

Plotting Date: 02/08/2012

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

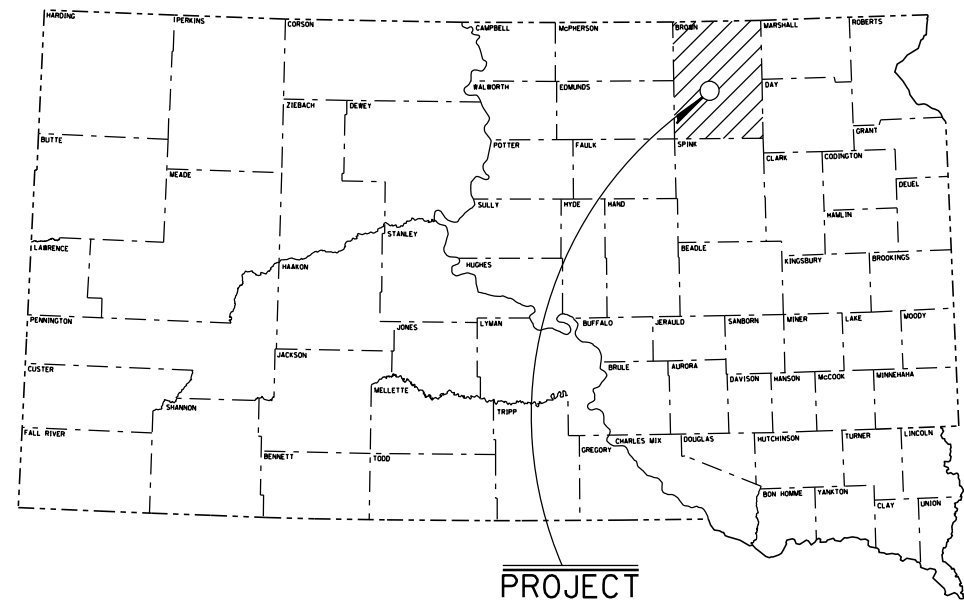
PLANS FOR PROPOSED

PROJECT NH 0012(160)298 WBL
US HIGHWAY 12
BROWN COUNTY

PCC PAVEMENT OVERLAY WITH FABRIC BOND BREAKER
Guardrail and Bridge Repair
PCN 023C

INDEX OF SECTIONS

- Section A: Estimate of Quantities
- Section C: Traffic Control Plans
- Section D: Erosion & Sediment Control Plans
- Section E: Bridge Plans
- Section F: Surfacing Plans
- Section M: Pavement Marking Plans
- Section S: Permanent Signing



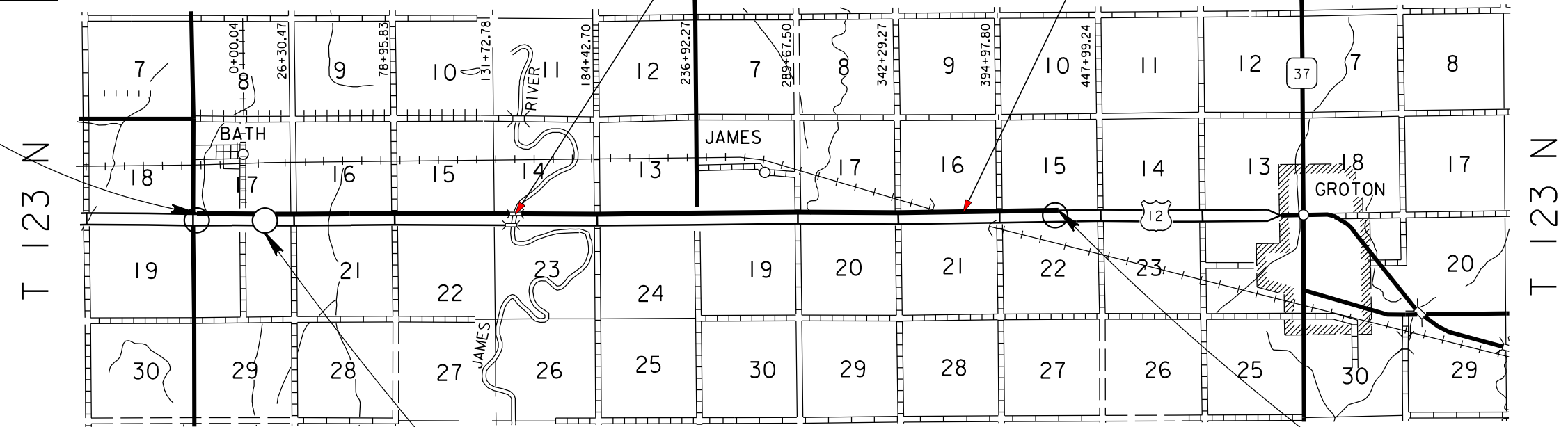
PLOT SCALE - 1:210

PLOT NAME - 1

BEGIN NH 0012(160)298
Station 380+72.00
MRM = 298.00 +0.087

R 62 W

R 61 W



Continuous Composite Girder Bridge
Sta. a 141+28.58 to Sta. a 143+68.64
240' -3/4" = 0.045 Mile
Structure#07-222-329
MRM 301.20

Continuous Composite Girder Bridge
Sta. a 373+73.61 to Sta. a 382+04.11
830' -6" = 0.157 Mile
Structure#07-267-329
MRM 305.76

EQUATION
403+68.31 =
a 0+00.00

END NH 0012(160)298
Station a 429+94.00
MRM = 306.00 +0.651

DESIGN DESIGNATION
ADT (2009) 2878 (West Bound Lanes Only)
ADT (2029) 2993 (West Bound Lanes Only)
DHV 323 (West Bound Lanes Only)
D 100
T DHV 10.7%
T ADT 23.5%
V 70 MPH

STORM WATER PERMIT
Major Receiving
Body of Water: James River
Area Disturbed: 24 Acres
Total Project Area: 120 Acres
Approx. Begin Lat +45.4590219/Long -98.3293034

GROSS LENGTH 45,290.31 FEET 8.578 MILES
LENGTH OF EXCEPTIONS 1,155.16 FEET 0.219 MILES
NET LENGTH 44,135.14 FEET 8.359 MILES

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BROWN\023C\TITLE.DGN

SECTION C - TRAFFIC CONTROL

Bid Item Number	Item	Quantity	Unit
110E1400	Remove Pavement Marking, 4" or Equivalent	1,000	Ft
632E2220	Guardrail Delineator	6	Each
632E2510	Type 2 Object Marker Back to Back	1	Each
632E2530	Type 3 Object Marker	8	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	13	Each
632E3600	Temporary Signing	998.5	SqFt
634E0010	Flagging	100	Hour
634E0100	Traffic Control	9,163	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0300	Temporary Road Marker	3,700	Each
634E0380	Tubular Marker	789	Each
634E0390	Replace Tubular Marker	40	Each
634E0420	Type C Advance Warning Arrow Panel	4	Each
634E0610	4" Temporary Pavement Marking Tape Type 2	3,480	Ft

SECTION D - EROSION AND SEDIMENT CONTROL

Bid Item Number	Item	Quantity	Unit
110E1690	Remove Sediment	2.3	CuYd
110E1693	Remove Erosion Control Wattle	250	Ft
110E1700	Remove Silt Fence	875	Ft
120E9000	Pit Run Material	60.0	Ton
230E0100	Remove and Replace Topsoil	Lump Sum	LS
730E0212	Type G Permanent Seed Mixture	624	Lb
732E0100	Mulching	48.0	Ton
734E0040	Soil Stabilizer	3,600	Lb
734E0154	12" Diameter Erosion Control Wattle	1,000	Ft
734E0165	Remove and Reset Erosion Control Wattle	250	Ft
734E0602	Low Flow Silt Fence	1,000	Ft
734E0604	High Flow Silt Fence	2,500	Ft
734E0610	Mucking Silt Fence	245	CuYd
734E0620	Repair Silt Fence	875	Ft
831E0300	MSE Geotextile Fabric	95	SqYd
900E1300	Granular Material for Construction Entrance	60.0	Ton

SECTION E - STRUCTURES

Bid Item Number	Item	Quantity	Unit
410E2600	Membrane Sealant Expansion Joint	125.6	Ft
430E0300	Granular Bridge End Backfill	49.3	CuYd
430E0510	Approach Slab Underdrain Excavation	55.5	CuYd
460E0070	Class A45 Concrete, Bridge Repair	1.3	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	67.5	SqYd
460E0170	Concrete Patching Material	158.9	CuYd
460E0300	Breakout Structural Concrete	1.3	CuYd
460E0380	Install Dowel in Concrete	54	Each
460E0510	Extend Deck Drain	2	Each
480E0200	Epoxy Coated Reinforcing Steel	130	Lb
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	51	Each
480E0506	No. 6 Rebar Splice	44	Each
491E0015	Two Coat Epoxy Bridge Deck Chip Seal	4,744.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	4,744.2	SqYd
491E0120	Bridge Deck Grinding	4,744.2	SqYd
491E0130	Concrete Removal, Class A	22.4	SqYd
491E0140	Concrete Removal, Class B	22.4	SqYd
680E0040	4" Underdrain Pipe	104	Ft
680E2010	Precast Concrete Headwall for Drain	2	Each
680E2500	Porous Backfill	11.7	Ton

SECTION F - SURFACING

Bid Item Number	Item	Quantity	Unit
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	8.359	Mile
009E3240	Graded Centerline Staking	8.359	Mile
009E3250	Miscellaneous Staking	8.359	Mile
009E3280	Slope Staking	8.359	Mile
009E3300	Three Man Survey Crew	40.0	Hour
110E0700	Remove 3 Cable Guardrail	555	Ft
110E0730	Remove Beam Guardrail	162.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	5	Each
110E0745	Remove 3 Cable Guardrail Slip Base Anchor Assembly	1	Each
110E1100	Remove Concrete Pavement	2,509.9	SqYd
110E6000	Remove 3 Cable Guardrail for Reset	1,041	Ft
110E6010	Remove 3 Cable Guardrail Anchor Assembly for Reset	3	Each
110E6210	Remove Thrie Beam Guardrail for Reset	50.0	Ft
110E6230	Remove W Beam Guardrail for Reset	262.5	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	4	Each
110E6260	Remove W Beam Guardrail Breakaway Cable Terminal for Reset	3	Each
110E6270	Remove W Beam Guardrail Flared End Terminal for Reset	1	Each
110E7500	Remove Pipe for Reset	8	Ft
110E7510	Remove Pipe End Section for Reset	1	Each
110E7700	Remove Drop Inlet Frame and Grate Assembly for Reset	6	Each
120E0010	Unclassified Excavation	2,450	CuYd
120E0100	Unclassified Excavation, Digouts	214	CuYd
120E0600	Contractor Furnished Borrow	11,801	CuYd
120E4100	Reprofiling Ditch	15.0	Sta
120E6100	Water for Embankment	152.2	MGal
120E6200	Water for Granular Material	545.6	MGal
120E9000	Pit Run Material	5,061.6	Ton
250E0010	Incidental Work	Lump Sum	LS
260E1010	Base Course	34,735.9	Ton
260E1030	Base Course, Salvaged	2,874.5	Ton
260E2060	Gravel Cushion, Modified	5,111.6	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	2,874.5	Ton
320E0006	PG 64-22 Asphalt Binder	689.7	Ton
320E1050	Class E Asphalt Concrete	11,954.1	Ton
320E1200	Asphalt Concrete Composite	1,706.9	Ton
320E5010	Saw and Seal Shoulder Joint	88,270	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	8.4	Mile
330E0010	MC-70 Asphalt for Prime	134.8	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	18.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	16.7	Ton
332E0010	Cold Milling Asphalt Concrete	1,716	SqYd
380E0050	8" Nonreinforced PCC Pavement	6,550.4	SqYd
380E1500	PCC Overlay, Furnish	30,065.7	CuYd
380E1580	8" PCC Overlay, Placement	121,039.0	SqYd
380E5030	Nonreinforced PCC Pavement Repair	144.4	SqYd
380E6000	Dowel Bar	52,866	Each
380E6110	Insert Steel Bar in PCC Pavement	48	Each
410E2600	Membrane Sealant Expansion Joint	167.6	Ft
450E8900	Cleanout Pipe Culvert	54	Each
450E9000	Reset Pipe	8	Ft
450E9001	Reset Pipe End Section	1	Each
600E0200	Type II Field Laboratory	1	Each
629E0100	3 Cable Guardrail	500	Ft

SPECIFICATIONS

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

INDEX OF SHEETS

A1 Estimate of Quantities for Sections C, D, E, F, M and S

SECTION F - SURFACING - CONTINUED

Bid Item Number	Item	Quantity	Unit
629E0220	Reset 3 Cable Guardrail, Cable Only	1,041	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	3	Each
629E0400	3 Cable Guardrail Anchor Assembly	4	Each
629E0410	Reset 3 Cable Guardrail Anchor Assembly	3	Each
629E1102	3 Cable Guardrail Intermediate Post	166	Each
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	25.0	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	100.0	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	2	Each
630E2020	W Beam Guardrail Tangent End Terminal	1	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	1	Each
630E2110	Beam Guardrail Post and Block	87	Each
630E5120	Reset Thrie Beam Rail	50.0	Ft
630E5160	Reset W Beam Rail	262.5	Ft
630E5180	Reset W Beam Guardrail Breakaway Cable Terminal	3	Each
630E5190	Reset W Beam to Thrie Beam Guardrail Transition	4	Each
630E5207	Reset W Beam Guardrail Flared End Terminal	1	Each
634E0510	4"x8" White Delineator Back to Back, Barrier Mounted	45	Each
634E0700	Traffic Control Movable Concrete Barrier	45	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
650E4380	Type D48 Concrete Curb and Gutter	60	Ft
670E5400	Precast Drop Inlet Collar	6	Each
670E7000	Reset Drop Inlet Frame and Grate Assembly	6	Each
831E0210	Non-woven Geotextile Separator	2,357	SqYd
831E1500	Geotextile Bond Breaker Fabric	186,214	SqYd
998E0100	Railroad Protective Insurance	Lump Sum	LS

SECTION M - PAVEMENT MARKING

Bid Item Number	Item	Quantity	Unit
633E1300	Pavement Marking Paint, White	321.0	Gal
633E1305	Pavement Marking Paint, Yellow	12.0	Gal
633E3000	Durable Pavement Marking, 4" White	111,574	Ft
633E3005	Durable Pavement Marking, 4" Yellow	89,259	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	196,906	Ft

SECTION S - PERMANENT SIGNING

Bid Item Number	Item	Quantity	Unit
110E0130	Remove Traffic Sign	68	Each
632E1320	2.0"x2.0" Perforated Tube Post	1,171.0	Ft
632E1330	2.25"x2.25" Perforated Tube Post	445.5	Ft
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	85	Each
632E2220	Guardrail Delineator	35	Each
632E2510	Type 2 Object Marker Back to Back	36	Each
632E2520	Type 2 Object Marker	35	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	774.8	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	618.8	SqFt

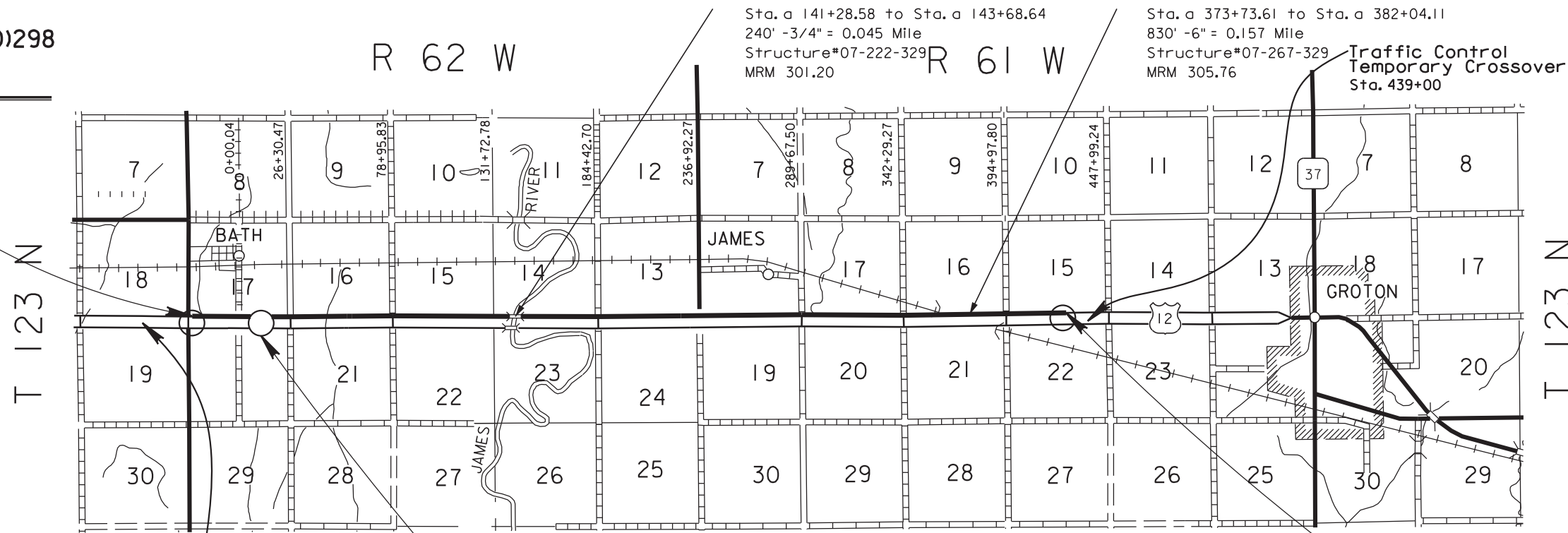
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	C1	C15
Plotting Date: 02/03/2012			

Section C: Traffic Control

INDEX OF SHEETS

- C1 General Layout with Index
- C2 thru C4 Estimate of Quantities, Notes, and Tables
- C5 Overwidth Signing Layout
- C6 Construction Sign Design Layouts
- C7 Intersecting Road Signing
- C8 thru C10 Crossover Layout at Bath
- C11 thru C12 Crossover Layout at 404 Av
- C13 thru C15 Standard Plates

BEGIN NH 0012(160)298
 Station 380+72.00
 MRM = 298.00 +0.087



DESIGN DESIGNATION

ADT (2009) 2878 (West Bound Lanes Only)
 ADT (2029) 2993 (West Bound Lanes Only)
 DHV 323 (West Bound Lanes Only)
 D 100

Traffic Control
 Temporary Crossover
 Sta. 366+00

EQUATION
 $403+68.31 =$
 $a 0+00.00$

END NH 0012(160)298
 Station a 429+94.00
 MRM = 306.00 +0.651

PLOT SCALE - 1:210

PLOTTED FROM - TRAB17882

PLOT NAME - 1

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	C2	C15

SECTION C ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E1400	Remove Pavement Marking, 4" or Equivalent	1,000	Ft
632E2220	Guardrail Delineator	6	Each
632E2510	Type 2 Object Marker Back to Back	1	Each
632E2530	Type 3 Object Marker	8	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	13	Each
632E3600	Temporary Signing	998.5	SqFt
634E0010	Flagging	100	Hour
634E0100	Traffic Control	9,163	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0300	Temporary Road Marker	3,700	Each
634E0380	Tubular Marker	789	Each
634E0390	Replace Tubular Marker	40	Each
634E0420	Type C Advance Warning Arrow Panel	4	Each
634E0610	4" Temporary Pavement Marking Tape Type 2	3,480	Ft

SEQUENCE OF OPERATIONS

The Contractor shall submit any proposed alternates to the following sequence for the Engineer's approval at least two weeks prior to the preconstruction meeting.

Phase I

Install fixed location Road Work Ahead(W20-1), Road Work Next ___ Miles(G20-1) and End Road Work(G20-2) signs.
 Install lane closure at traffic control temporary crossover locations.
 Construct traffic control temporary crossovers at Sta. 366+00 and Sta. a439+00.
 Install over-width signing.
 Install shoulder delineation.
 Install bridge end protection in EBL (moveable concrete barriers and guardrail).

Phase II

Remove conflicting pavement markings.
 Install channeling devices and temporary road markers to separate two-way traffic on the Eastbound lanes.
 Eastbound lanes - repaint existing white and yellow edge line. Existing yellow edge line to be painted white.

Phase III

Maintain two-way traffic on Eastbound lanes while constructing Westbound lanes.
 Complete Structure Work (Approach Slabs, Joints and Epoxy Chip Seal).

Phase IV

Accomplish shoulder shaping to the typical section.
 Install permanent pavement markings on the reconstructed Westbound lanes.
 Install permanent signing and delineation.
 Perform erosion control.

Phase V

Restore Westbound traffic to reconstructed Westbound lanes.
 Remove two way traffic delineation and shoulder delineation.
 Remove over-width signing.
 Remove Bridge-end and median protection.
 Install permanent pavement markings on Eastbound lanes within project limits.
 Remove all fixed location construction signing.

MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. The cost of this work shall be incidental to the various contract bid items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be as near the right-of-way as possible. 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.

The Contractor's employee vehicles will not be allowed to park in the US 12 median at any time.

Work activities during non-daylight hours are subject to prior approval.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP Report 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

The public access median crossovers located within the project limits for field and unimproved section line roads shall be blocked off by the use of a Type III Barricade (double sided) and a Road Closed sign. The barricades shall be located outside of the traffic lane clear zone (30' minimum from yellow edge line).The following locations meet the above requirements:

MRM	MRM	MRM	MRM
298.08	299.62	301.30	305.27
298.71	300.08	302.52	306.49
299.16	300.25	303.33	
299.45	300.53	303.51	
299.59	301.19	304.30	

All temporary pavement markings in the traffic control temporary crossovers shall be Temporary Road Markers. Refer to Section M for pavement marking requirements during two-way head to head traffic for the EBL in between the 2 traffic control temporary crossovers.

Temporary marking used by the Contractor shall be completely removed upon completion of the project or as project conditions warrant. The cost of removal shall be incidental to the contract unit price per each for "Temporary Road Marker".

