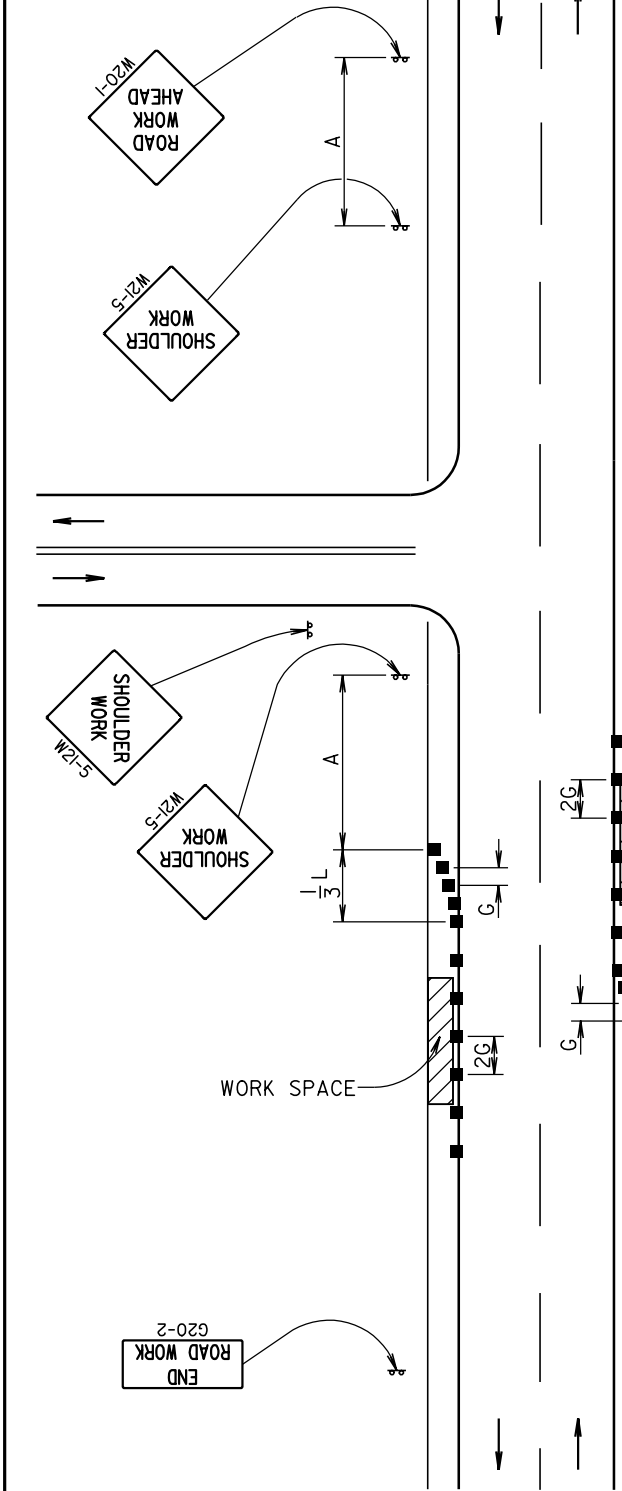
\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

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.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

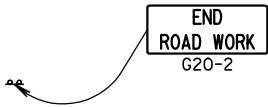


July 1, 2005



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

Channelizing Device



The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer.

For short duration operations (1 hour or less) all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE



July 1, 2005

Plotting Date: 13-MAY-2010

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

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).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall 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.

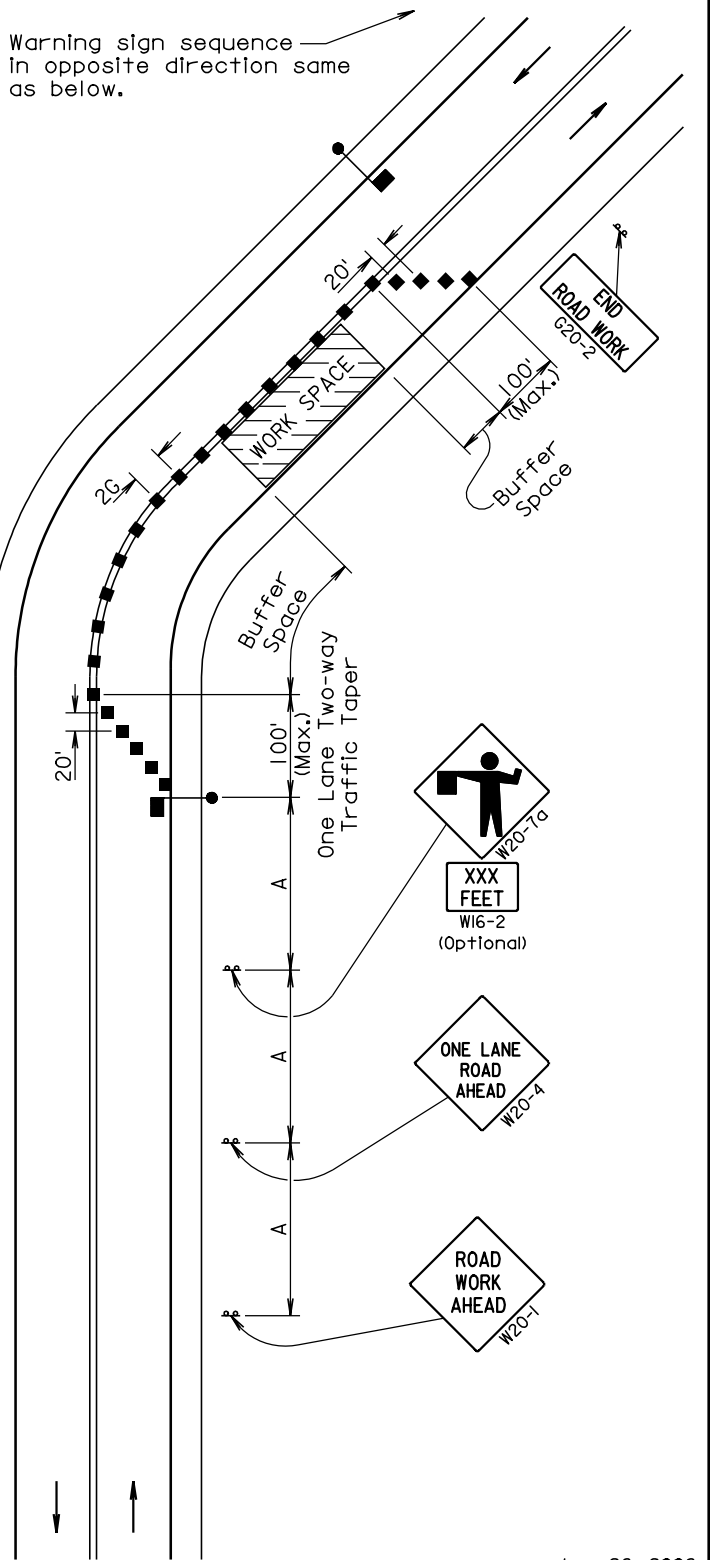
The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space shall be a sufficient length so that the channelizing devices are visible to approaching traffic.

Warning sign sequence in opposite direction same as below.



June 26, 2006

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

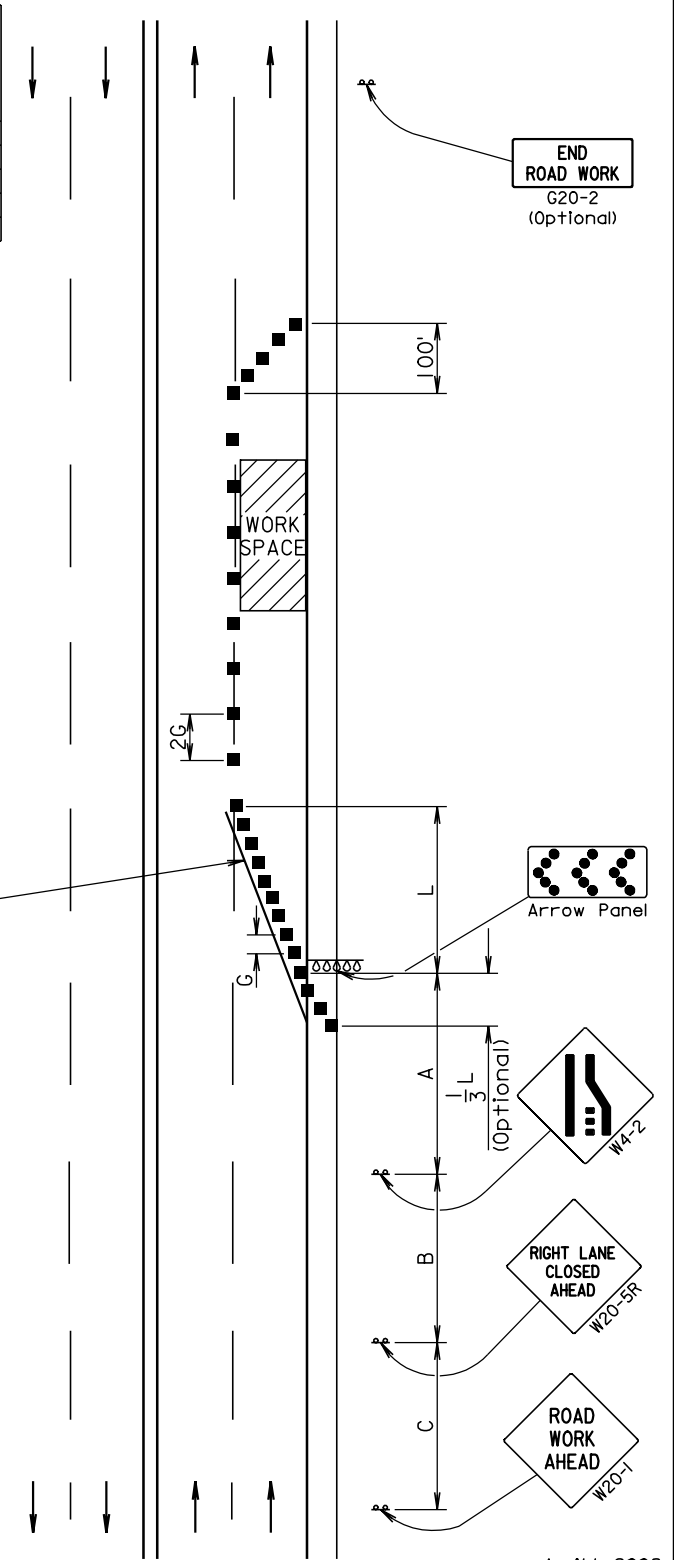
Channelizing Device

Drums or Type II Barricades shall be used if required overnight.

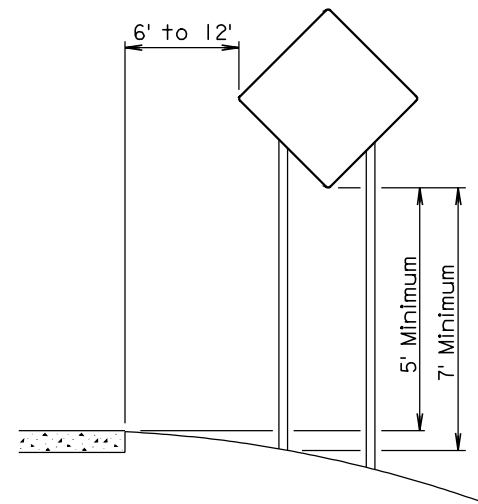
42" cones may be used along centerline

Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.

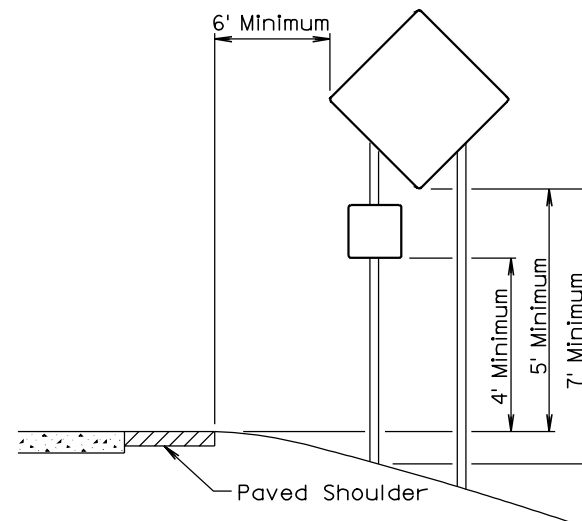
Four inch white temporary pavement marking shall be used if traffic control must remain overnight or longer.