The Contractor will be required to change the yellow delineators located on the median side of the EBL Structures to white before two way traffic is allowed. The Contractor shall return these delineators to yellow upon completion of two way traffic. All costs for changing delineators shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

The Contractor will be required to install R4-7 Keep Right symbol, W6-3 Two Way Traffic symbol, R2-1 SPEED LIMIT 55, and R4-1 DO NOT PASS signs as indicated on the Sign Layout at Intersecting Roads. The W6-3, R2-1 and R4-1 signs shall also be installed in both directions at approximately MRM 301.5.

The Contractor will be required to furnish and install Type 3 Object Markers on both ends of both structures before two-way traffic is allowed. The cost to furnish, install, maintain, and remove the Type 3 object markers shall be incidental to the contract unit price per each for "Type 3 Object Marker".

Included in the Estimate of Quantities is 6 Guardrail Delineator and 1 Type 2 Object Marker Back to Back for use on the traffic control temporary guardrail for Str. No. 07-222-330. Refer to Standard Plate 632.40 in the Section S plans for installation requirements.

Upon completion of the project and removal of signs, breakaway bases shall be pulled immediately.

For information only, it is estimated that 200 white and 3500 yellow temporary road markers will be required as illustrated on Standard Plate 634.66

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	C3	C15

TUBULAR MARKER FOR TWO-WAY TRAFFIC

The Engineer shall inspect and approve the tubular marker for use prior to the marker being installed on the project. The tubular marker shall be in reasonably close conformance with the following specifications. The tubular marker shall be a minimum of 28" in height, 3" to 4" in width, and yield upon vehicular impact.

The color of the tubular marker shall be predominately orange.

All tubular markers shall be of the same size and type. Reflectorization of the tubular markers shall be a minimum of two, three-inch wide white bands; the first placed a maximum of 2 inches from the top with a maximum of 6 inches between the bands. The reflectorized material shall be adequately attached to the marker to prevent peeling or detachment.

The tubular marker shall provide adequate nighttime reflectivity.

The base of the Tubular Marker should be attached to the roadway surface with a flexible non-permanent bituminous adhesive capable of being removed from the roadway surface after use, or with an adhesive approved by the Engineer. The pin used to connect the marker to the base shall be of a type that will not puncture a vehicle tire if it should become dislodged from the base. The cost to furnish, install, maintain, and remove the tubular markers shall be incidental to the contract unit price per each for "Tubular Marker".

For information only, it is estimated that 578 Tubular Markers will be required to delineate Two-Way Traffic.

OVERWIDTH SIGNING

The Contractor shall furnish and install overwidth signs as shown in the plans. All costs to furnish, install, maintain and remove the signs shall be incidental to the contract unit price per Square Foot for "Temporary Signing".

When the overwidth signing is not required, the installed signs shall be covered or deactivated by an alternate method approved by the Engineer. If the signs are covered, the covering shall completely prevent viewing of the sign. The signs shall be removed during long periods of deactivation.

SPECIAL SHOULDER DELINEATION

Special shoulder protection shall be installed on both shoulders of the Eastbound lanes throughout the entire length of two-way, head to head traffic.

Shoulder protection shall consist of installing tubular markers 3 feet from the edge of the driving lane at 500' intervals. Tubular markers for shoulder delineation shall be of the same size and type as defined in section TUBULAR MARKER FOR TWO-WAY TRAFFIC of these plans.

All costs to furnish, install, maintain and remove the tubular markers shall be incidental to the contract unit price per each for "Tubular Marker".

For information only, it is estimated that 186 Tubular Markers will be required for this purpose.

SPECIAL CENTERLINE DELINEATION

Special centerline delineation shall be installed on the centerline of the WBL from approximately Sta. 359+65 (East entrance to Northern Rural Electric) to Sta.376+50 (395th Ave).

Centerline delineation shall consist of installing tubular markers on centerline as depicted on Sheet 2 of 3 of the detail CROSSOVER LAYOUT AT BATH. Tubular markers for centerline delineation shall be of the same size and type as defined in section TUBULAR MARKER FOR TWO-WAY TRAFFIC of these plans.

All costs to furnish, install, maintain and remove the tubular markers shall be incidental to the contract unit price per each for "Tubular Marker".

For information only, it is estimated that 25 Tubular Markers will be required for this purpose.

REMOVAL OF EXISTING PAVEMENT MARKINGS

The Contractor shall remove the 4" solid yellow edge line(s) and the 4" White centerline skips in traffic merging areas. Limits of removal shall be determined in the field by the Engineer.

All costs to remove existing skip line and edge line shall be incidental to the contract unit price per foot for "Remove Pavement Marking, 4" or Equivalent".

It is estimated that 1000 feet of 4" pavement marking paint will be removed from the centerline and edge lines.

REMOVAL OF CONFLICTING SIGNS

Section S of the plans contains a listing of signs to be removed. All One Way, Do Not Enter, Wrong Way, Divided Highway Crossing, and Speed Limit signs listed in Section S shall be removed when there is head to head traffic on this project. There will be no additional payment for removing these signs, other than the method of payment noted in Section S of the plans. Stop and Yield signs shall remain in place.

Additional signing near 395th Ave intersection requires removal. Those signs are as listed in the following table. All costs associated with removing these signs at the start of two-way head to head traffic and replacement at the end of the project shall be incidental to the contract unit price per each for "Remove, Salvage, Relocate, and Reset Traffic Sign".

<u>MRM</u>	<u>Lt/Rt</u>	<u>Sign Description</u>	<u>Location</u>
297.93	Rt	Do Not Enter	Sign on back side of Sand Lake National Wildlife Refuge sign
297.93	Lt	One Way	Sign on West side of Median
297.94	Rt	One Way	Sign on south inslope of US12 EBL
297.94	Lt	One Way	One Way Sign on East side on Median. Only remove sign facing south.
297.98	Lt	Wrong Way	Sign in Median facing East
298.01	Rt	Do Not Enter	Sign in SW quadrant of the 395 Ave Intersection
298.02	Lt	One Way	Sign on West side of Median. Only remove sign facing south
298.04	Rt	One Way	Sign located in SE Quadrant of Intersection facing South
		One Way	Sign located in SE Quadrant of Intersection facing North
		Divided Highway Crossing Symbol	Sign located in SE Quadrant of Intersection facing South
298.04	Lt	One Way	One Way Sign on East side on Median. Only remove sign facing south.
298.06	Rt	Do Not Enter	Sign on back side of Adopt A Highway sign
298.08	Lt	One Way	Sign in Median facing East

It will be allowable to cover these signs for up to 3 calendar days after the beginning of two-way head to head traffic, to allow the Contractor time to remove those signs. The covering shall be such that the entire sign is covered and the cover shall prevent any image of the sign from being viewed.

4" TEMPORARY PAVEMENT MARKING TAPE, TYPE 2

Included in the Section C Estimate of Quantities is 3,480 feet of Yellow 4" Temporary Pavement Marking Tape for use on the lane closures as depicted on Standard Plate 634.64. These closures shall be in place during construction of the traffic control temporary crossover at Sta. 366+00 and Sta. a439+00.

Temporary Road Markers may be installed in place of 4" Temporary Pavement Marking Tape, Type 2. Temporary Road Markers shall be spaced at 5' center to center.

TEMPORARY SIGNING

Sign Designation	Sign Description	Color	Width (Ft)	Height (Ft)	Area (SqFt)	Quantity	Total Area (SqFt)
	Head to Head Traffic Next 9 Miles	Orange with Black Text/Border	8.00	4.00	32.00	1	32.00
	Median Crossover 1 Mile Ahead	Orange with Black Text/Border	8.00	4.00	32.00	1	32.00
A	No Vehicles over 12' Wide	White with Back Text/Border	7.00	2.50	17.50	4	70.00
B	Width Restriction / US12 5 Miles East of Aberdeen / Use Alternate Route	Refer to Construction Sign Design Layout detail sheet	9.50	7.00	66.50	6	399.00
C	Width Restriction / US12 2 Miles West of Groton / Use Alternate Route	Refer to Construction Sign Design Layout detail sheet	9.50	7.00	66.50	7	465.50
Total							998.50

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-1	48" x 24"	ROAD WORK NEXT ## MILES	3	24	72
G20-2A	36" x 18"	END ROAD WORK	2	17	34
R2-1	30" x 36"	SPEED LIMIT 55	21	23	483
R2-1	30" x 36"	SPEED LIMIT 65	1	23	23
R2-1	30" x 36"	SPEED LIMIT 70	1	23	23
R4-1	24" x 30"	DO NOT PASS	19	18	342
R4-7	24" x 30"	KEEP RIGHT (SYMBOL)	19	18	342
R5-1	48" x 48"	DO NOT ENTER	2	34	68
R11-2	48" x 30"	ROAD CLOSED	32	27	864
W1-4a	48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)	3	34	102
W1-6	48" x 24"	LARGE ARROW	2	24	48
W3-5	48" x 48"	REDUCED SPEED LIMIT AHEAD SIGN (55 MPH)	4	34	136
W4-1	48" x 48"	MERGE (SYMBOL)	1	34	34
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	8	34	272
W6-3	48" x 48"	TWO WAY TRAFFIC (SYMBOL)	19	34	646
W7-3a	30" x 24"	NEXT ## MILES	3	18	54
W8-6	48" x 48"	TRUCK CROSSING	4	34	136
W13-1	24" x 24"	ADVISORY SPEED PLATE	3	16	48
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	24	34	816
W20-5	48" x 48"	LT. OR RT. LANE CLOSED AHEAD	8	34	272
W20-5	48" x 48"	LT. OR RT. LANE CLOSED 1/2 MILE	4	34	136
W21-5	48" x 48"	SHOULDER WORK	2	34	68
*****	*****	TYPE III BARRICADE - 8 FT. DOUBLE SIDED	74	56	4144
TOTAL UNITS					9163

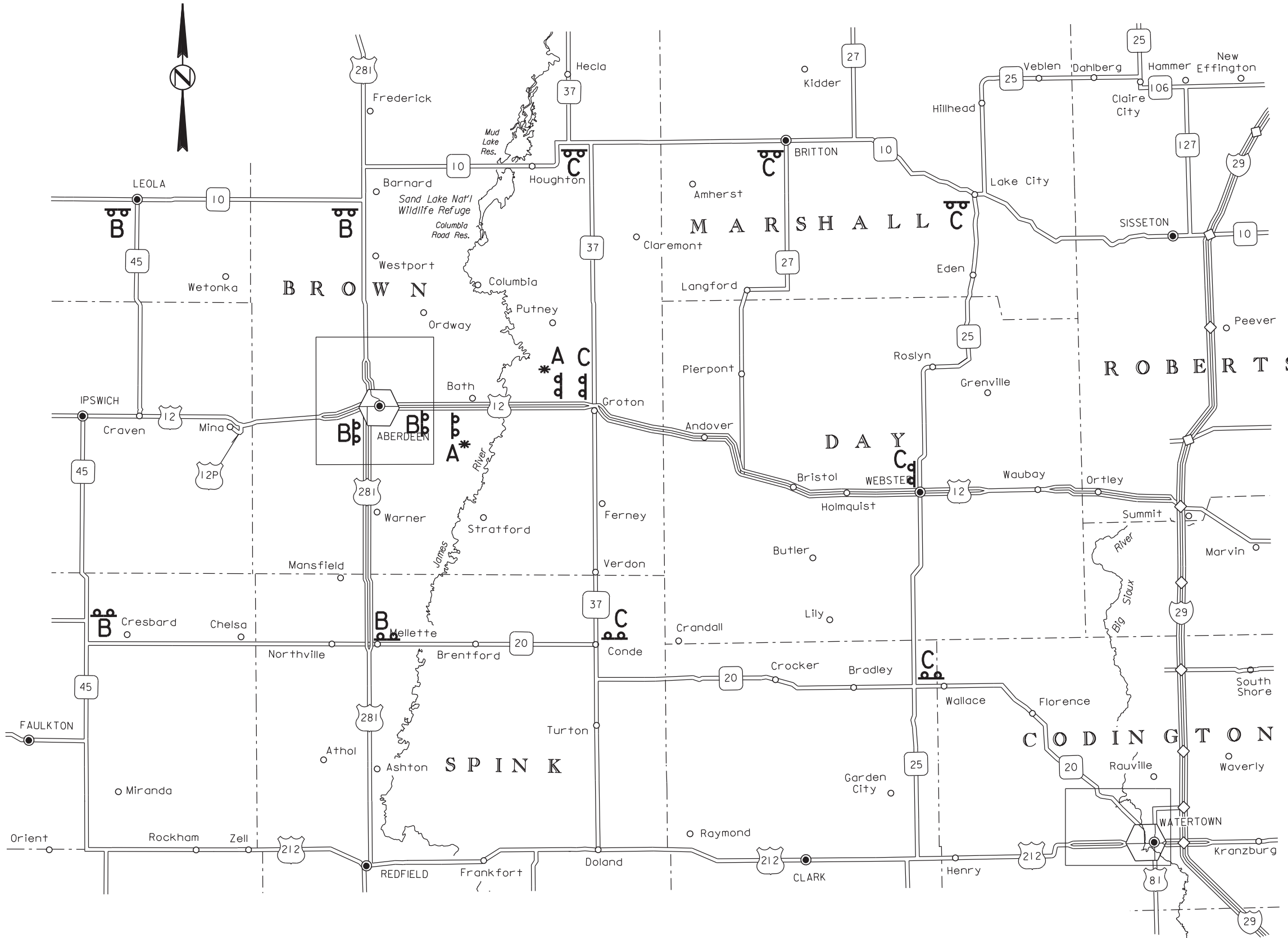
If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:
Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (sq ft) x 3.
If a sign measures between 23H" and 37H" the units per sign will be computed as sign size (sq ft) x 1.2 +15.

PLOT SCALE - 1:50000

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	C5	C15
Plotting Date: 02/03/2012			

WIDTH RESTRICTION SIGN LOCATION LAYOUT
(FIXED LOCATION, GROUND MOUNTED, BREAKAWAY SUPPORTS)



* Sign shall be placed on median and outside shoulder

A
**NO VEHICLES
OVER 12 FT WIDE**

B
**WIDTH RESTRICTION
12 FT MAXIMUM
5 MILES EAST
OF ABERDEEN
USE ALT ROUTE**

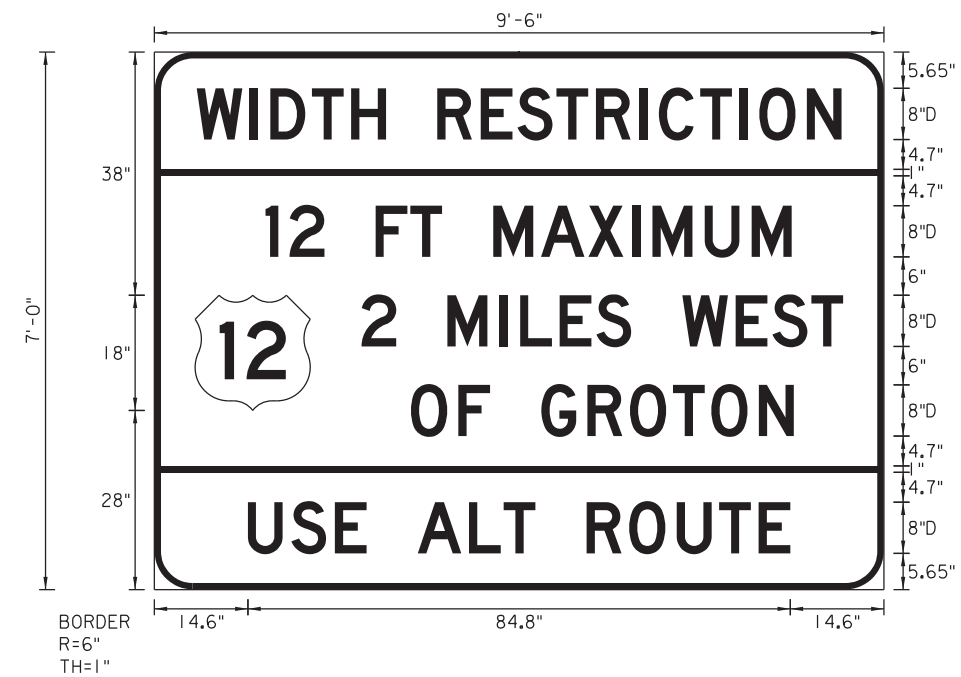
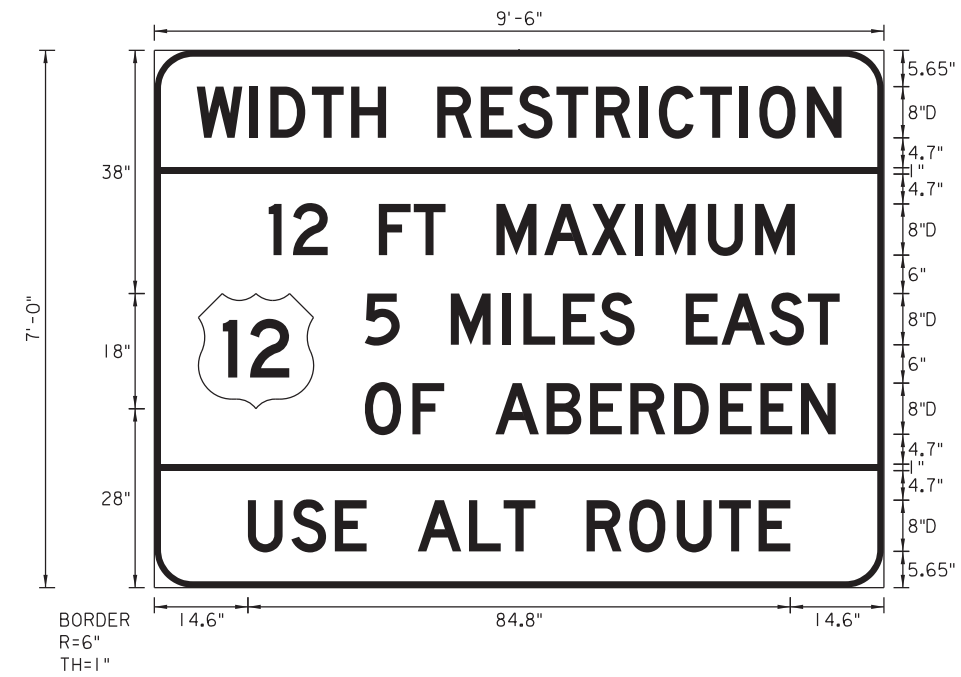
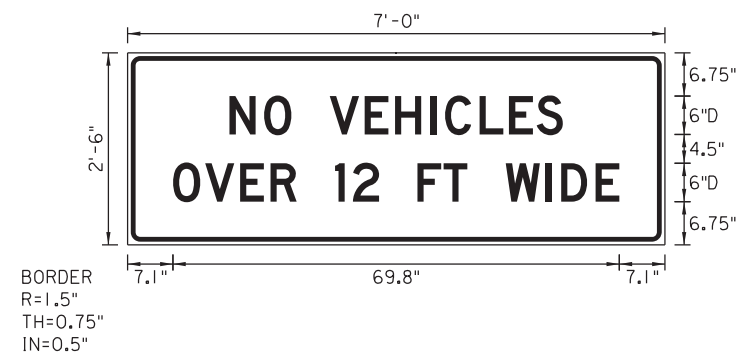
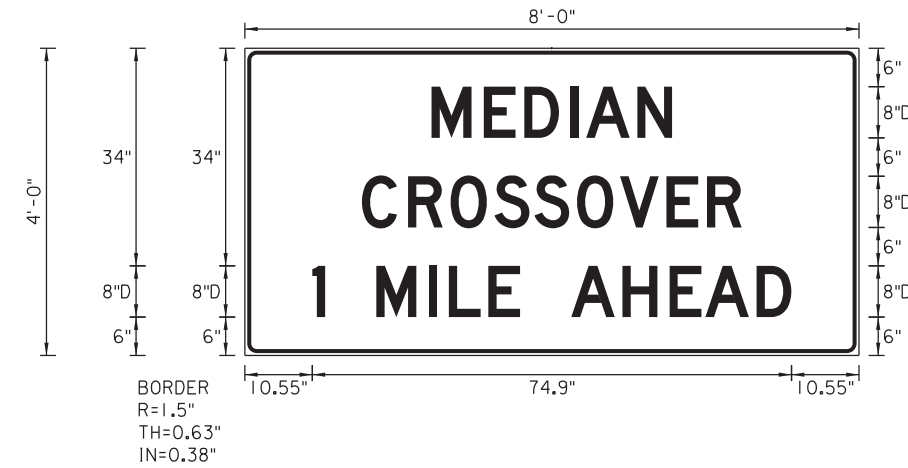
C
**WIDTH RESTRICTION
12 FT MAXIMUM
2 MILES WEST
OF GROTON
USE ALT ROUTE**

PLOT NAME - 2

FILE - ... \OVERWIDTH_SIGN_LOCATION.DGN

CONSTRUCTION SIGN DESIGN LAYOUTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160)298	C6	C15
Plotting Date: 02/03/2012			



PLOT SCALE - 1:2.5

PLOTTED FROM - TRAB17882

PLOT NAME - 3

FILE - ... \WR SIGNING 0012-160-298.DGN

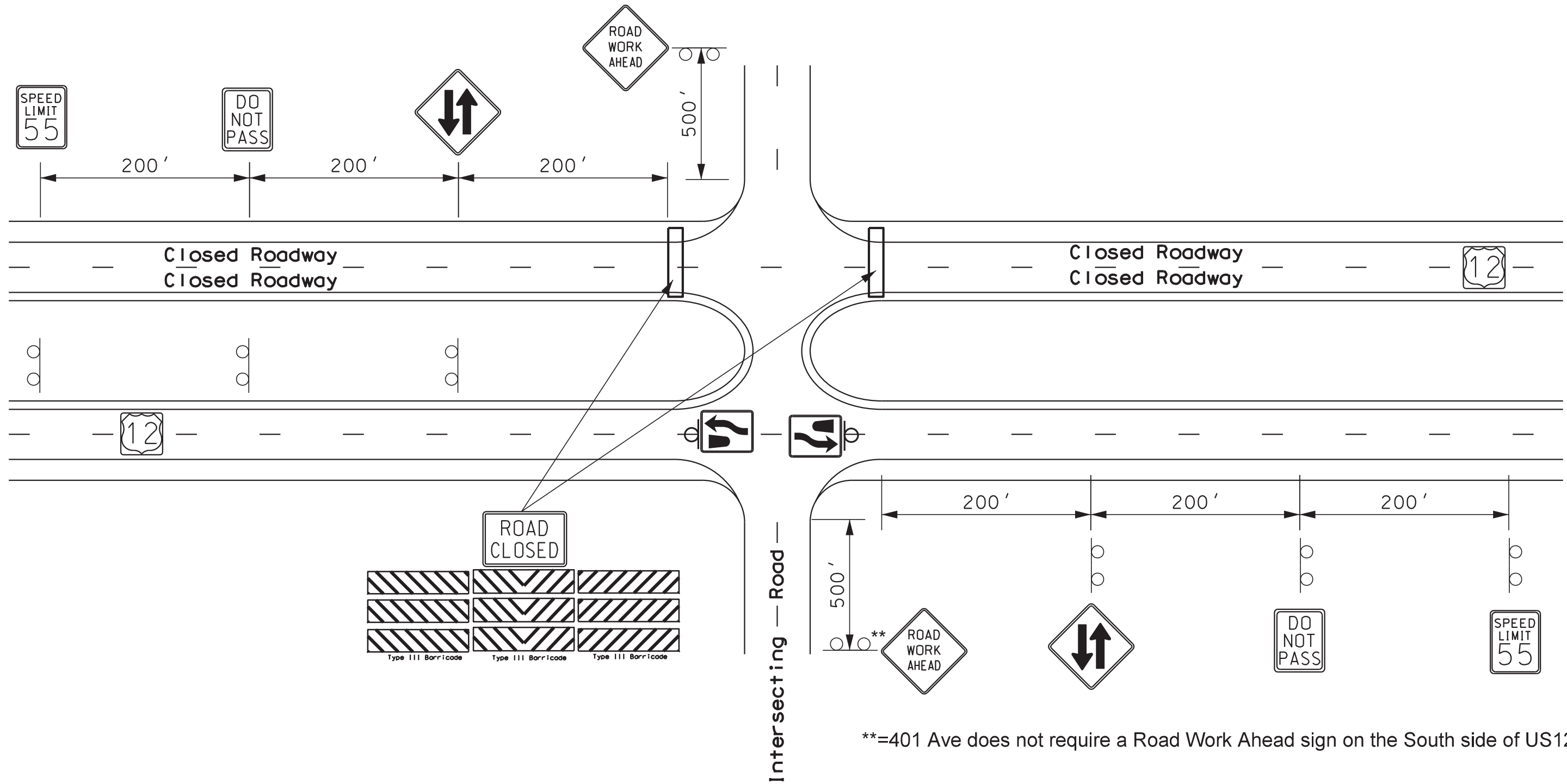
SIGN LAYOUT AT INTERSECTING ROADS (FIXED LOCATION, GROUND MOUNTED, BREAKAWAY SUPPORTS)

Park Road, 396 Ave, 397 Ave, 400 Ave, 401 Ave, 402 Ave, & 403 Ave

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. C7	TOTAL SHEETS C15
Plotting Date: 02/03/2012			

PLOT SCALE - 1:50

PLOT NAME - 4



PLOTTED FROM - TRAB17882

FILE - ... \CROSS_ROAD_FIXED_SIGNS.DGN

CROSSOVER LAYOUT AT BATH

(Sheet 1 of 3)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	C8	C15
Plotting Date: 02/03/2012			

Refer to Standard Plate 634.66 for full details on sign spacing, pavement markings and other requirements for the traffic control temporary crossover.

Follow Standard Plate 634.66 unless otherwise noted.

The following changes are to be made to Standard Plate 634.66:

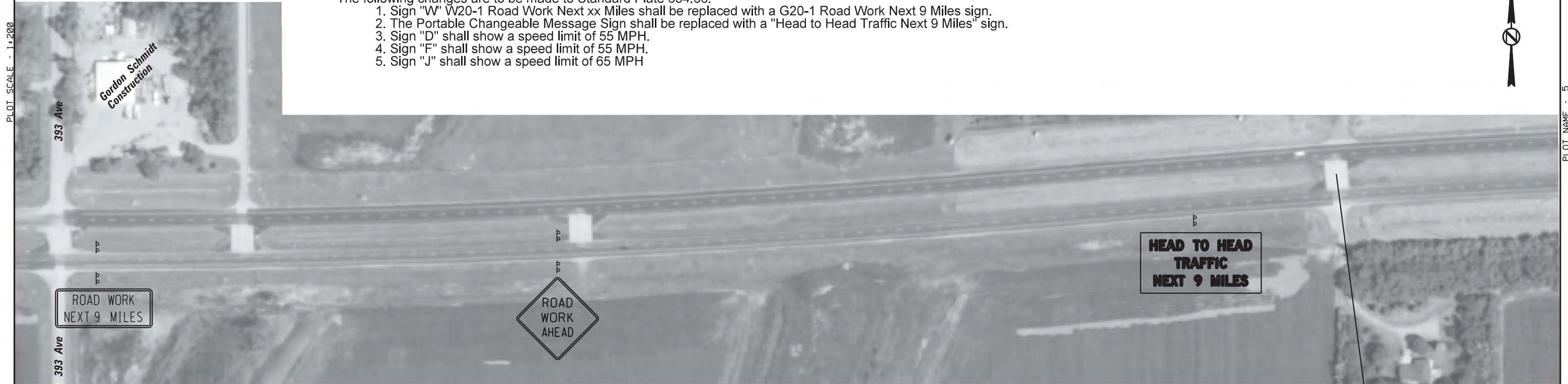
1. Sign "W" W20-1 Road Work Next xx Miles shall be replaced with a G20-1 Road Work Next 9 Miles sign.
2. The Portable Changeable Message Sign shall be replaced with a "Head to Head Traffic Next 9 Miles" sign.
3. Sign "D" shall show a speed limit of 55 MPH.
4. Sign "F" shall show a speed limit of 55 MPH.
5. Sign "J" shall show a speed limit of 65 MPH



PLOT SCALE - 1:200

393 Ave

PLOTTED FROM - TRAB17882



PLOT NAME - 5

Identical Points



FILE - ... \CROSSOVER_AT_BATH_1.DGN

Scale 1"=200'

CROSSOVER LAYOUT AT BATH

(Sheet 2 of 3)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	C9	C15
Plotting Date: 02/03/2012			

Refer to Standard Plate 634.66 for full details on sign spacing, pavement markings and other requirements for the traffic control temporary crossover.
 Follow Standard Plate 634.66 unless otherwise noted.
 The following changes are to be made to Standard Plate 634.66:

1. Sign "W" W20-1 Road Work Next xx Miles shall be replaced with a G20-1 Road Work Next 9 Miles sign.
2. The Portable Changeable Message Sign shall be replaced with a "Head to Head Traffic Next 9 Miles" sign.
3. Sign "D" shall show a speed limit of 55 MPH.
4. Sign "F" shall show a speed limit of 55 MPH.
5. Sign "J" shall show a speed limit of 65 MPH

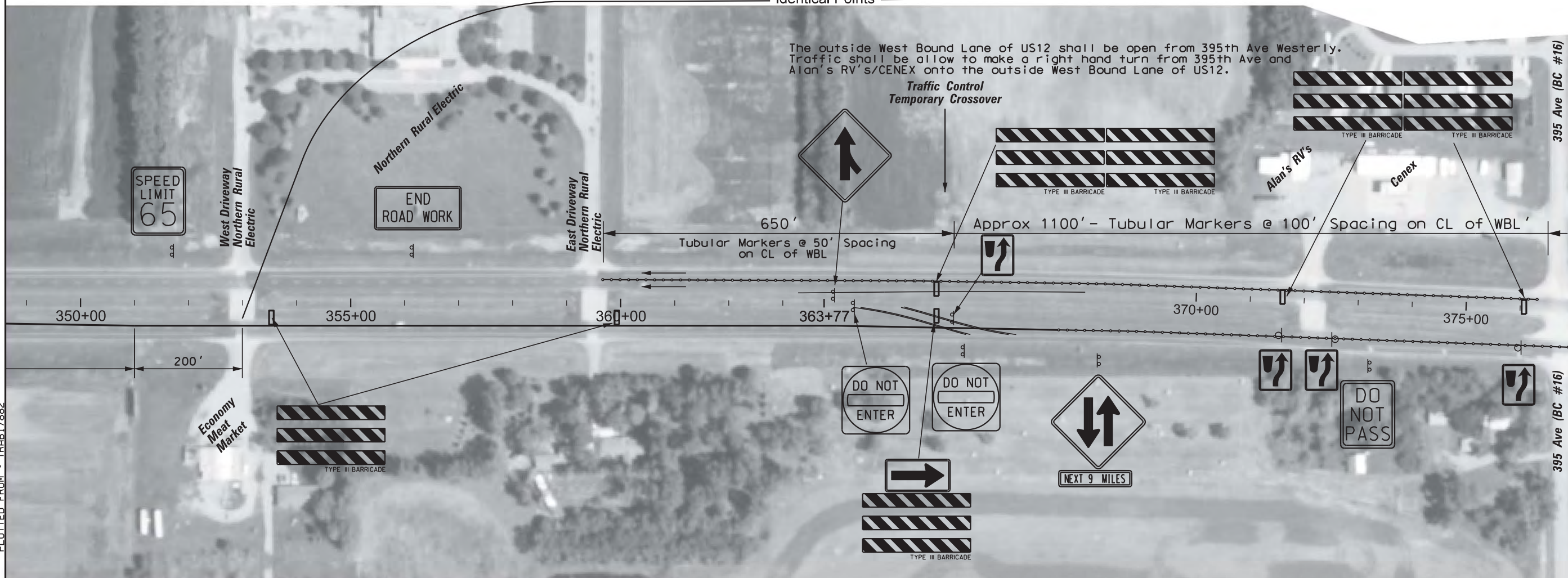
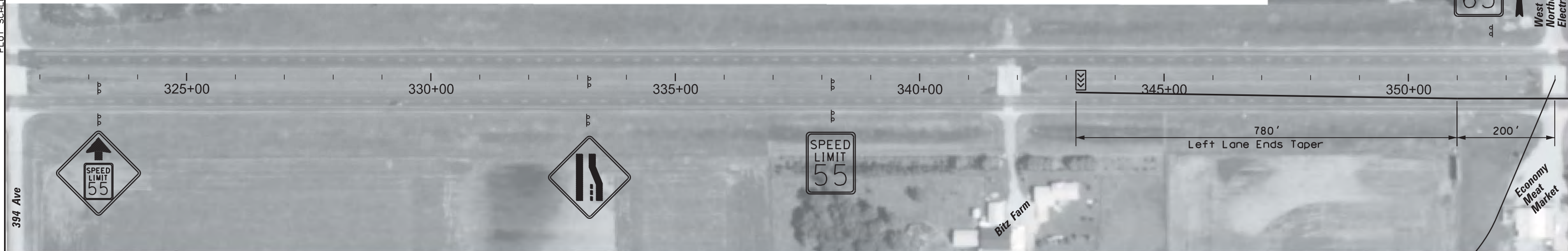
PLOT SCALE - 1:200

394 Ave

PLOTTED FROM - TRAB17882

PLOT NAME - 6

FILE - ... \CROSSOVER_AT_BATH_2.DGN



Scale 1"=200'

CROSSOVER LAYOUT AT BATH

(Sheet 3 of 3)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	C10	C15

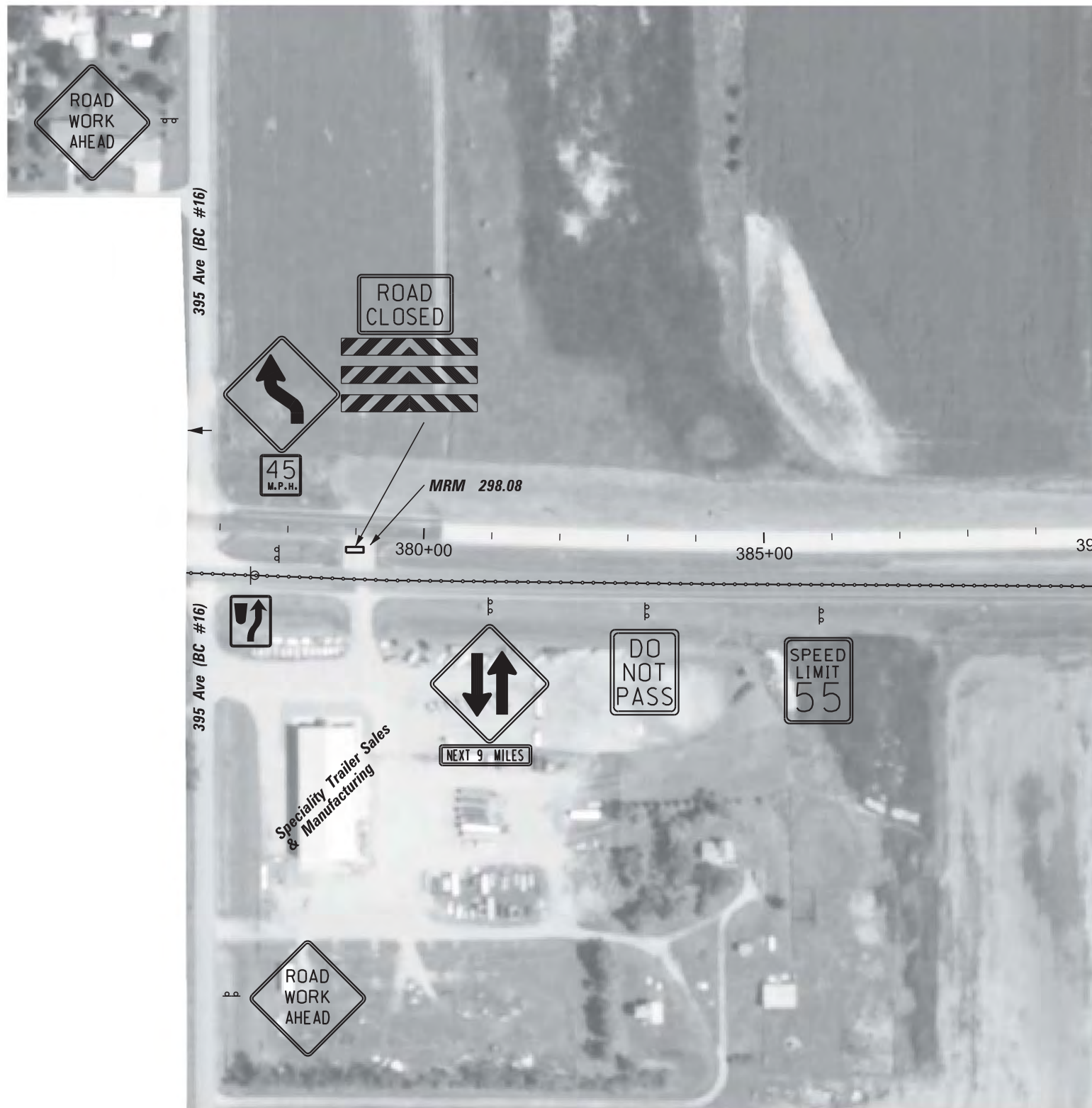
Plotting Date: 02/03/2012

Refer to Standard Plate 634.66 for full details on sign spacing, pavement markings and other requirements for the traffic control temporary crossover.

Follow Standard Plate 634.66 unless otherwise noted.

The following changes are to be made to Standard Plate 634.66:

1. Sign "W" W20-1 Road Work Next xx Miles shall be replaced with a G20-1 Road Work Next 9 Miles sign.
2. The Portable Changeable Message Sign shall be replaced with a "Head to Head Traffic Next 9 Miles" sign.
3. Sign "D" shall show a speed limit of 55 MPH.
4. Sign "F" shall show a speed limit of 55 MPH.
5. Sign "J" shall show a speed limit of 65 MPH.



PLOT SCALE - 1"=200'

PLOTTED FROM - TRAB17882

PLOT NAME - 7

FILE - ... \CROSSOVER_AT_BATH_3.DGN

Scale 1"=200'

CROSSOVER LAYOUT AT 404 AVE

(Sheet 1 of 2)

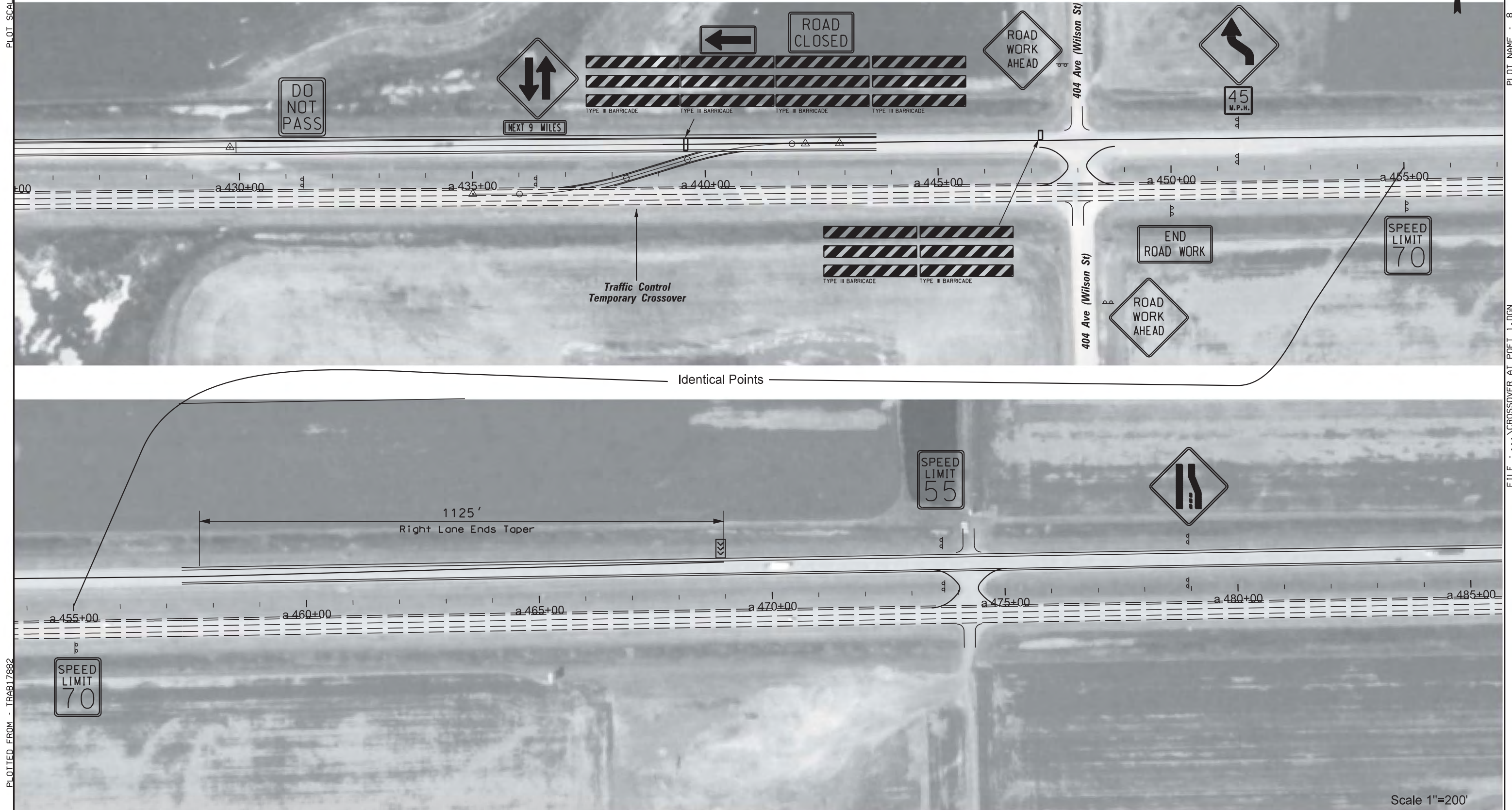
STATE OF SOUTH DAKOTA	PROJECT NH 0012 (160) 298	SHEET NO. C11	TOTAL SHEETS C15
Plotting Date: 02/03/2012			

Refer to Standard Plate 634.66 for full details on sign spacing, pavement markings and other requirements for the traffic control temporary crossover.
 Follow Standard Plate 634.66 unless otherwise noted.
 The following changes are to be made to Standard Plate 634.66:

1. Sign "W" W20-1 Road Work Next xx Miles shall be replaced with a G20-1 Road Work Next 9 Miles sign.
2. The Portable Changeable Message Sign shall be replaced with a "Median Crossover 1 Mile Ahead" sign.
3. Sign "D" shall show a speed limit of 55 MPH.
4. Sign "F" shall show a speed limit of 55 MPH.
5. Sign "J" shall show a speed limit of 65 MPH.