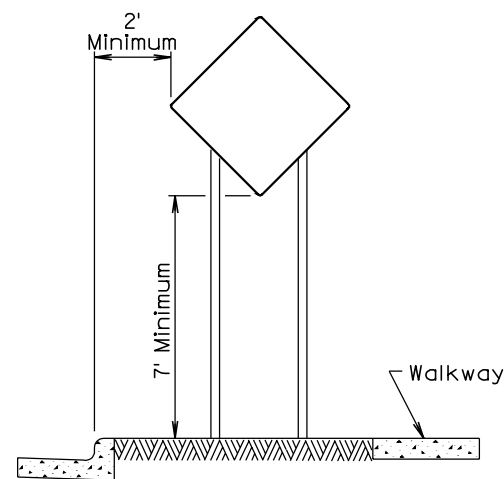
April 11, 2008



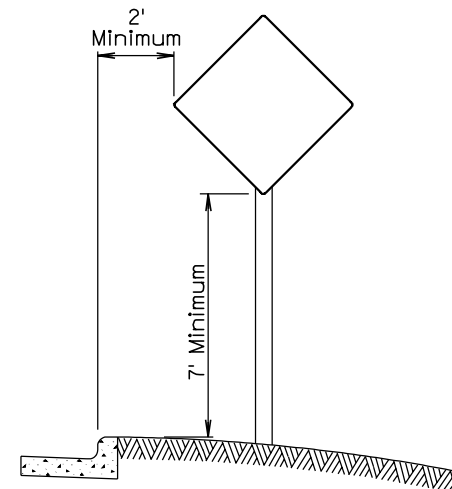
RURAL DISTRICT



RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

December 23, 2003

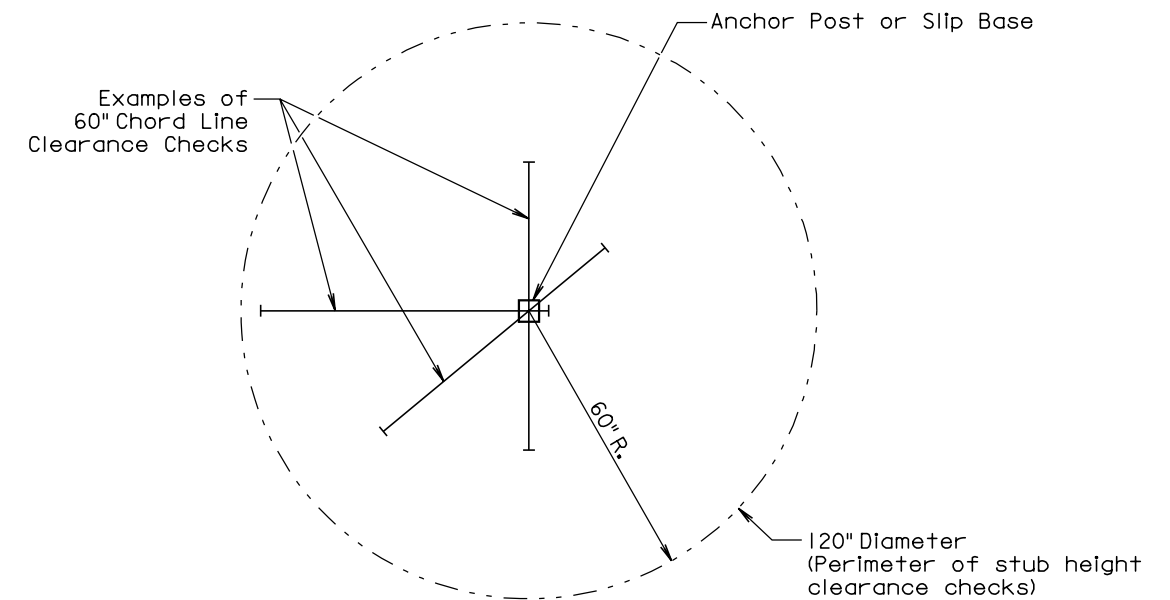
Published Date: 2nd Qtr. 2010

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**BREAKAWAY SIGN SUPPORTS**  
(Typical Construction Signing)

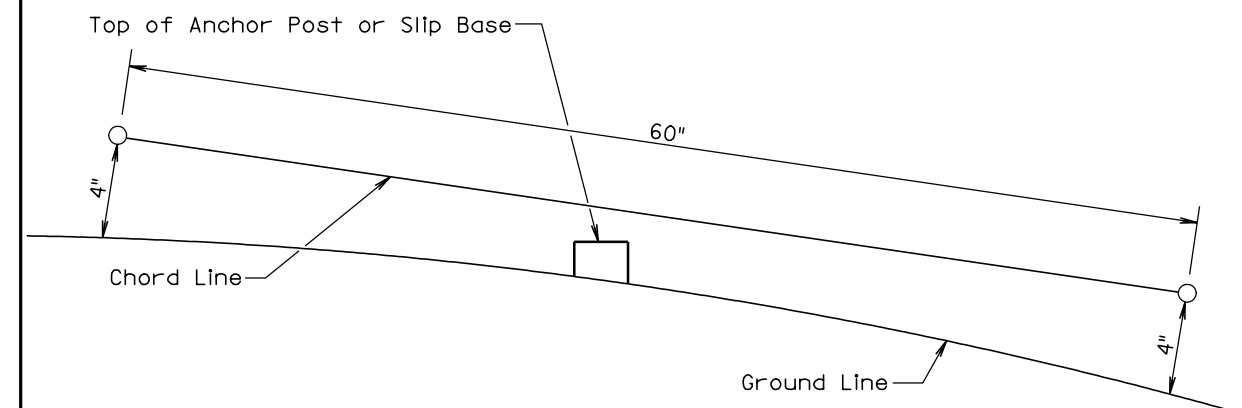
PLATE NUMBER  
634.85

Sheet 1 of 1



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

**GENERAL NOTES:**

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 2nd Qtr. 2010

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**BREAKAWAY SUPPORT STUB CLEARANCE**