PLOT SCALE - 1:200

PLOT NAME - 8



PLOTTED FROM - TRAB17882

FILE - ... \CROSSOVER_AT_POET_1.DGN

Scale 1"=200'

CROSSOVER LAYOUT AT 404 AVE

(Sheet 2 of 2)

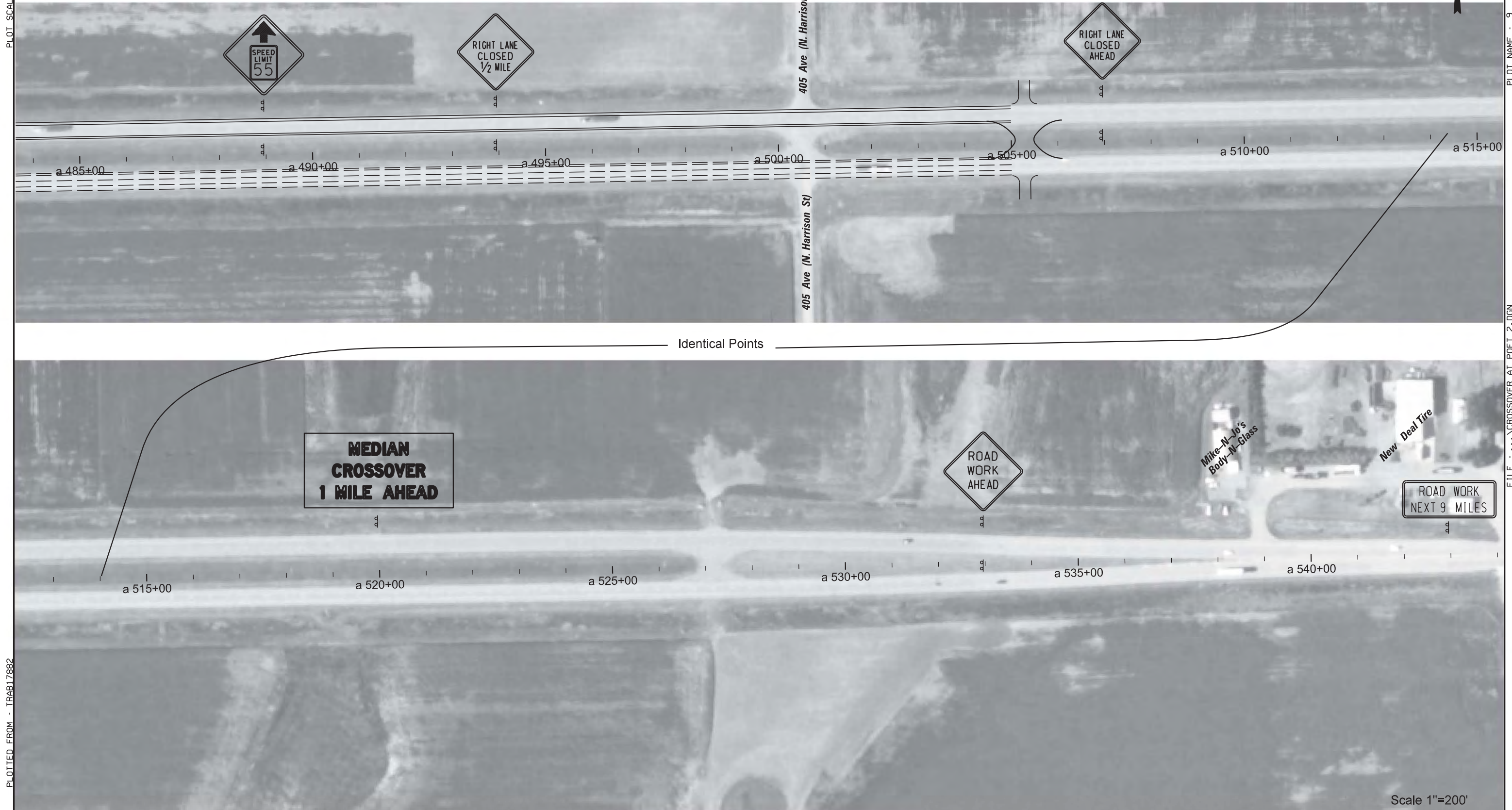
STATE OF SOUTH DAKOTA	PROJECT NH 0012 (160) 298	SHEET NO. C12	TOTAL SHEETS C15
Plotting Date: 02/03/2012			

Refer to Standard Plate 634.66 for full details on sign spacing, pavement markings and other requirements for the traffic control temporary crossover.
 Follow Standard Plate 634.66 unless otherwise noted.
 The following changes are to be made to Standard Plate 634.66:

1. Sign "W" W20-1 Road Work Next xx Miles shall be replaced with a G20-1 Road Work Next 9 Miles sign.
2. The Portable Changeable Message Sign shall be replaced with a "Median Crossover 1 Mile Ahead" sign.
3. Sign "D" shall show a speed limit of 55 MPH.
4. Sign "F" shall show a speed limit of 55 MPH.
5. Sign "J" shall show a speed limit of 65 MPH

PLOT SCALE - 1:200

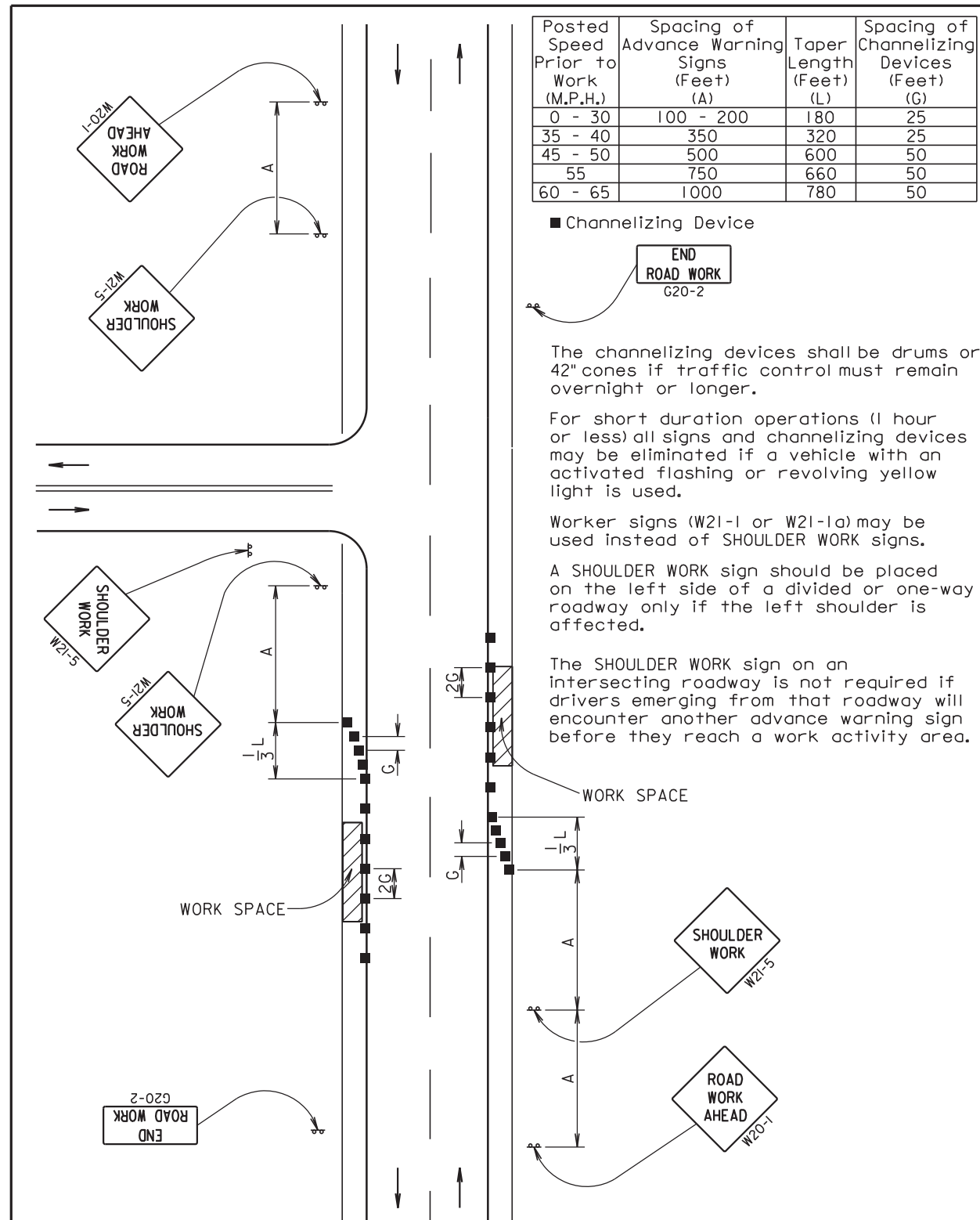
PLOT NAME - 9



PLOTTED FROM - TRAB17882

FILE - ... \CROSSOVER_AT_POET-2.DGN

Scale 1"=200'



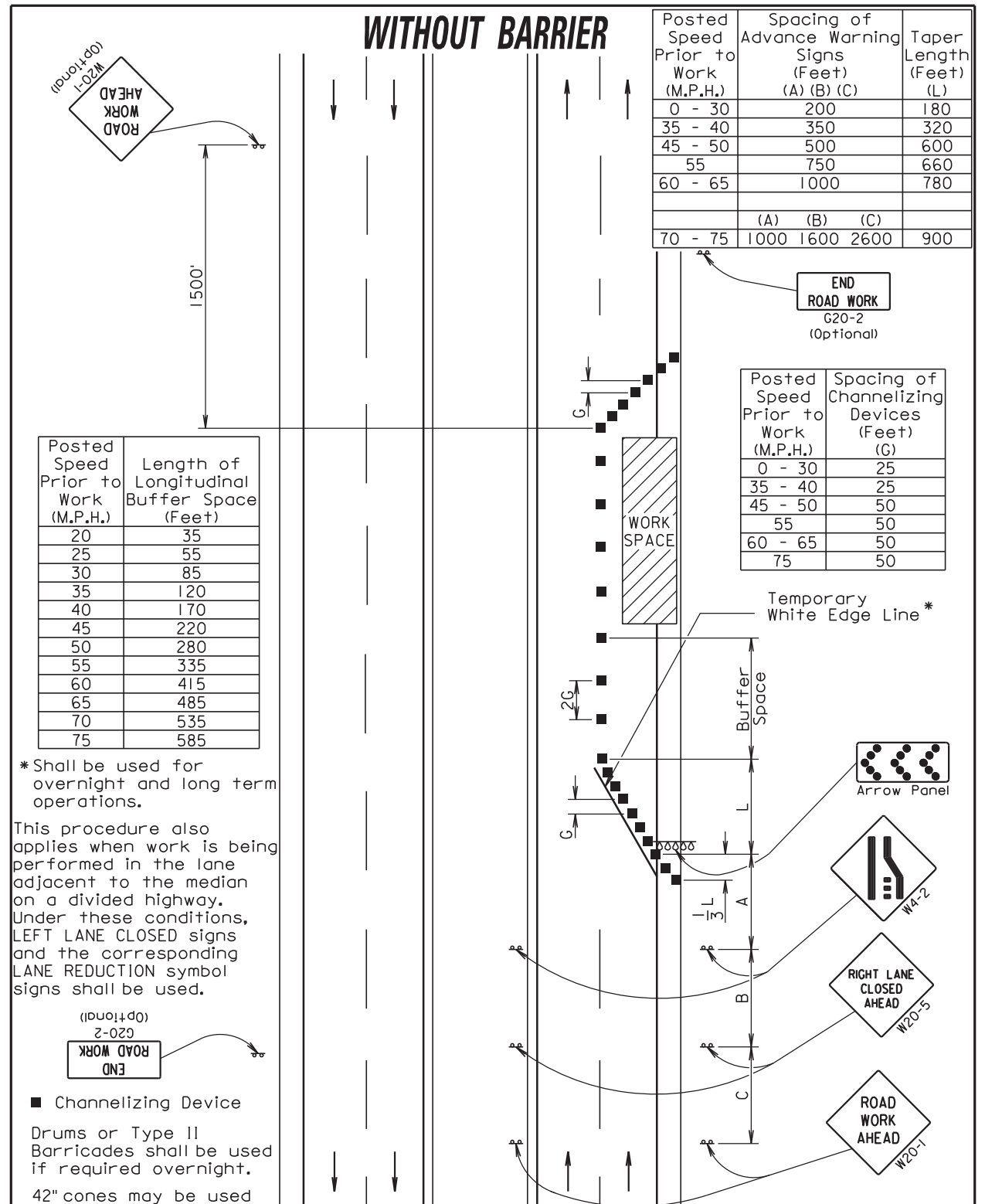
The channelizing devices shall be drums or 42" cones if traffic control must remain overnight or longer.

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.

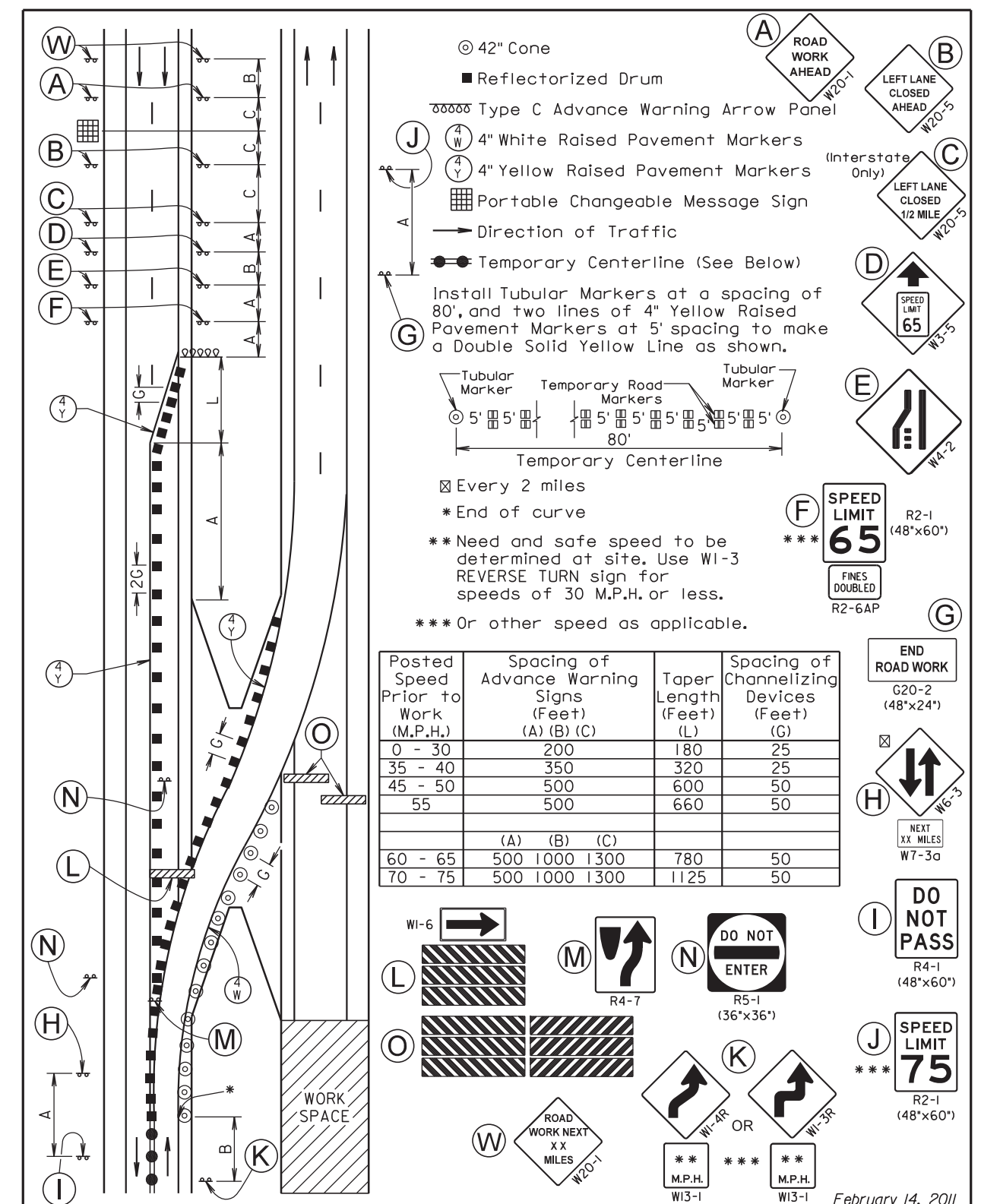
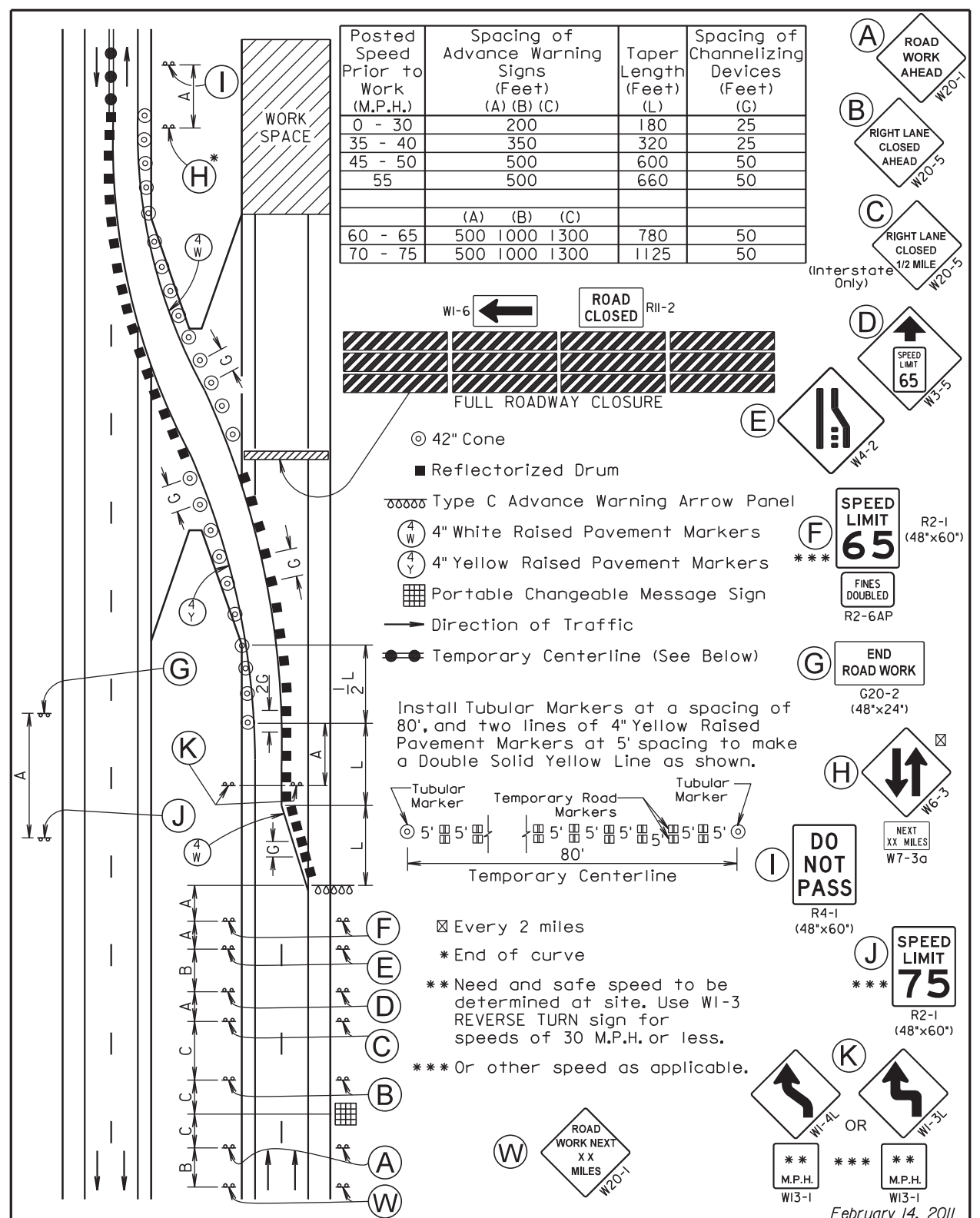
Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

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.

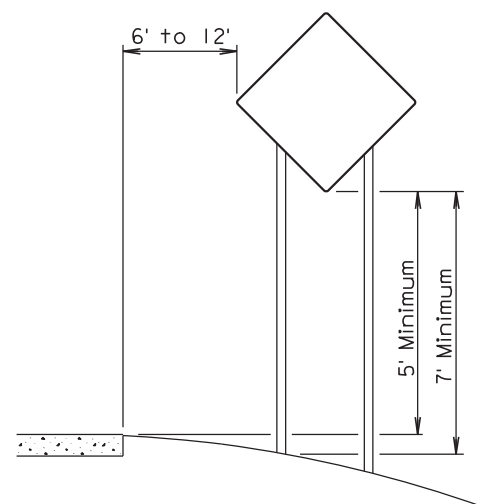
The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.



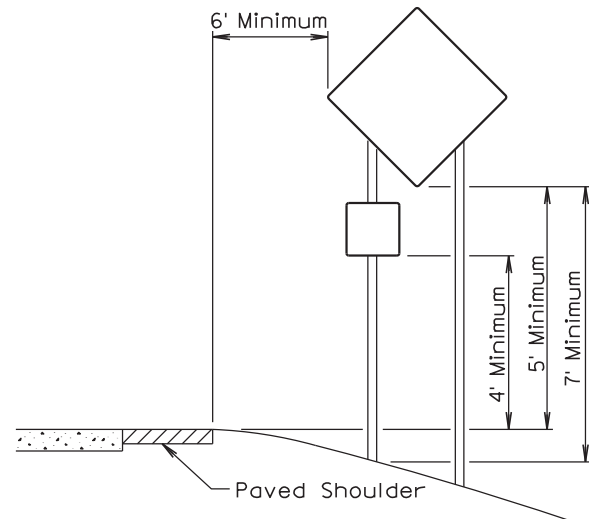
PLOTTED FROM - TRAB17882



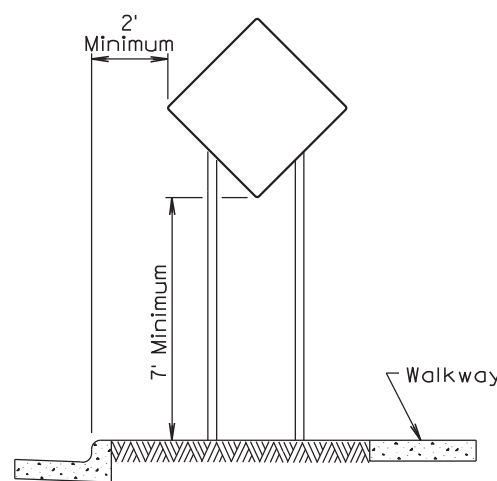
PLOTTED FROM - TRAB17882



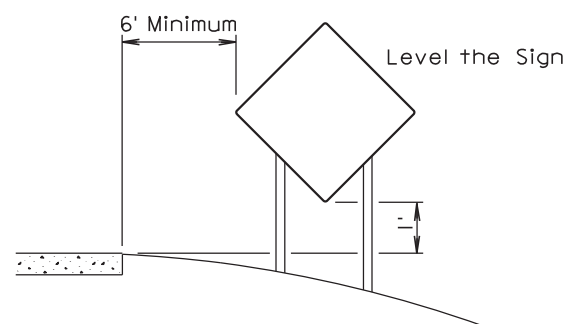
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



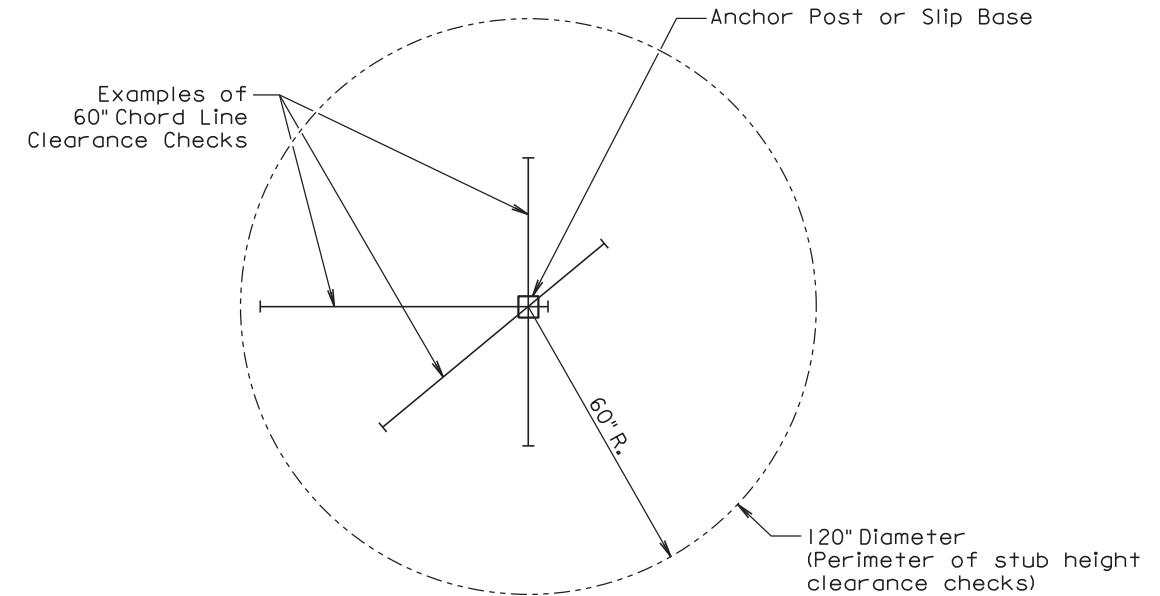
URBAN DISTRICT



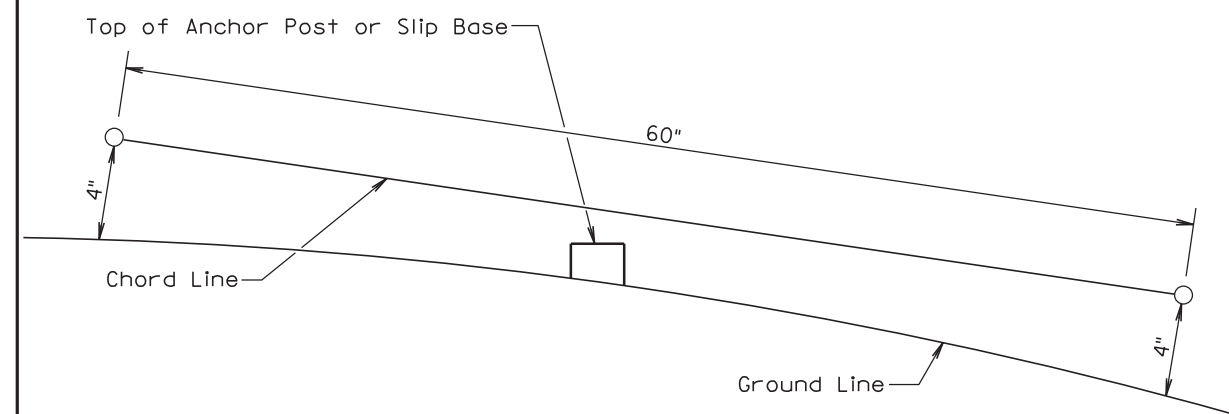
RURAL DISTRICT
3 DAY MAXIMUM

February 14, 2011

Published Date: 4th Qtr. 2011	S D D O T	CRASHWORTHY 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: 4th Qtr. 2011	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

PLOTTED FROM - TRAB17882














SECTION D: EROSION AND SEDIMENT CONTROL PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	D1	D10

Plotting Date: 02/08/2012

LEGEND

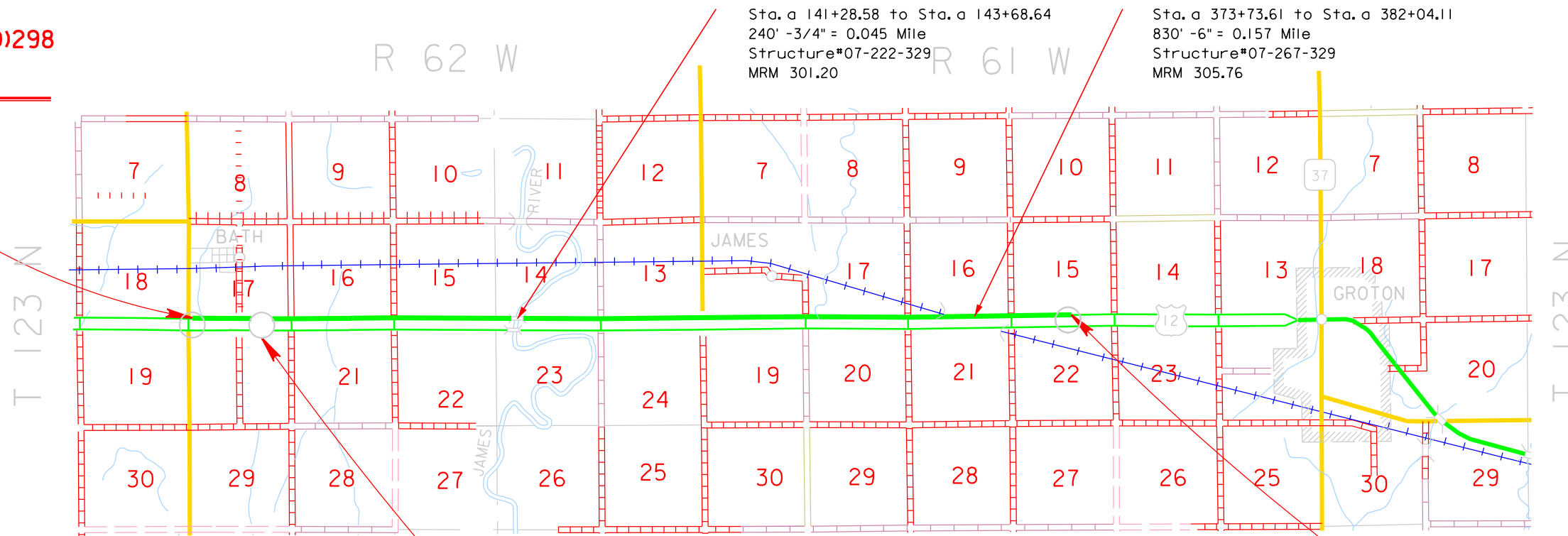
Symbols in the Legend are to be shown in the updated SWPPP on this title sheet and/or in the plan sheets if they are applicable.

- | | |
|---|--|
|  Drainage Arrows |  Concrete Plant Sites |
|  Vegetated Buffer Strips |  Concrete Washouts |
|  Stabilized Construction Entrances |  Asphalt Plant Sites |
|  Topsoil Stockpiles |  Work Platform |
|  On-Site Construction Material Storage Areas |  Borrow Areas |
|  Dumpster or other Trash and Debris Containers |  Spill Kit |
|  Vehicle and Equipment Parking, Fueling, and Maintenance Areas | |

INDEX OF SHEETS

- | | |
|-----------|--|
| D1 | General Layout with Index |
| D2 to D3 | Estimate with General Notes and Tables |
| D4 to D6 | Stormwater Pollution Prevention Plan Checklist |
| D7 | Stabilized Construction Entrance Details |
| D8 to D10 | Standard Plates |

BEGIN NH 0012(160)298
 Station 380+72.00
 MRM = 298.00 +0.087



Sta. a 141+28.58 to Sta. a 143+68.64
 240' -3/4" = 0.045 Mile
 Structure*07-222-329
 MRM 301.20

Sta. a 373+73.61 to Sta. a 382+04.11
 830' -6" = 0.157 Mile
 Structure*07-267-329
 MRM 305.76

EQUATION
 403+68.31 =
 0 0+00.00

END NH 0012(160)298
 Station a 429+94.00
 MRM = 306.00 +0.651



PLOT SCALE - 1+210

PLOTTED FROM - TRPR17200

PLOT NAME - 1

FILE - U:\RD\PR\J\BR\W\023C\TITLED.DGN

SECTION D ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E1690	Remove Sediment	2.3	CuYd
110E1693	Remove Erosion Control Wattle	250	Ft
110E1700	Remove Silt Fence	875	Ft
120E9000	Pit Run Material	60.0	Ton
230E0100	Remove and Replace Topsoil	Lump Sum	LS
730E0212	Type G Permanent Seed Mixture	624	Lb
732E0100	Mulching	48.0	Ton
734E0040	Soil Stabilizer	3,600	Lb
734E0154	12" Diameter Erosion Control Wattle	1,000	Ft
734E0165	Remove and Reset Erosion Control Wattle	250	Ft
734E0602	Low Flow Silt Fence	1,000	Ft
734E0604	High Flow Silt Fence	2,500	Ft
734E0610	Mucking Silt Fence	245	CuYd
734E0620	Repair Silt Fence	875	Ft
831E0300	MSE Geotextile Fabric	95	SqYd
900E1300	Granular Material for Construction Entrance	60.0	Ton

REMOVE AND REPLACE TOPSOIL

Prior to beginning surfacing operations, a 4" depth of topsoil shall be bladed down the respective inslopes and left in a windrow 11'+/- from the subgrade shoulder. Following completion of resurfacing operations, topsoil shall be bladed back up the inslope to the point indicated on the typical section.

Topsoil shall also be salvaged and stockpiled prior to constructing the following: culvert resets, median crossover, and guardrail embankment area(s). Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 12,680 CuYd.

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

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 they have baffles, partitions, agitators, or augers which keep the seed distributed throughout the seed box and the seed is planted at a depth of 1/4" to 1/2" .

FERTILIZING

Application of fertilizer will not be required on this project.

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 1/4" to 1/2". All seed broadcast must be raked or dragged in (incorporated) within the top 1/4" to 1/2" of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

Type G Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

MULCHING (GRASS HAY OR STRAW)

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

Straw may be placed before seeding to temporarily stabilize the site.

SOIL STABILIZER

An estimated quantity of 3,600 pounds of soil stabilizer has been included in the Estimate of Quantities. The soil stabilizer shall be applied on areas deemed necessary by the Engineer to prevent wind and water erosion.

The Contractor shall apply soil stabilizer according to the manufacturer's application instructions and at the rate specified in the list of approved soil stabilizers.

Wood fiber mulch that contains a green dye shall be mixed with the soil stabilizer to be used as a tracer when the soil stabilizer is applied hydraulically. Wood fiber mulch shall be added at a rate of 300 pounds per acre to all of the approved soil stabilizers listed in the table except for the Pam-12 Plus product. The wood fiber mulch shall be a 100% wood fiber product and does not need to contain a tackifier.

All costs for furnishing and applying the soil stabilizer including wood fiber mulch, hauling, materials, equipment, labor, and incidentals necessary shall be paid for at the contract unit price per pound for "Soil Stabilizer".

The soil stabilizer shall be from the list below or an approved equal:

Product	Manufacturer
StarTak 600 applied at a rate of 150 Lb/Acre	Chemstar Products Company 3915 Hiawatha Avenue Minneapolis, MN Phone: 800-328-5037 www.chemstar.com
Pam-12 Plus applied at a rate of: Slope None to 4:1 1000 Lb/Acre 4:1 to 3:1 1000 to 2000 Lb/Acre 3:1 to 2:1 2000 to 3000 Lb/Acre	ENCAP, LLC Green Bay, WI Phone: 877-405-5050 http://professional.encap.net/
M-Binder applied at a rate of 150 Lb/Acre	Ecology Controls P.O. Box 1275 Carpinteria, CA Phone: 805-684-0436 www.ssseeds.com
R-Tack applied at a rate of 150 Lb/Acre	Rantec Corporation P.O. Box 729 Ranchester, WY Phone: 307-655-9565 www.ranteccorp.com
Super Tack applied at a rate of 60 Lb/Acre	Rantec Corporation P.O. Box 729 Ranchester, WY Phone: 307-655-9565 www.ranteccorp.com

STABILIZED CONSTRUCTION ENTRANCE

The Contractor shall install a Construction Entrance as shown on the Construction Entrance detail at locations where a potential for mud tracking and sediment flow from construction sites and work areas to paved public roadways exist.

The Contractor shall maintain the construction entrance such that mud tracking and sediment flow will not enter the roadway or adjacent drainage areas. The construction entrance shall be routinely inspected and the Contractor shall repair or replace material as deemed necessary by the Engineer.

It is anticipated that granular material will need to be periodically removed and replaced as it becomes inundated with mud and sediment. The Contractor shall be compensated for all granular material necessary to re-establish a clean granular material. All costs for disposal of inundated granular material shall be incidental to the various bid items.

No additional payment will be made for salvaged and reused material. All incidentals necessary to construct, maintain, and remove the construction entrance shall be incidental to the various bid items used for the construction entrance. Quantities are based on one construction entrance. Actual quantities shall be determined during construction.

PIT RUN MATERIAL FOR CONSTRUCTION ENTRANCE

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

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

Pit run material for the construction entrance shall be compacted to the satisfaction of the Engineer.

Pit run material shall be paid for at the contract unit price per ton. Payment shall be full compensation for furnishing and placing materials, labor, equipment, and all incidentals required.

MSE GEOTEXTILE FABRIC FOR CONSTRUCTION ENTRANCE

The geotextile shall conform to Section 831 of the Standard Specifications. The geotextile shall be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

The geotextile should be kept as taut as possible prior to placing.

Equipment shall not be allowed on the geotextile until the first lift of granular material is in place.

All seams in the geotextile shall be overlapped at least 2 feet and shingled.

Geotextile shall be paid for at the contract unit price per square yard for "MSE Geotextile Fabric". Payment quantities shall be based on the area covered plus 15%. Overlaps are accounted for in the additional 15%. Payment shall be full compensation for furnishing and installing the geotextile only.

GRANULAR MATERIAL FOR CONSTRUCTION ENTRANCE

Granular material shall be placed in 6 inch maximum lifts.

Aggregate for granular material shall conform to the following gradation requirements:

Sieve Size	Percent Passing
3"	100%
2 1/2"	90-100%
1 1/2"	25-60%
3/4"	0-10%
1/2"	0-5%

Granular material will be paid for at the contract unit price per ton for "Granular Material for Construction Entrance". Payment shall be full compensation for furnishing and placing materials, labor, equipment, and all incidentals required.

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.

EROSION CONTROL WATTLE (continued)

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

A quantity of 1000 feet of 12" Diameter Erosion Control Wattles has been included in the Estimate of Quantities for temporary erosion and sediment control. Wattles may be left in place to decompose if used as part of final stabilization.

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

Product	Manufacturer
Curlex Sediment Log AEC Premier Straw Wattles	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 www.amerexcel.com
Aspen Excelsior Logs and Excel Straw Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 www.westernexcelsior.com
Earth Saver Rice Straw Wattles	R.H. Dyck Inc. Winters, CA Phone: 1-866-928-8537 www.earth-savers.com
Amber Waves Straw Wattles	GroNatural Winsted, MN Phone: 1-320-485-2800 www.gronatural.com
EarthTec Erosion Control Wattles	EarthTec/the Dukes, Inc. Devils Lake, ND Phone: 1-701-662-6666
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Stenlog	Erosion Control Blanket Riverton, MB Phone: 1-866-280-7327 www.erosioncontrolblanket.com
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexelsior.com
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

REMOVE EROSION CONTROL WATTLE

Erosion control wattles shall be removed when vegetation is established. Some or all of the erosion control wattles may be left on the project until vegetation is established.

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Remove and Reset Erosion Control Wattle".

LOW FLOW SILT FENCE

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

<http://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp>

Low flow silt fence shall 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 734.04 for details.

1000 feet of Low Flow Silt Fence has been included in the Estimate of Quantities for temporary sediment control.

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided shall 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/Applications/HC54ApprovedProducts/main.asp>

High flow silt fence shall 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.

2,500 feet of high flow silt fence has been included in the Estimate of Quantities for temporary sediment control.

MUCKING SILT FENCE

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

REMOVE SILT FENCE

Silt fence shall be removed when vegetation is established. Some or all of the silt fence may be left on the project until vegetation is established.

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

(The numbers right of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES)

❖ SITE DESCRIPTION (4.2 1)

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe): Minor inslope shaping
- **Total Project Area** 120 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 24 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 100
- **Soil Properties:** NRCS--Silt Loam, Silty Clay Loam, Saline Silty Clay
- **Name of Receiving Water Body/Bodies** James River **(4.2 1.e.)**

❖ ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

- (Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)
- **Special sequencing requirements** (see sheet).
 - **Install stabilized construction entrance.**
 - **Install low flow silt fence where runoff sheets from the site.**
 - **Surround culvert inlets with high flow silt fence.**
 - **Blade topsoil down inslopes and off the crossover area.**
 - **Construct the crossover.**
 - **Stabilize bladed area with Soil Stabilizer as directed by the engineer.**
 - **Complete concrete overlay.**
 - **Complete final shaping of inslopes.**
 - **Complete traffic control installation and protection devices.**
 - **Reseed areas disturbed by removal activities.**

❖ EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))

- (Check all that apply)
- **Stabilization Practices (See Detail Plan Sheets)**
 - Temporary Seeding (Cover Crop Seeding)
 - Permanent Seeding (with cover crop)
 - Sodding
 - Planting (Woody Vegetation for Soil Stabilization)
 - Mulching (Grass Hay or Straw)
 - Hydraulic Mulch (Wood Fiber Mulch)
 - Soil Stabilizer
 - Bonded Fiber Matrix
 - Erosion Control Blankets or Mats
 - Vegetated Buffer Strips
 - Roughened Surface (e.g. tracking)
 - Dust Control
 - Other:

➤ Structural Temporary Erosion and Sediment Controls

- Silt Fence
- Floating Silt Curtain
- Straw Bale Check
- Temporary Berm
- Temporary Slope Drain
- Straw Wattles or Rolls
- Turf Reinforcement Mat
- Rip Rap
- Gabions
- Rock Check Dams
- Sediment Traps/Basins
- Inlet Protection
- Outlet Protection
- Surface Inlet Protection (Area Drain)
- Curb Inlet Protection
- Stabilized Construction Entrances
- Entrance/Exit Equipment Tire Wash
- Interceptor Ditch
- Concrete Washout Area
- Temporary Diversion Channel
- Work Platform
- Temporary Water Barrier
- Temporary Water Crossing
- Other:

➤ Wetland Avoidance

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes No If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

➤ Storm Water Management (4.2 2.b., (1) and (2))

Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

➤ Other Storm Water Controls (4.2 2.c., (1) and (2))

- **Waste Disposal**
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
- **Sanitary Waste**
Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ Maintenance and Inspection (4.2 3. and 4.2 4.)

➤ Maintenance and Inspection Practices

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $\frac{1}{3}$ of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches $\frac{1}{2}$ the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ Non-Storm Water Discharges (3.0)

The following non-storm water discharges are anticipated during the course of this project (check all that apply).

- Discharges from water line flushing.
- Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- Uncontaminated ground water associated with dewatering activities.

❖ Materials Inventory (4.2. 2.c.(2))

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

- Concrete and Portland Cement
- Detergents
- Paints
- Metals
- Bituminous Materials
- Petroleum Based Products
- Cleaning Solvents
- Wood
- Cure
- Texture
- Chemical Fertilizers
- Other:

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ Housekeeping

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ Hazardous Materials

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

➤ **Product Specific Practices (6.8)**

▪ Petroleum Products

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

▪ Fertilizers

Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

▪ Paints

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

▪ Concrete Trucks

Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➤ **Spill Control Practices (4.2 2 c.(2))**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➤ **Spill Response (4.2 2 c.(2))**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.

- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:
 - The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
 - The discharge causes an immediate danger to human health or safety.
 - The discharge exceeds 25 gallons.
 - The discharge causes a sheen on surface water.
 - The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
 - The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
 - The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
 - The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

❖ **CERTIFICATIONS**

➤ **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

➤ **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Authorized Signature (See the General Permit, Section 6.7.1.C.)