PLATE NUMBER  
634.99

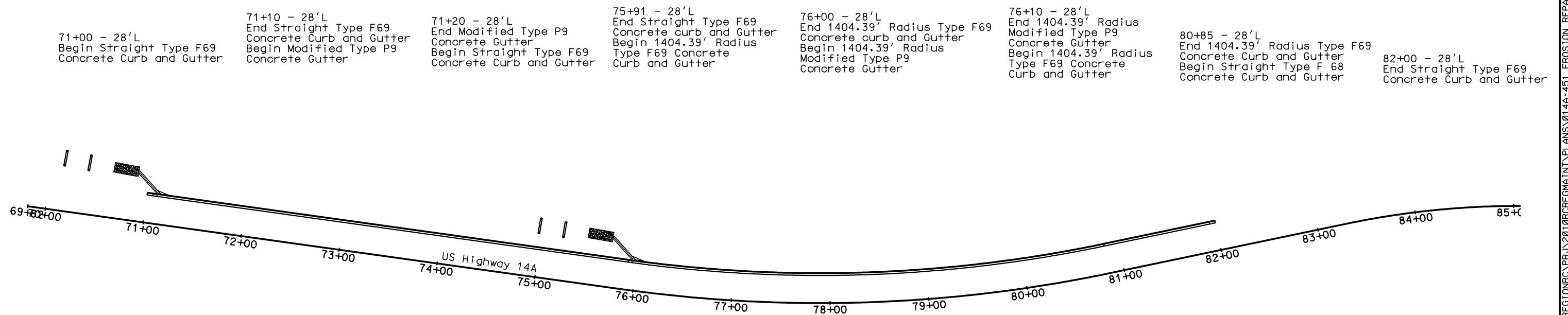
Sheet 1 of 1

# PLAN SHEET

## US Highway 14A

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	12	18

Plotting Date: 13-MAY-2010



20' - 12" Erosion Control Wattles

 Riprap Locations

Install 6" Miscellaneous PCC  
Pavement at the Following Locations:  
71+10 - 30.7' L to 71+20 - 30.7' L  
76+00 - 30.7' L to 76+10 - 30.7' L

Install Special Riprap  
at the Following Locations:  
70+65 to 70+90 - L 14 Tons  
75+50 to 75+75 - L 14 Tons

Note: Special Riprap dimensions are approximately 10' wide by 25' long by 1' in depth. Dimensions may be altered to better fit the dimensions of the ditch bottom if so directed by the Engineer.

Install 12" Erosion Control Wattle  
at the Following Locations:

70+15	- L	20'	- 12"
70+40	- L	20'	- 12"
75+00	- L	20'	- 12"
75+25	- L	20'	- 12"

PC 75+91.10  
PI 78+40.59  
PT 80+85.13  
Δ 19°45'41" Left  
D 4°00'00"  
T 249.49  
L 494.03  
R 1432.39

PC	83+29.92
PI	85+67.40
PT	87+93.05
$\Delta$	31°15'41" Right
D	6°45'00"
T	237.49
L	463.13
R	848.83

PLOT SCALE - 100.00000:1.00000

PLOTTED FROM - TRRC12608

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PLOT SCALE - 100,000,000:1,000,000

PLOTTED FROM - TRRC12608

# PLAN SHEET

## US Highway 14A

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	13	18

Plotting Date: 13-MAY-2010

PC 83+29.92  
PI 85+67.40  
PT 87+93.05  
 $\Delta$  31°15'41" Right  
D 6°45'00"  
T 237.49  
L 463.13  
R 848.83

88+25 - 28'L  
Begin Type F69 Concrete  
Curb and Gutter

88+35 - 28'L  
End Type F69  
Concrete Curb and Gutter  
Begin Modified Type P9  
Concrete Gutter

88+45 - 28'L  
End Modified Type P9  
Concrete Gutter  
Begin Type F69  
Concrete Curb and Gutter

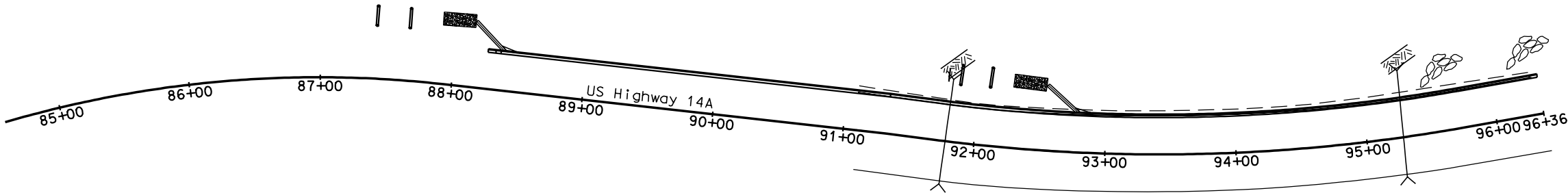
91+70 - 28'L  
End Straight Type F69  
Concrete curb and Gutter  
Begin 1295.91' Radius  
Type F69 Concrete  
Curb and Gutter

92+90 - 28'L  
End 1295.91' Radius  
Type F69 Concrete  
Curb and Gutter  
Begin 1295.91' Radius  
Modified Type P9  
Concrete Gutter

93+00 - 28'L  
End 1295.91' Radius  
Modified Type P9  
Concrete Gutter  
Begin 1295.91' Radius  
Type F69 Concrete  
Curb and Gutter

95+74 - 28'L  
End 1295.91' Radius Type F69  
Concrete curb and Gutter  
Begin Straight Type F 68  
Concrete curb and Gutter

96+36 - 28'L  
End Type F69 Concrete  
Curb and Gutter



20' - 12" Erosion Control Wattles

Riprap Locations

Install 6" Miscellaneous PCC  
Pavement at the Following Locations:=  
88+35 - 30.7'L to 88+45 - 30.7'L  
92+90 - 30.7'L to 93+00 - 30.7'L

Install Special Riprap  
at the Following Locations:  
87+90 to 88+15 - L 14 Tons  
92+25 to 92+50 - L 14 Tons

Note: Special Riprap dimensions are  
approximately 10' wide by 25' long  
by 1' in depth. Dimensions may be  
altered to better fit the dimensions of  
the ditch bottom if so directed by the  
Engineer.