➤ **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature

❖ **CONTACT INFORMATION**

➤ **Contractor Information:**

- Prime Contractor Name:
- Contractor Contact Name:
- Address:
- Address:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➤ **Erosion Control Supervisor**

- Name:
- Address:
- Address:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➤ **SDDOT Project Engineer**

- Name:
- Business Address:
- Job Office Location:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➤ **SD DENR Contact Spill Reporting**

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

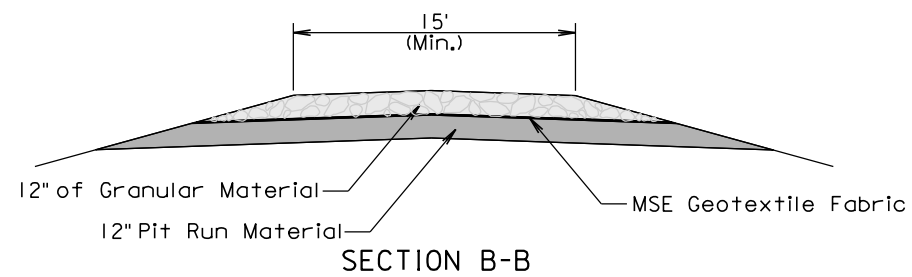
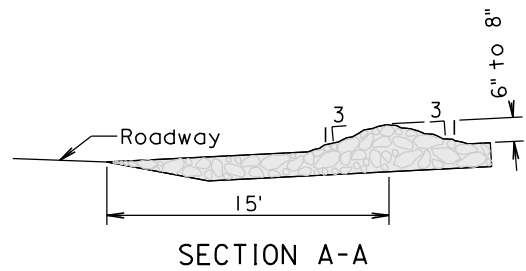
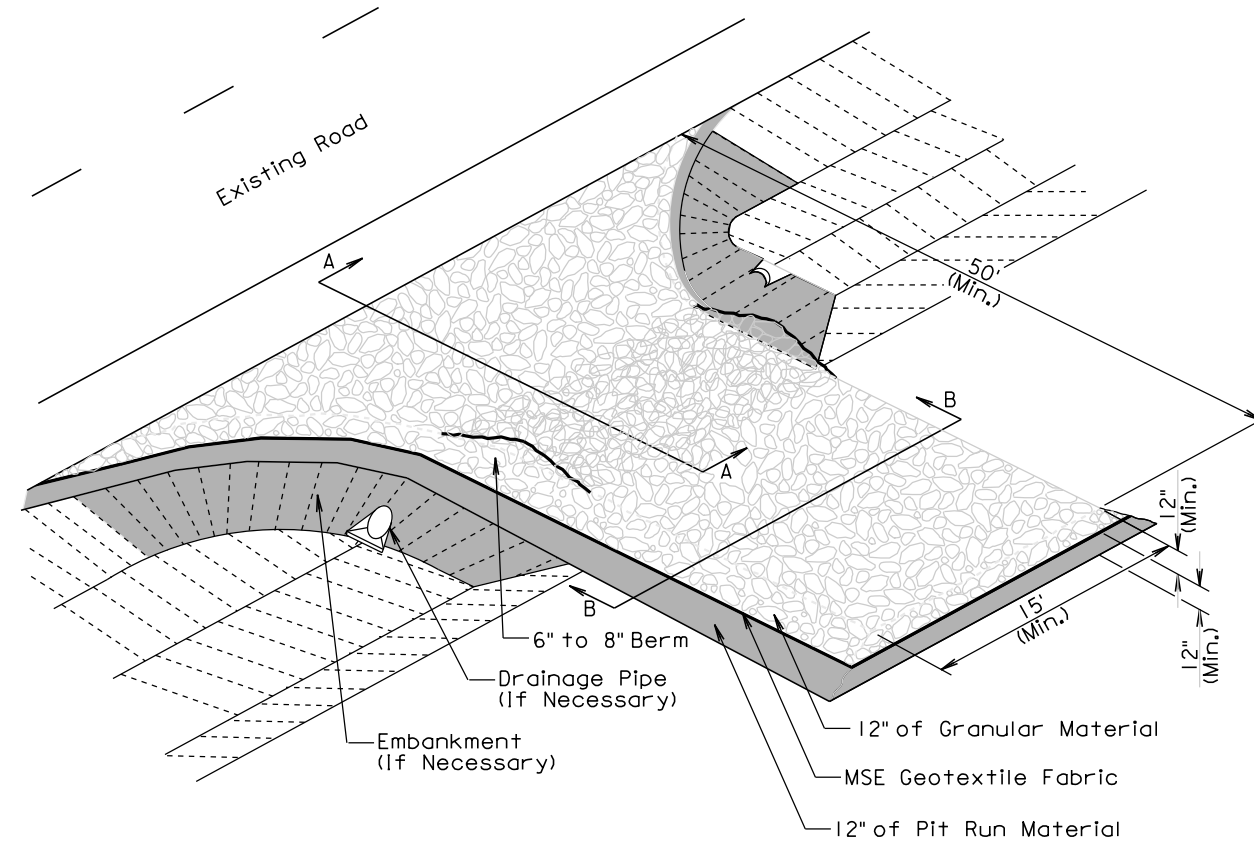
➤ **National Response Center Hotline**

- (800) 424-8802.

CONSTRUCTION ENTRANCE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(160)298	D7	D10

Plotting Date: 02/08/2012



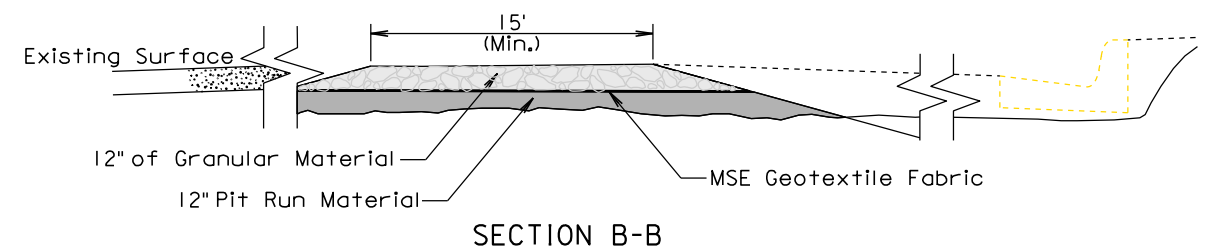
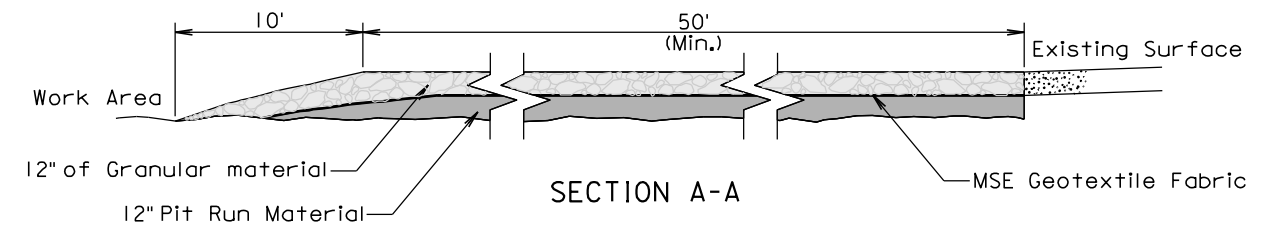
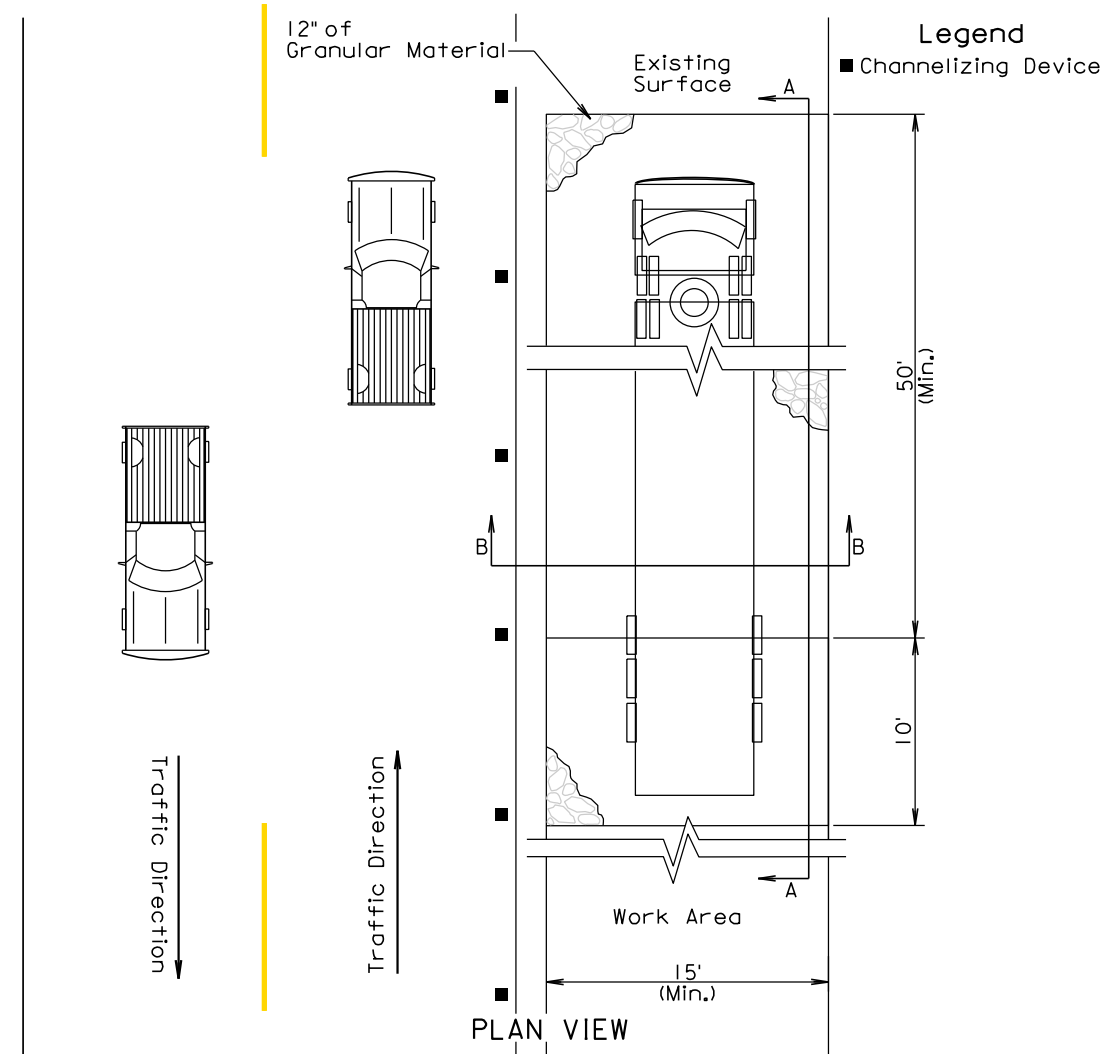
GENERAL NOTES:

If the grade of the entrance slopes down to the roadway, a berm of extra rock shall be used to prevent sediment or mud from being deposited on the roadway. See SECTION A-A.

If a drainage pipe is necessary the size and type shall be determined by the Contractor to meet field conditions. All cost shall be incidental to the various bid items.

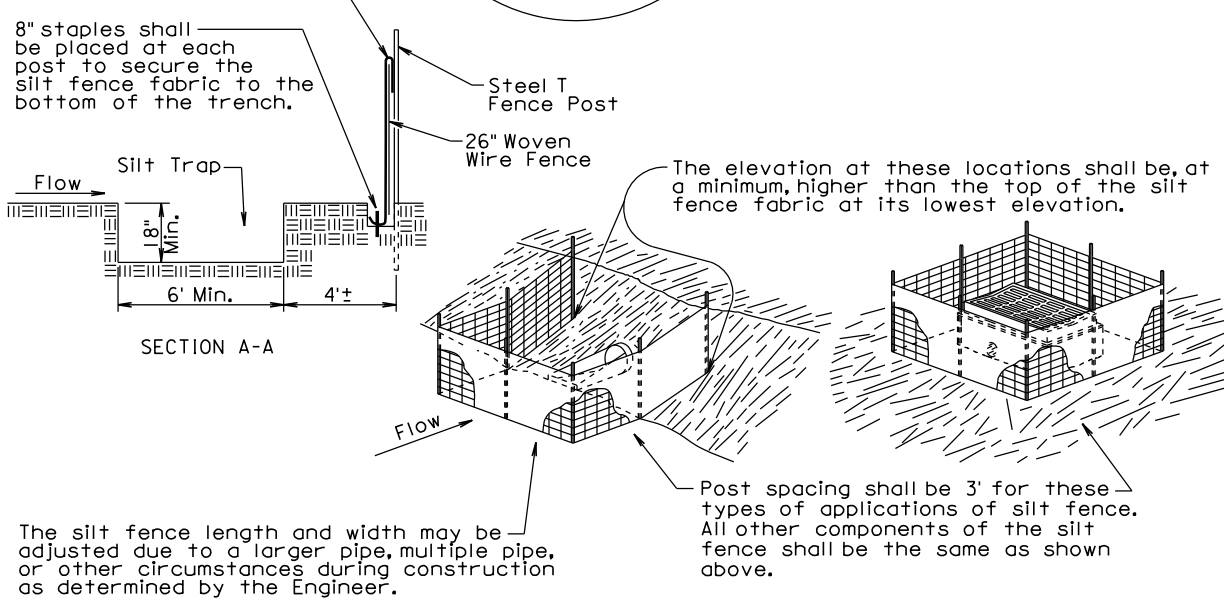
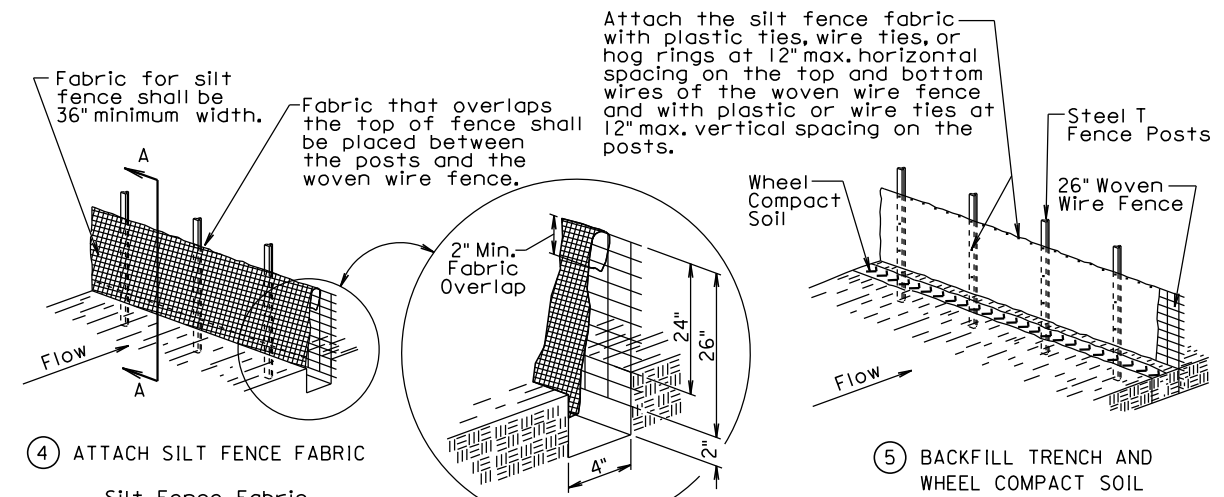
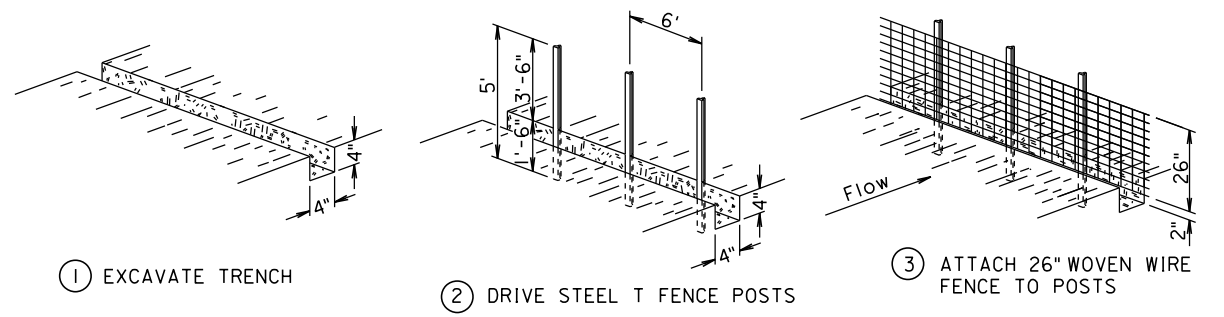
If embankment is necessary it shall be pit run material.

TRANSVERSE TO ROADWAY



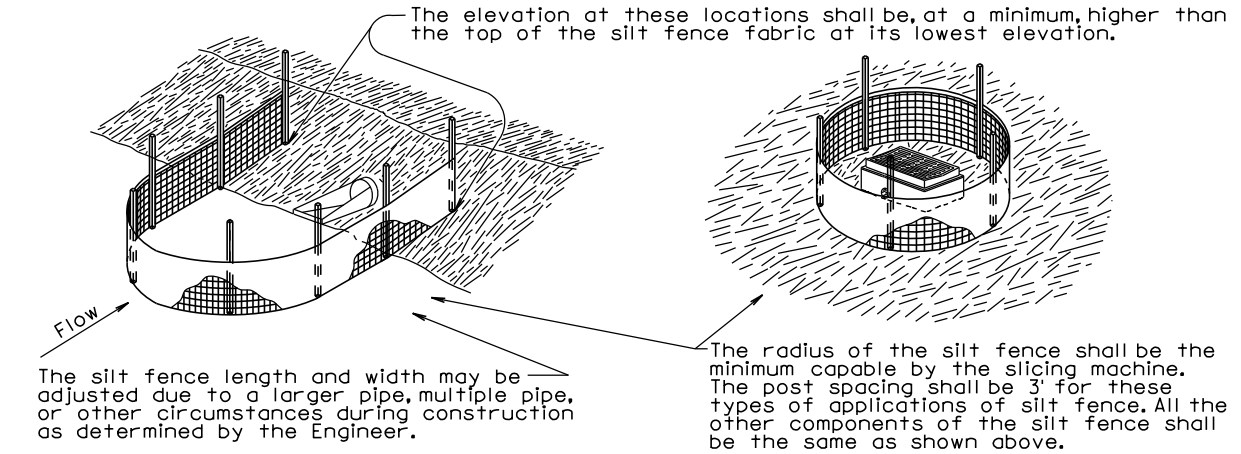
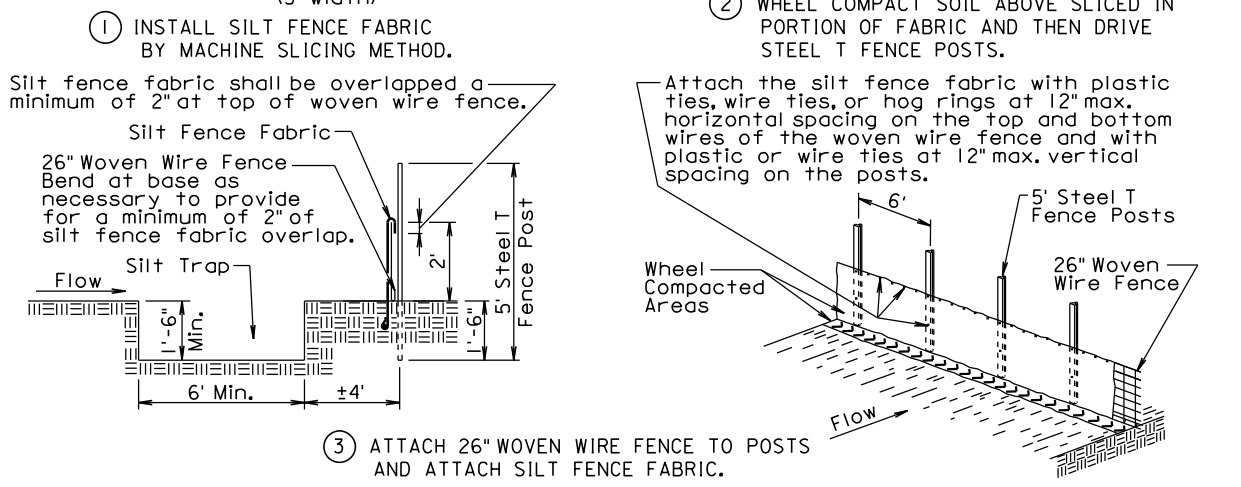
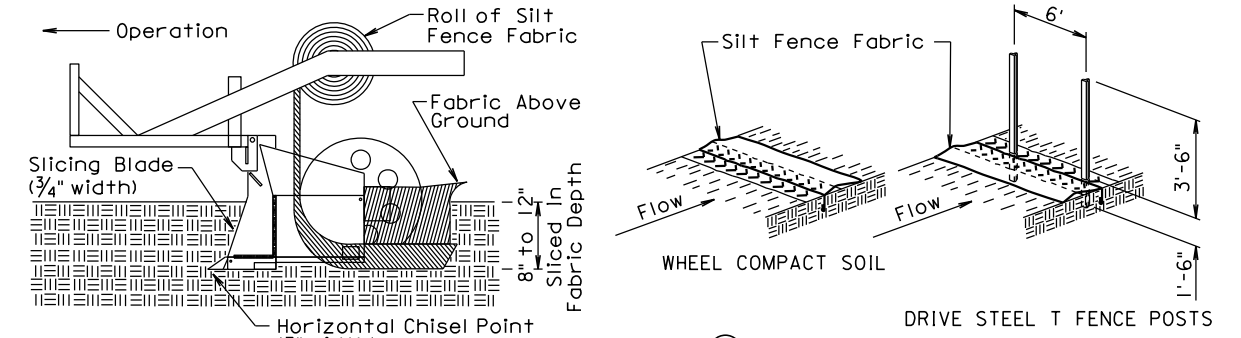
PARALLEL TO ROADWAY

MANUAL LOW FLOW SILT FENCE INSTALLATION



December 23, 2003

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



GENERAL NOTES:

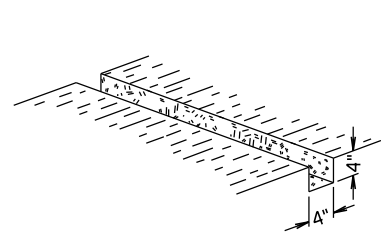
A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

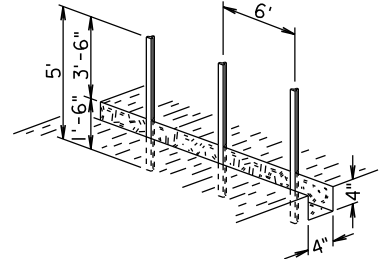
December 23, 2003

MANUAL HIGH FLOW SILT FENCE INSTALLATION

① EXCAVATE TRENCH

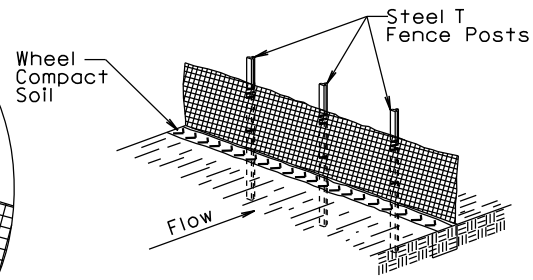
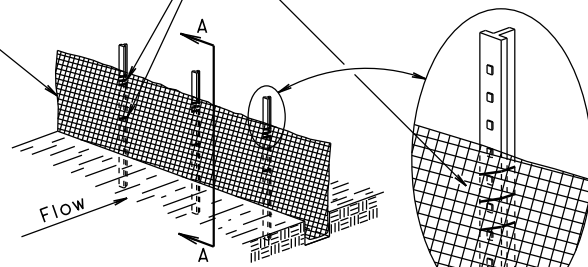


② DRIVE STEEL T FENCE POSTS



Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties shall be used at the top and 1 tie shall be approximately at mid-point of the post.