Install 12" Erosion Control Wattle  
at the Following Locations:  
87+40 - L 20' - 12"  
87+65 - L 20' - 12"  
91+85 - L 20' - 12"  
92+10 - L 20' - 12"

PC 91+70.25  
PI 93+73.84  
PT 95+74.27  
 $\Delta$  17°29'06" Left  
D 4°19'40"  
T 203.59  
L 404.02  
R 1323.91

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PLOT SCALE - 25.000000:1.000000

PLOTTED FROM - TRRC12608

# PAVEMENT REMOVAL AND CURB & GUTTER ADDITION AREA IN LEAD

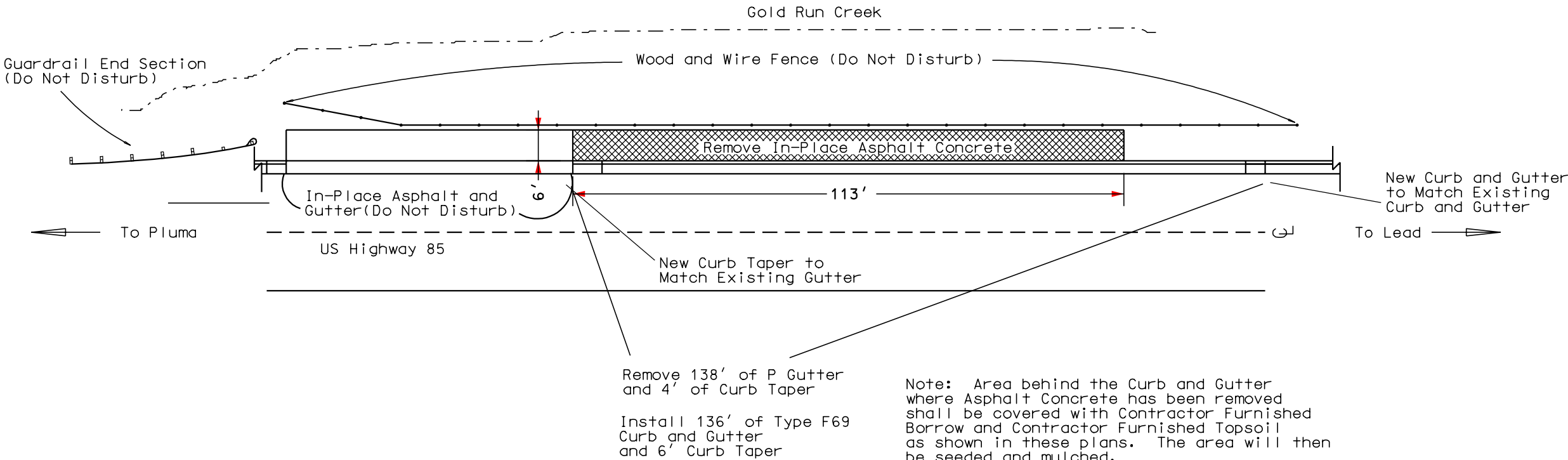
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451 & 085-451	14	18

Plotting Date: 13-MAY-2010

Approximately MRM 24.3

Note: Any damage to the adjoining fence caused by the Contractor during construction of this project shall be the responsibility of the Contractor. All costs associated with repair of damage to the fence shall be the sole responsibility of the Contractor at no additional cost to the State.

Asphalt  
Concrete  
Removal  
Area

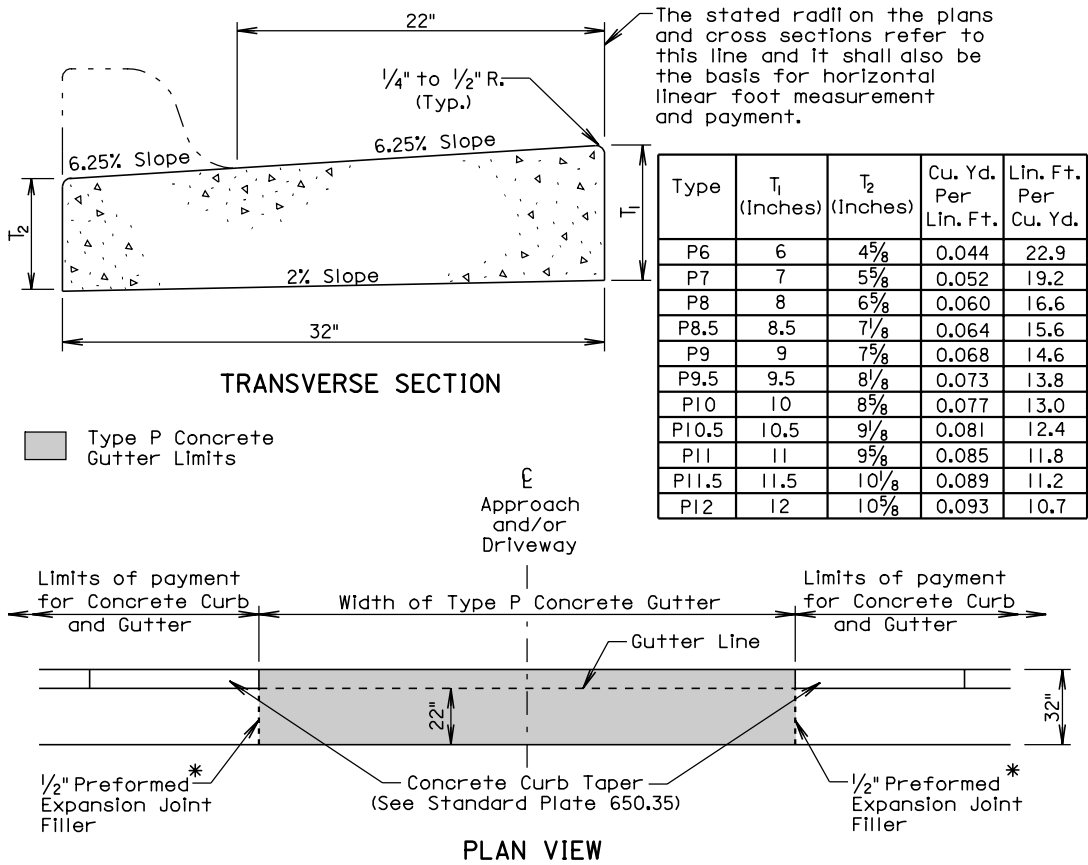


Note: Area behind the Curb and Gutter where Asphalt Concrete has been removed shall be covered with Contractor Furnished Borrow and Contractor Furnished Topsoil as shown in these plans. The area will then be seeded and mulched.

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MODIFIED TYPE P CONCRETE GUTTER



\* Joint will not be needed if concrete curb & gutter and type P concrete gutter is placed at the same time.

GENERAL NOTES:

The concrete for the Type P Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

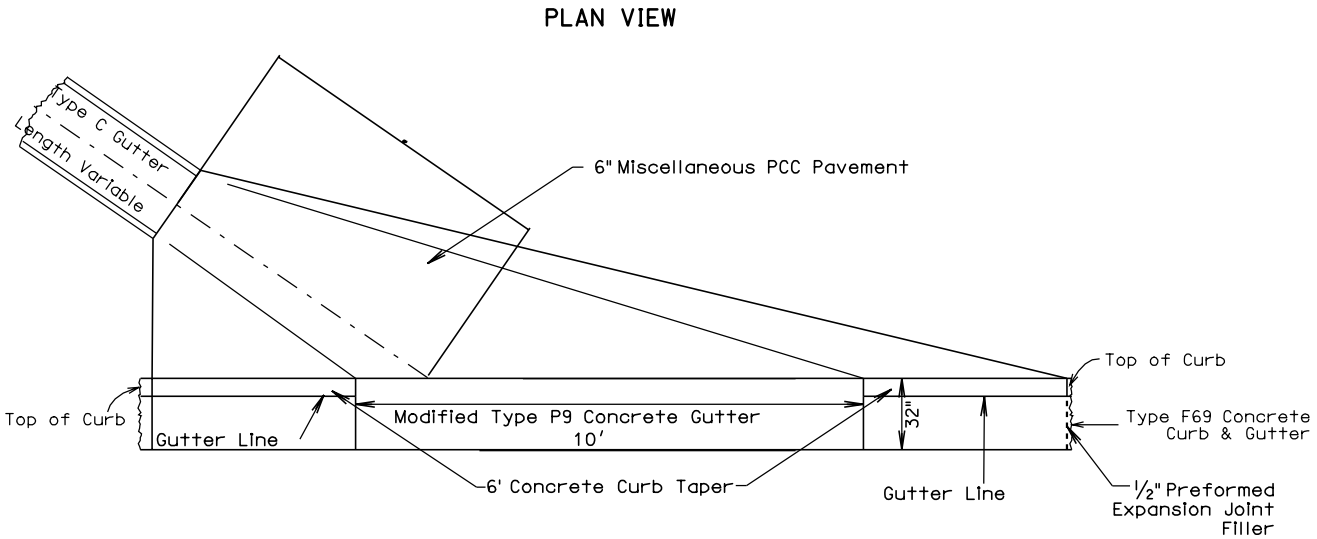
When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

Transverse contraction joints shall 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 shall 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 shall 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 shall be 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 shall be at least 1/4 the thickness of the concrete.

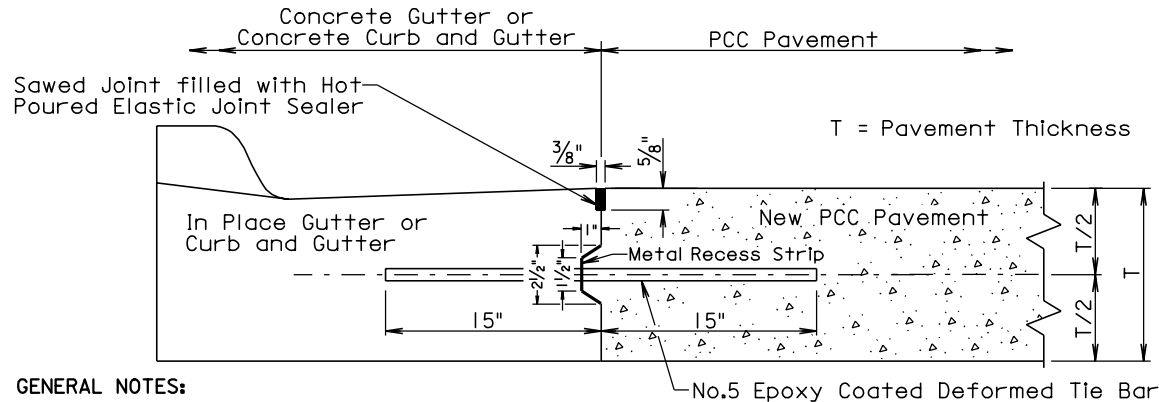
INLET BETWEEN SECTIONS OF CURB AND GUTTER



Use these details rather than the transition shown at the bottom of Standard Plate 650.10.

\*

### LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (INDIVIDUALLY FORMED)



#### GENERAL NOTES:

No.5 epoxy coated deformed tie bars shall be spaced 48" center to center. The keyway shown above is a female keyway.