Fabric for silt fence shall be 36" minimum width.



③ ATTACH SILT FENCE FABRIC

④ BACKFILL TRENCH AND WHEEL COMPACT SOIL

Silt Fence Fabric

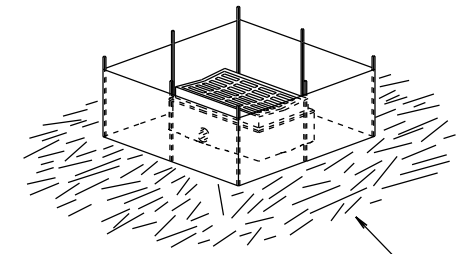
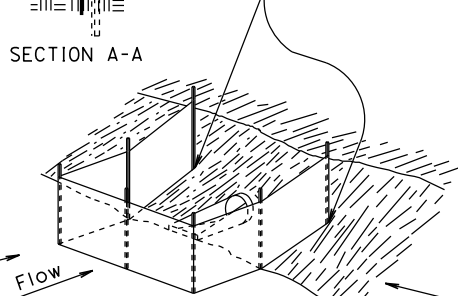
Steel T Fence Post

8" staples shall be placed at each post to secure the silt fence fabric to the bottom of the trench.

Plastic or Wire Ties

SECTION A-A

The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



Post spacing shall be 3' for these types of applications of silt fence. All other components of the silt fence shall be the same as shown above.

The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

December 23, 2003

Published Date: 1st Qtr. 2012

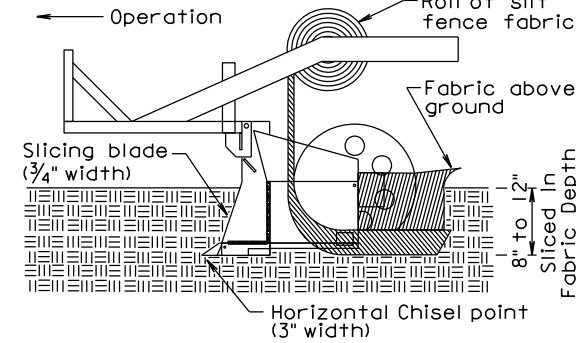
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HIGH FLOW SILT FENCE

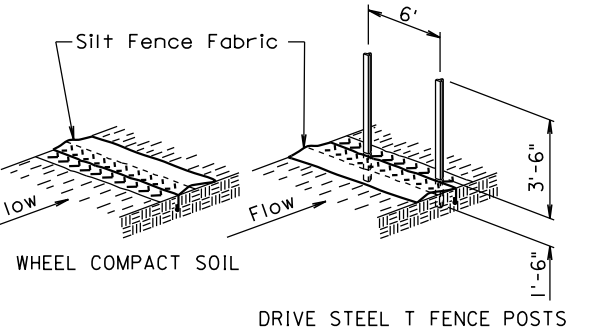
PLATE NUMBER
734.05

Sheet 1 of 2

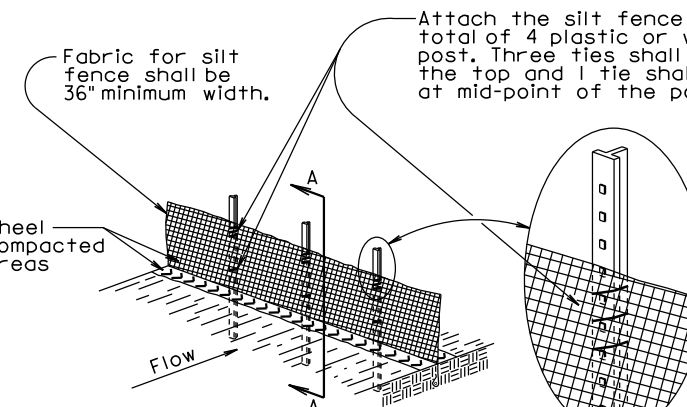
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



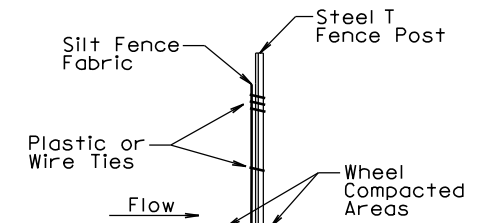
② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



③ ATTACH SILT FENCE FABRIC

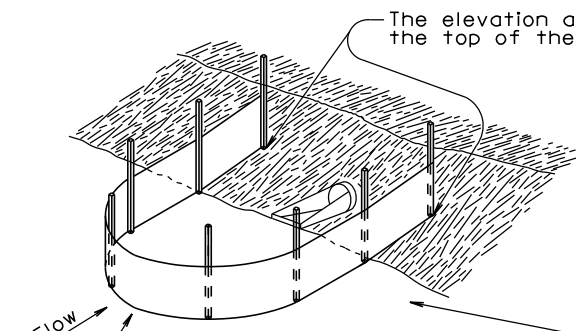
Fabric for silt fence shall be 36" minimum width.

Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties shall be used at the top and 1 tie shall be approximately at mid-point of the post.



SECTION A-A

The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

The radius of the silt fence shall be the minimum capable by the slicing machine. The post spacing shall be 3' for these types of applications of silt fence. All the other components of the silt fence shall be the same as shown above.

GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

December 23, 2003

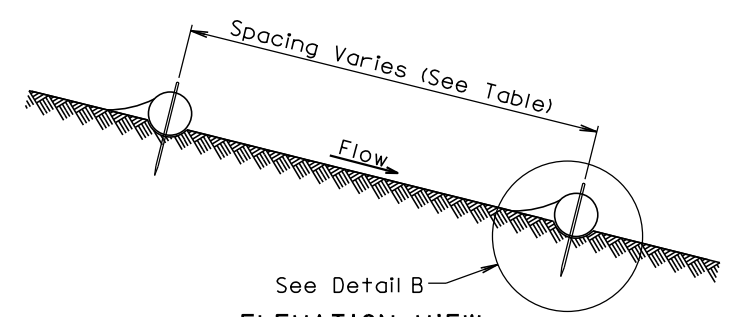
Published Date: 1st Qtr. 2012

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HIGH FLOW SILT FENCE

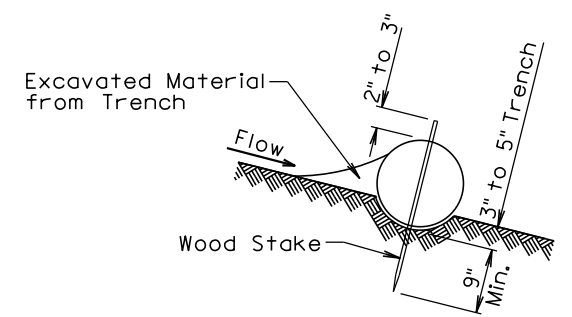
PLATE NUMBER
734.05

Sheet 2 of 2

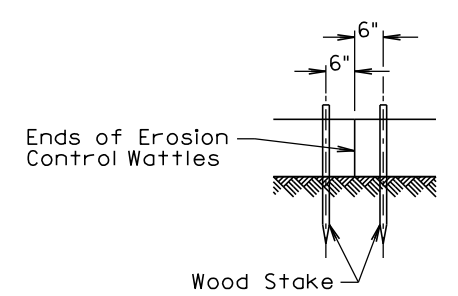


Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40

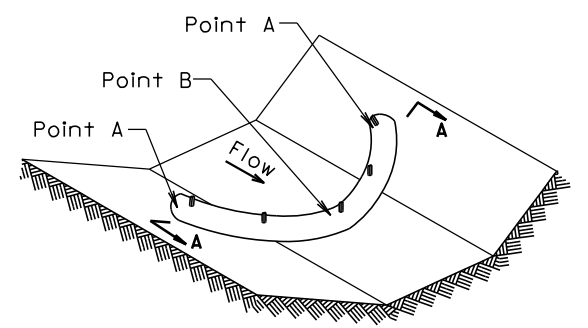
ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION



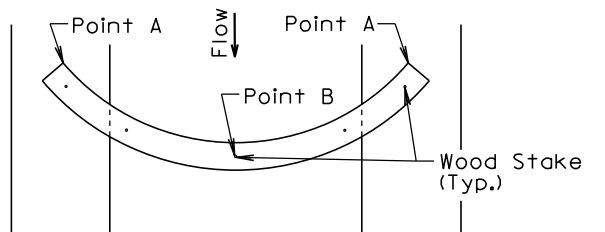
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

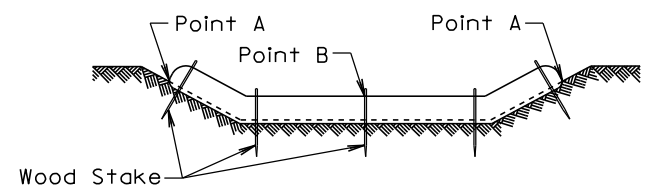


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

December 23, 2004

Published Date: 1st Qtr. 2012	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

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

Published Date: 1st Qtr. 2012	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

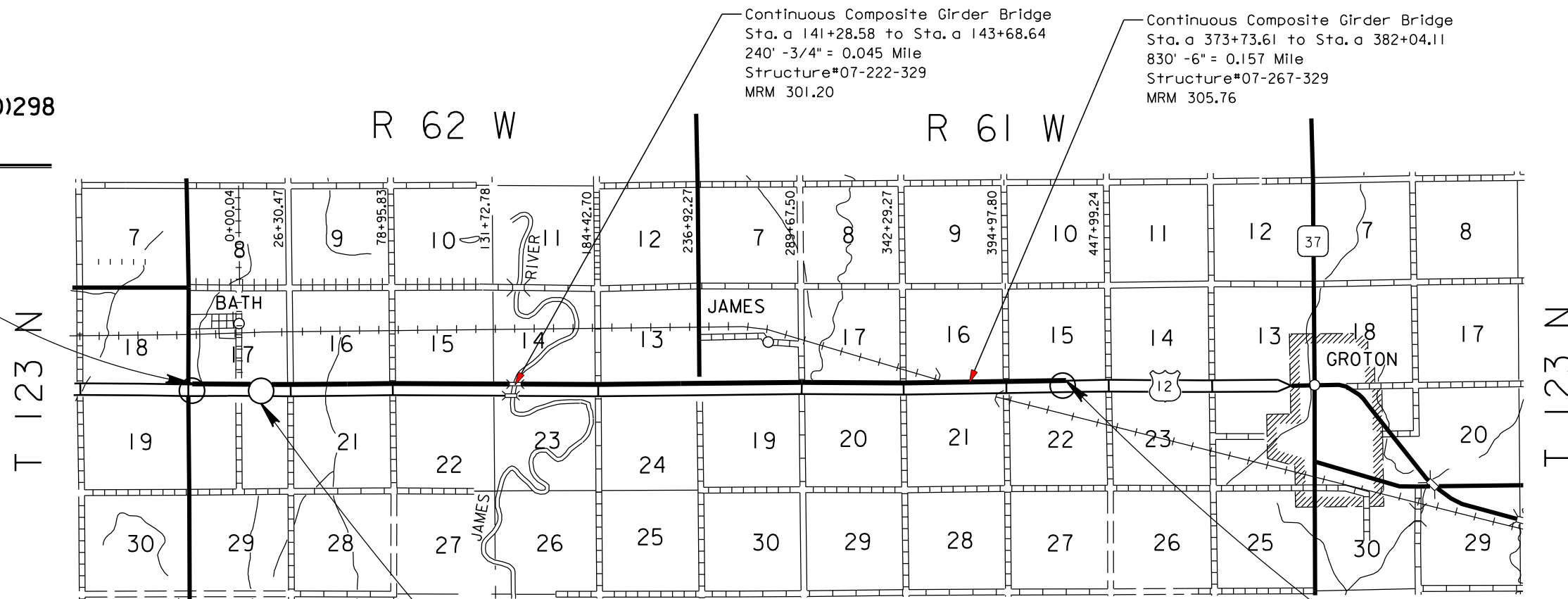
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E1	E30

Section E: Structure Plans

INDEX OF SHEETS

E1	General Layout with Index
E2	Estimate of Structure Quantities
E3 - E15	Str. No. 07-222-329
E16 - E30	Str. No. 07-267-329

BEGIN NH 0012(160)298
 Station 380+72.00
 MRM = 298.00 +0.087



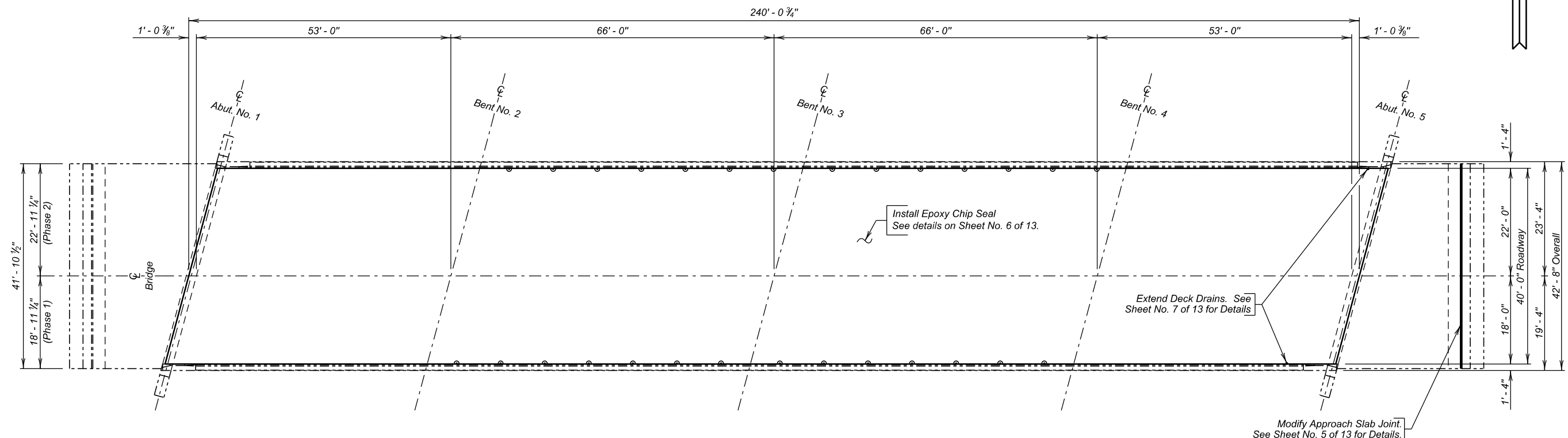
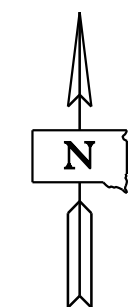
EQUATION
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SECTION E - ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
410E2600	Membrane Sealant Expansion Joint	125.6	Ft
430E0300	Granular Bridge End Backfill	49.3	CuYd
430E0510	Approach Slab Underdrain Excavation	55.5	CuYd
460E0070	Class A45 Concrete, Bridge Repair	1.3	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	67.5	SqYd
460E0170	Concrete Patching Material	158.9	CuFt
460E0300	Breakout Structural Concrete	1.3	CuYd
460E0380	Install Dowel in Concrete	54	Each
460E0510	Extend Deck Drain	2	Each
480E0200	Epoxy Coated Reinforcing Steel	130	Lb
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	51	Each
480E0506	No. 6 Rebar Splice	44	Each
491E0015	Two Coat Epoxy Bridge Deck Chip Seal	4,744.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	4,744.2	SqYd
491E0120	Bridge Deck Grinding	4,744.2	SqYd
491E0130	Concrete Removal, Class A	22.4	SqYd
491E0140	Concrete Removal, Class B	22.4	SqYd
680E0040	4" Underdrain Pipe	104	Ft
680E2010	Precast Concrete Headwall for Drain	2	Each
680E2500	Porous Backfill	11.7	Ton

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E3	E30



PLAN

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Upgrade
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Approach Slab Joint Repair
- Sheet No. 6 - Epoxy Chip Seal Details
- Sheet No. 7 - Deck Drain Extension Details
- Sheet Nos. 8 thru 13 - Original Construction plans

(WESTBOUND LANES)
LAYOUT FOR UPGRADE
 FOR
240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 15° SKEW LHF
 OVER JAMES RIVER SEC. 14-T123N-R62W
 STR. NO. 07-222-329 NH 0012(160)298
 PCN 023C

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2012

PLANS BY: OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY NP BRWN023C	DRAWN BY NP 023CSB01	CHECKED BY EJA	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	41.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	1.3	CuYd
460E0170	Concrete Patching Material	27.8	CuFt
460E0300	Breakout Structural Concrete	1.3	CuYd
460E0510	Extend Deck Drain	2	Each
480E0200	Epoxy Coated Reinforcing Steel	130	Lb
480E0505	No. 5 Rebar Splice	3	Each
491E0015	Two Coat Epoxy Bridge Deck Chip Seal	1062.3	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1062.3	SqYd
491E0120	Bridge Deck Grinding	1062.3	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer at the pre-construction meeting.

- Remove the existing strip seal expansion device in the approach slab and a portion of the existing sleeper slabs for the first phase of construction.
- Modify the existing approach slab and install the new membrane seals in the approach slab.
- Perform Bridge Deck Grinding for the first phase of construction.
- Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS (CONT.)

- Place the Two Coat Epoxy Bridge Deck Chip Seal for the first phase of construction.
- Switch traffic and repeat steps 1 through 6 for Phase 2 construction.
- Extend the deck drains at the locations specified in the plans.

GENERAL CONSTRUCTION - BRIDGE

- All mild reinforcing steel shall conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise. Match existing chamfer if the existing chamfer differs.
- Use 2" clear cover on all reinforcing steel except as shown.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid item Class A45 Concrete, Bridge Repair.
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract item Class A45 Concrete Bridge Repair shall conform to the requirements of Section 460 of the Construction Specification.

CONCRETE BREAKOUT

- The existing approach slab and sleeper slab shall be broken out to the limits shown on the plans. Breakout limits shall be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned and straightened to the satisfaction of the Engineer. Care shall be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
- All broken out concrete, discarded reinforcing bars and expansion devices shall be disposed of by the Contractor. Any disposal of discarded material shall be in accordance with the Construction Specifications.

CONCRETE BREAKOUT (CONTINUED)

- During concrete removal operations, no broken out concrete shall be allowed to fall into the James River.
- The contract unit price per cubic yard for "Breakout Structural Concrete" shall include breaking out concrete, cleaning, straightening existing reinforcing steel, removal of the existing strip seal extrusion, and disposal of all broken out material.
- The existing reinforcing steel in the approach slab and sleeper slab is epoxy coated. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned of all adhering concrete and rust (if present) with a wire brush and straightened to the satisfaction of the Engineer. After all concrete removal and rebar straightening, the Contractor shall visually inspect the epoxy coating on the salvaged reinforcing steel with the Engineer and repair all areas of damaged epoxy coating as approved by the Engineer. The damaged coating areas shall be repaired with a touch up coating material supplied by an epoxy coating manufacturer who supplies coating material for new epoxy coated reinforcing steel. This coating shall be inert in concrete and compatible with the existing coating on the reinforcing steel. The coating shall be allowed to cure for 24 hours or as per the manufacturer's recommendations, whichever is more stringent, before concrete can be placed. These bars shall be clean and free from all surface contaminants before coating. The cost of cleaning and placing the epoxy touch up coating to the existing reinforcing steel shall be incidental to the various bid items.

APPROACH SLAB MODIFICATION

- The portion of the new sleeper slab riser and approach slab shall be built up to the level of the roadway surface and a new Membrane Sealant Joint placed in the location where the strip seal is now.
- The membrane sealant shall be furnished and installed in accordance with the Membrane Sealant Expansion Joint notes.
- The portions of the existing sleeper slab riser and approach slab shall be broken out in accordance with the Concrete Breakout notes.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 240' - 0 3/4" CONT. COMP. GIRDER BRIDGE

Str. No. 07-222-329

JANUARY 2012

2 OF 13

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E5	E30

MEMBRANE SEALANT EXPANSION JOINT

1. Install all membrane sealant expansion joints at the plan shown locations in conformance to the following notes.
2. The Membrane Sealant is a foam sealant consisting of an open-cell high density polyurethane foam impregnated with either a polymer modified bitumen or a neoprene rubber suspended in chlorinated hydrocarbons. The Membrane Sealant shall be supplied by one the following companies:

Wabo HSeal
 Watson Bowman Acme Corp.
 95 Pineview Drive, Amherst NY 14228
 Phone: 716-691-7566
 Fax: 716-691-9239
 Web site: <http://www.wbacorp.com>

Sealtite 50N
 Schul International Company, LLC
 One Industrial Drive
 Pelham, NH 03076
 Phone: 800-848-1120
 Fax: 800-998-9105
 Web site: <http://www.sealtiteusa.com>

Polytite N
 Sunshine Industrial
 5051 Merriam Drive
 Merriam, KS 66203
 Phone: 913-362-6300

3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. Miter the ends of each piece for ease of joining to the adjacent pieces. The membrane sealant shall have a minimum depth of 4 inches. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be a waterproof epoxy adhesive that adheres to concrete surfaces and is approved by the membrane sealant supplier.
6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
7. The Styrofoam filler material shall be closed cell and water-tight as approved by the Engineer.
8. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.

MEMBRANE SEALANT EXPANSION JOINT (CONTINUED)

9. A technical representative of the membrane sealant supplier shall be present at the jobsite during installation.
10. The joint opening shall be formed during the concrete placement by Styrofoam block out material. The Styrofoam block out material shall remain in-place until the adjacent concrete has cured for a minimum of 7 days. After curing the 7 days the Styrofoam shall be removed to the plan specified depth to allow for placement of the membrane sealant material.
11. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.
12. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
13. Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant supplier shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
14. Traffic shall not be allowed on the joint for a minimum 3 hours unless otherwise directed by the Engineer.
15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

REMOVAL OF LOOSE AND DELAMINATED CONCRETE

1. This work consists of preparation of the existing bridge deck for Two Coat Epoxy Bridge Deck Chip Seal by removing and replacing the loose and delaminated concrete.
2. Concrete used to repair the deck surface shall be in accordance with the Concrete Patching Material notes in this set of plans.