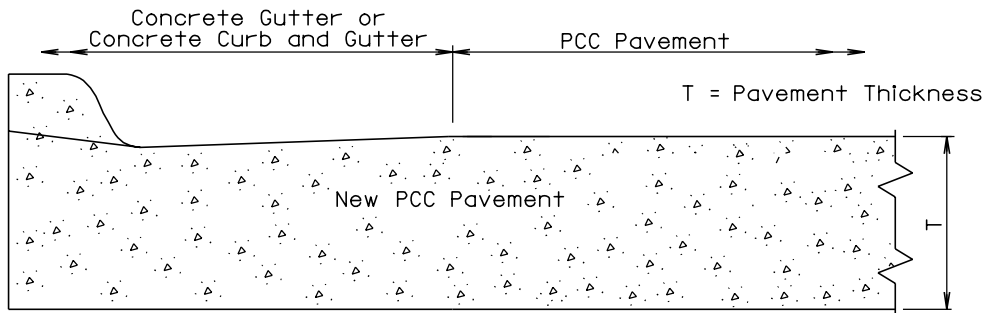
The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

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

The transverse contraction joints in the concrete gutter or concrete curb and gutter shall be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter shall be 1 1/2" deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete gutter or concrete curb and gutter.

The term "In Place Gutter or Curb and Gutter" in the above drawing indicates that the in place concrete gutter and concrete curb and gutter was placed on the current project.

### POURED MONOLITHICALLY



#### GENERAL NOTES:

The mainline curb and gutter may be placed monolithically with the PCC pavement. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement shall be eliminated.

The gutter or curb and gutter shall be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter shall be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter shall be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter shall be constructed at the same slope as the mainline concrete pavement.

September 14, 2005

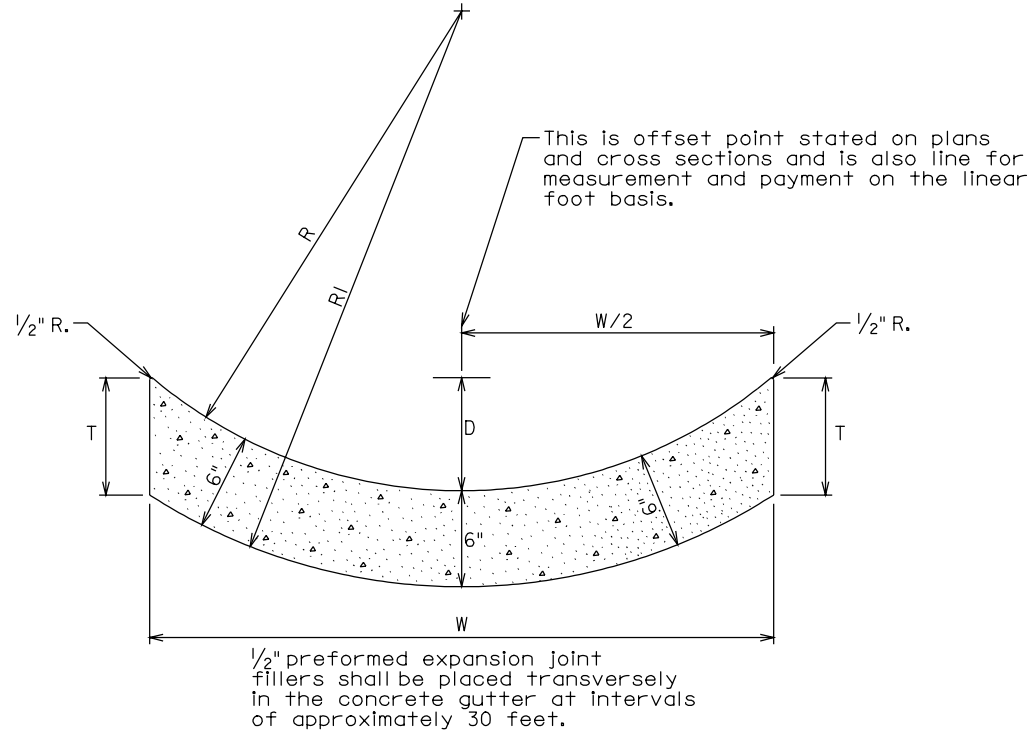
Published Date: 2nd Qtr. 2010

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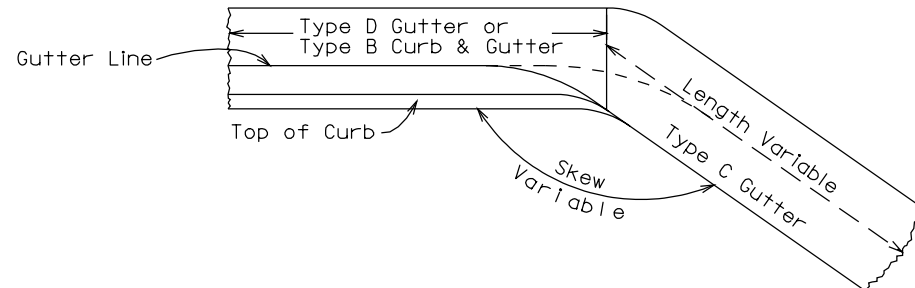
PCC PAVEMENT LONGITUDINAL CONSTRUCTION  
JOINTS WITH CONCRETE GUTTER OR  
CONCRETE CURB AND GUTTER

PLATE NUMBER  
380.11

Sheet 1 of 1



Type	Gutter Depth D	Gutter Width W	Radius of Top of Gutter R	Radius of Bottom of Gutter RI	Vertical Depth of Concrete at Edges T	Cu. Yd. Per Lin. Foot	Lin. Ft. Per Cu. Yd.
C6	6"	30"	21 3/4"	27 3/4"	7 5/8"	0.04982	20.1
C9	9"	48"	36 1/2"	42 1/2"	7 5/8"	0.07966	12.6
C12	12"	72"	60"	66"	7 3/8"	0.11828	8.5



Outlet end of Type D Gutter shall be warped in field to provide proper drainage into Type C Gutter without creating an excessive hump or dip at edge of driving surface.

#### GENERAL NOTE:

The concrete for the Type C Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

March 31, 2000

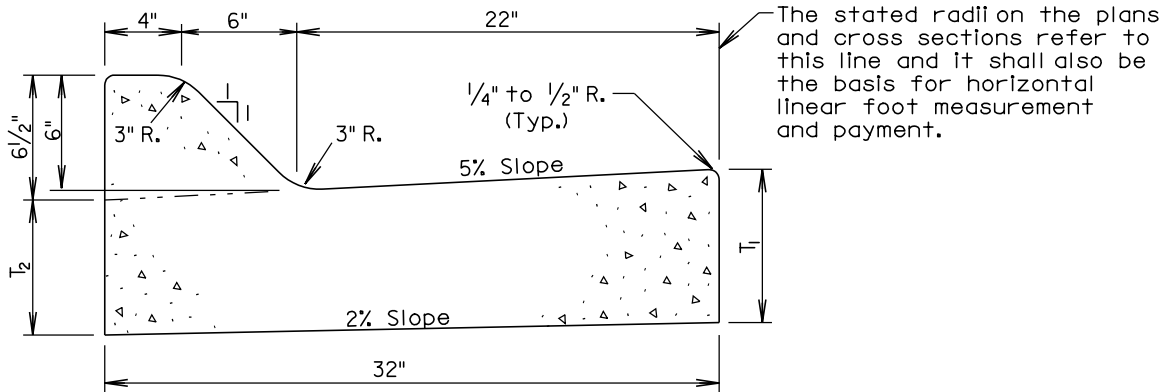
Published Date: 2nd Qtr. 2010

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TYPE C CONCRETE GUTTER

PLATE NUMBER  
650.10

Sheet 1 of 1



Type	T <sub>1</sub> (Inches)	T <sub>2</sub> (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
F66	6	5 1/16	0.057	17.6
F67	7	6 1/16	0.065	15.4
F68	8	7 1/16	0.073	13.6
F68.5	8.5	7 9/16	0.077	12.9
F69	9	8 1/16	0.082	12.3
F69.5	9.5	8 9/16	0.086	11.7
F610	10	9 1/16	0.090	11.1
F610.5	10.5	9 9/16	0.094	10.7
F611	11	10 1/16	0.098	10.2
F611.5	11.5	10 9/16	0.102	9.8
F612	12	11 1/16	0.106	9.4

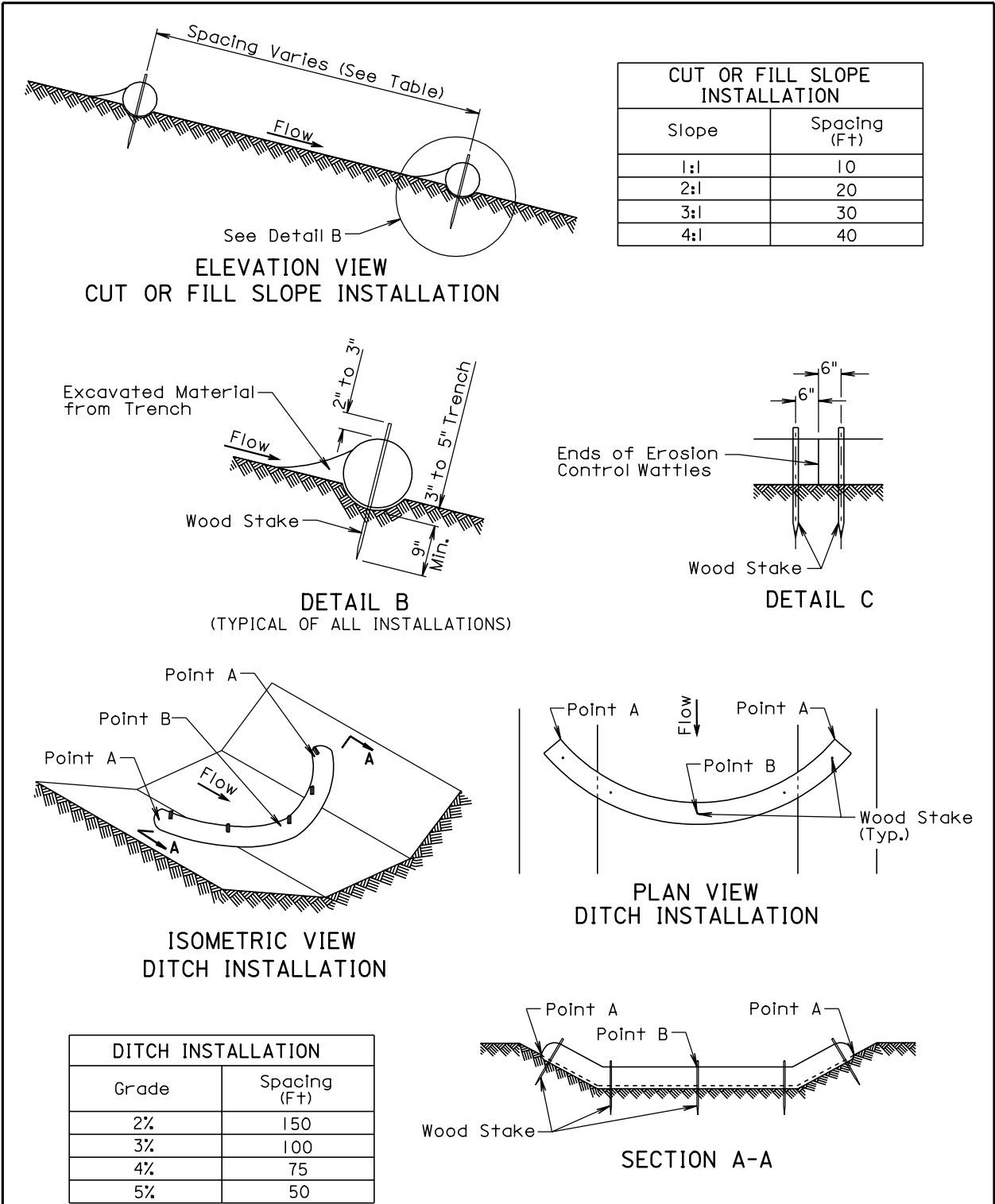
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2008

Published Date: 2nd Qtr. 2010	S D D O T	TYPE F CONCRETE CURB AND GUTTER	PLATE NUMBER 650.20
			Sheet 1 of 1



December 23, 2004

**GENERAL NOTES:**

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004