REMOVAL OF LOOSE AND DELAMINATED CONCRETE (CONT.)

3. Concrete Removal on the bridge deck shall be divided into one of the following two classes:
 - a. Concrete Removal, Class A: Concrete Removal, Class A shall consist of the removal of delaminated and visibly loose concrete and any bituminous patches (when present) from the top of existing bridge deck down to a depth no deeper than the top of the top mat of bridge deck reinforcing steel.
 - b. Concrete Removal, Class B: Concrete Removal, Class B areas shall be determined after completion of the Concrete Removal, Class A has been accomplished. Concrete Removal, Class B shall consist of the removal of delaminated and visibly loose concrete that exists below the bottom limits of the Concrete Removal, Class A (*below the top of the top mat of reinforcing steel*).
4. Concrete Removal shall be by jackhammers and chipping hammers or other methods as approved by the Engineer. Jackhammers and chipping hammers shall be used as follows:
 - a. Jackhammers heavier than 30 pounds will not be permitted.
 - b. Chipping hammers heavier than 15 pounds will not be permitted for removing concrete below the top of the top mat of reinforcing steel.
 - c. Jackhammers and chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the concrete.
 - d. Extreme care shall be taken when using jackhammers and chipping hammers to assure that existing reinforcing steel is not damaged or debonded from the sound concrete.
5. Removal shall begin near the center of the loose or delaminated concrete and shall progress outwardly until the loose or delaminated concrete is removed and sound concrete is encountered such that the amount of concrete removal is minimized.
6. The edges of the resulting areas of removed concrete shall be nearly vertical or slightly tapered inward from the top down to a minimum depth of one inch. If this condition is not able to be achieved with jackhammers or chipping hammers, saw cutting the edges of the removal area may be required to attain satisfactory results.

**NOTES (CONTINUED)
 FOR
 240' – 0 3/4" CONT. COMP. GIRDER BRIDGE**

Str. No. 07-222-329

JANUARY 2012

3 OF 13

DESIGNED BY: NP BRWN023C	DRAWN BY: NP 023CNOTE	CHECKED BY: EJA <i>Kevin M. Broderick</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E6	E30

REMOVAL OF LOOSE AND DELAMINATED CONCRETE (CONT.)

- Care shall be taken during concrete removal to not nick, gouge, or in any other way damage the in-place reinforcing steel. Any inadvertent damage to the in-place reinforcing steel shall be brought to the attention of the Bridge Construction Engineer and shall be repaired by the Contractor as directed by the Engineer at no additional cost to the Department.
- Concrete Removal, Class A will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square yard. Concrete Removal, Class A will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to remove the specified concrete, concrete sawing, and disposing of removed material.
- Concrete Removal, Class B will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square yard. Concrete Removal, Class B will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to remove the specified concrete, concrete sawing, and disposing of removed material.

CONCRETE PATCHING MATERIAL

- Concrete patching material will be used to fill in the removal areas of the loose and delaminated concrete.
- Concrete patching material shall be packaged, dry, rapid-hardening cementitious mortar or concrete materials conforming to the requirements of ASTM C 928, Type R-3 and shall contain no chlorides or magnesium phosphates.
- Water used for the concrete patching material shall be in conformance with Section 790 of the Construction Specifications.
- Upon completion of the concrete removal and immediately prior to placing any concrete patching material into the concrete removal areas, the removal areas shall be thoroughly cleaned of loose and foreign material by abrasive blasting. The abrasive blasting shall be to the extent that all surface laitance is removed. Abrasive blast cleaning shall expose the coarse aggregate and remove rust from any exposed reinforcing steel. After abrasive blasting, the surface shall be cleaned by the use of compressed air to the satisfaction of the Engineer.
- The existing surface at the time of placement of the concrete patching material shall be at least 40° F, measured by a thermometer placed against the concrete surface and covered with an insulating blanket. The concrete patching material shall be mixed and placed in accordance with the manufacturer's technical data sheet. The Contractor shall provide a manufacturer's technical data sheet to the Engineer prior to performing the work. The concrete patching material shall be maintained at or above 45° F for at least 72 hours after placement.

CONCRETE PATCHING MATERIAL (CONTINUED)

- Immediately after finishing the concrete patching material, the surface of the concrete patching material shall be covered with a double layer of wet burlap. Within one hour of covering with wet burlap, polyethylene sheeting shall be placed on the wet burlap. The surface shall be wet cured for a minimum of 48 hours or in accordance with the manufacturer's recommendations, whichever is more stringent. Following the wet cure, the burlap and polyethylene sheeting shall be removed and the surface allowed to air dry for a minimum of 48 hours after removal of the burlap and polyethylene sheeting before application of the epoxy chip seal is permitted.
- Concrete Patching Material will be measured to nearest 0.1 cubic feet as determined from the theoretical yield per bag of Concrete Patching Material. Concrete Patching Material will be paid for at the contract unit price per cubic foot. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to abrasive blast clean the removal areas, and furnish, place and cure the concrete patching material within the removal areas.

EPOXY CHIP SEAL

The Epoxy Chip Seal shall be applied in accordance with the Special Provision for "Two Coat Epoxy Bridge Deck Chip Seal".

DECK DRAIN EXTENSIONS

- All angles shall conform to ASTM A709, Grade 36 and shall be galvanized in accordance with ASTM A123.
- The 3/8" diameter x 2 3/4" long wedge-type anchors shall be commercially available steel wedge-type anchor bolts, nuts and washers set in concrete in accordance with the recommendations of the manufacturer. The Contractor shall obtain from the manufacturer and submit to the Engineer, certification indicating the material is either stainless steel or the finish is galvanized.
- The 3/8" diameter bolts, nuts and washers shall conform to ASTM A307 and shall be galvanized in accordance with ASTM A153.
- The 6" diameter pipes shall be Schedule 40 Acrylonitrile Butadiene-Styrene (ABS) Plastic Pipe conforming to the requirements of ASTM - D2661 or Schedule 40 ABS Plastic Pipe conforming to the requirements of ASTM - F628.
- The Sheet Metal strap shall be fabricated from hot-rolled carbon steel conforming to ASTM A570. The material shall have a 16 gage minimum coating designation G90, regular spangle.
- The method used to attach the ABS pipe to the 16 gauge galvanized sheet metal straps shall be at the option of the Contractor as approved by the Engineer.

DECK DRAIN EXTENSIONS (CONTINUED)

- The deck drain extensions shall be paid for at the contract unit price per each for "Extend Deck Drain" and shall be for each drain in place requiring extension. The price shall be payment in full for furnishing all specified materials, galvanizing specified material, all labor and any incidentals required to construct the deck drain extensions as stated in these plans.

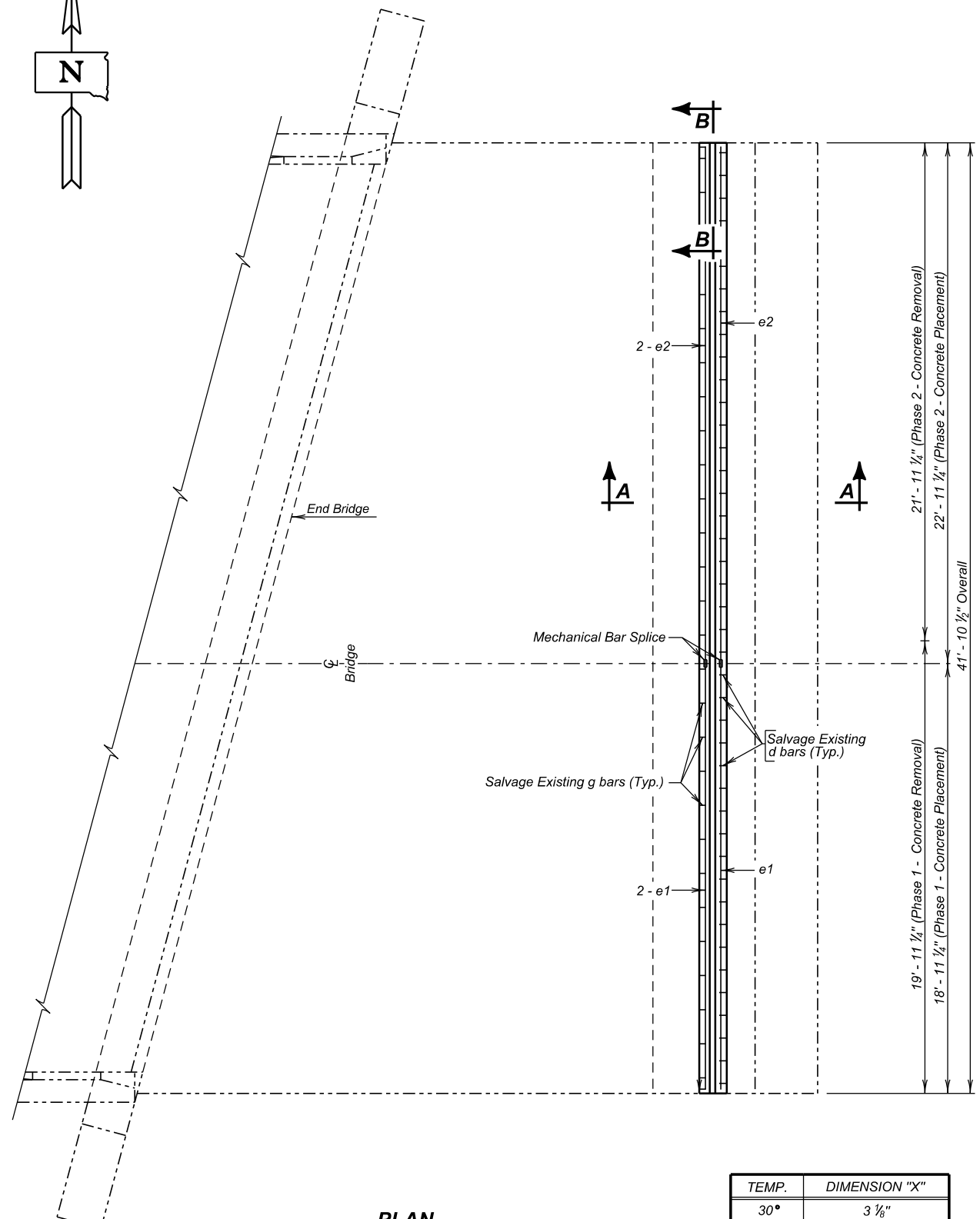
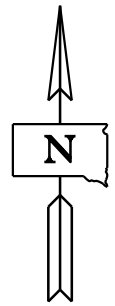
**NOTES (CONTINUED)
FOR
240' - 0 3/4" CONT. COMP. GIRDER BRIDGE**

Str. No. 07-222-329

JANUARY 2012

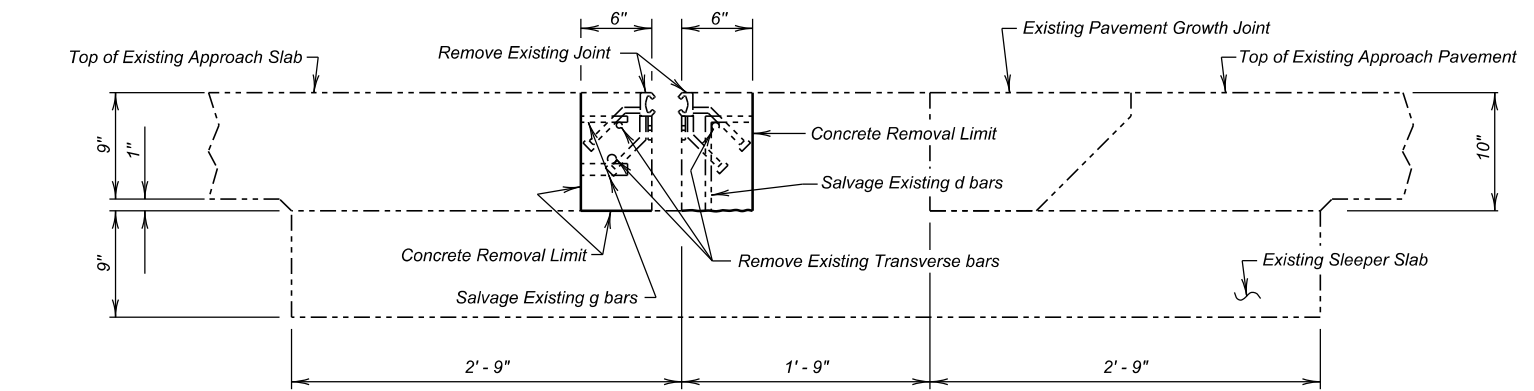
4 OF 13

DESIGNED BY: NP BRWN023C	DRAWN BY: NP 023CNOTE	CHECKED BY: EJA <i>Kevin M. Broderick</i> BRIDGE ENGINEER
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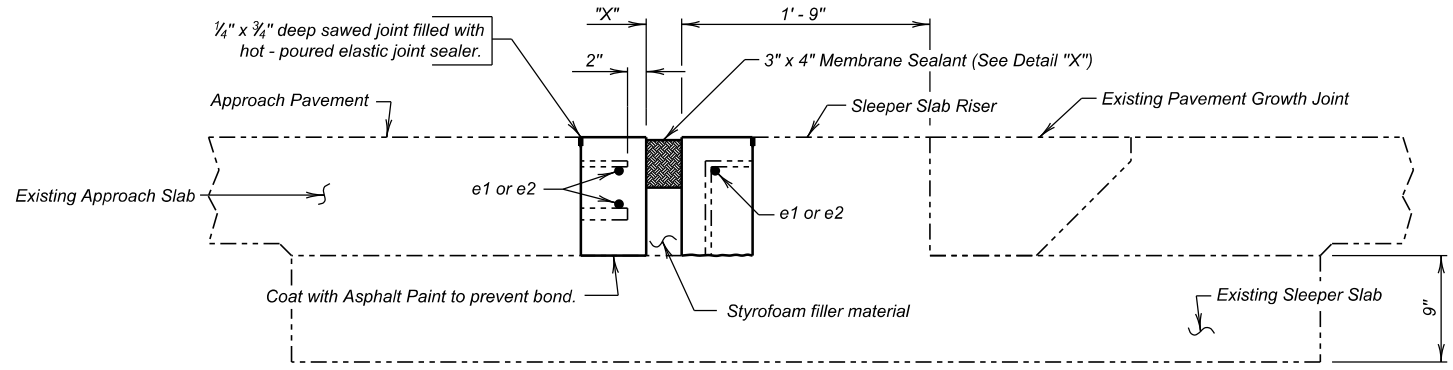


PLAN
(Abutment No. 5 End Only)

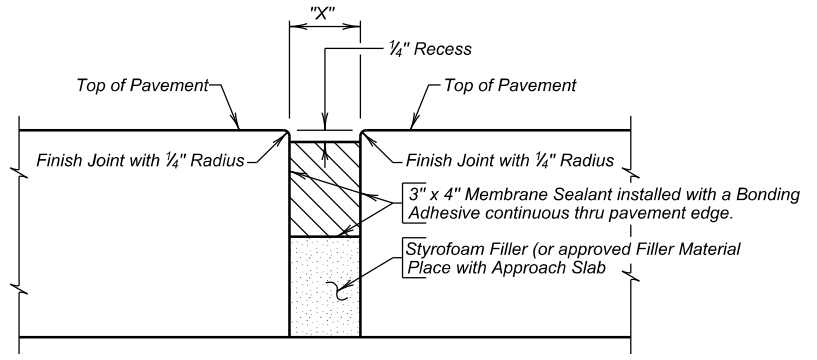
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30°	3 1/8"
40°	3"
50°	2 7/8"
60°	2 3/4"
70°	2 11/16"
80°	2 9/16"
90°	2 7/16"



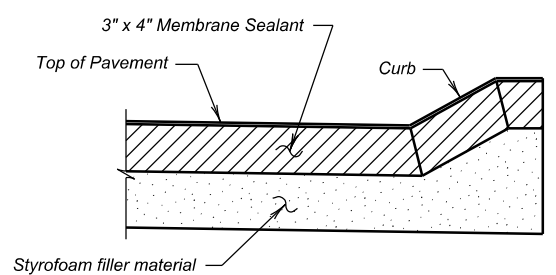
SECTION A - A
(Concrete Removal Shown)



SECTION A - A
(Joint Reconstruction Shown)



DETAIL "X"



SECTION B - B

REINFORCING SCHEDULE				
(For One Approach Slab Joint Repair)				
Mk.	No.	Size	Length	Type
e1	3	5	18'-9"	Str.
e2	3	5	22'-9"	Str.

NOTES:
All Bars to be Epoxy Coated.
All dimensions are out to out of bars.

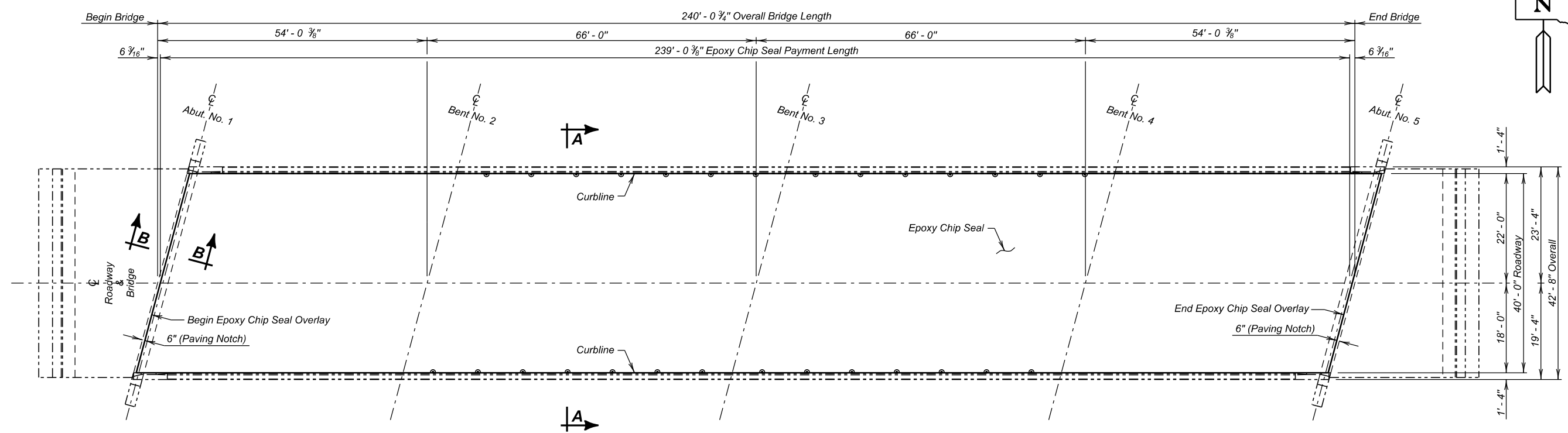
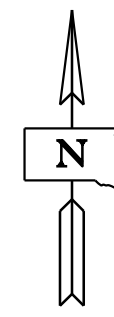
ESTIMATED QUANTITIES				
ITEM	UNIT	QUANTITY		
		Phase 1	Phase 2	
Class A45 Concrete, Bridge Repair	Cu. Yd.	0.6	0.7	
Epoxy Coated Reinforcing Steel	Lb.	59	71	
Breakout Structural Concrete	Cu. Yd.	0.6	0.7	
No. 5 Rebar Splice	Each	3	—	
Membrane Sealant Expansion Joint	Ft.	18.9	22.9	

(WESTBOUND LANES)
APPROACH SLAB JOINT REPAIR
FOR
240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY
OVER JAMES RIVER
STR. NO. 07-222-329

15° SKEW LHF
SEC. 14-T123N-R62W
NH 0012(160)298

BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION

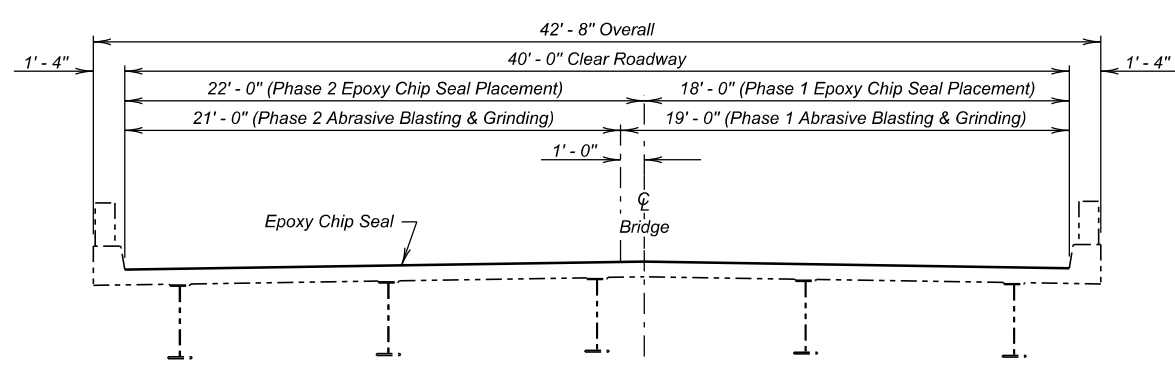
JANUARY 2012 5 OF 13



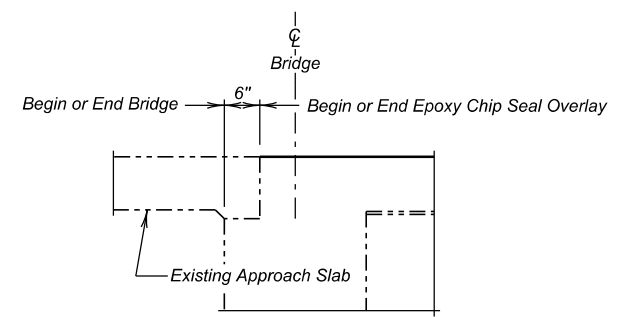
PLAN

NOTE:
 * Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Two Coat Epoxy Bridge Deck Chip Seal	Sq. Yd.	478.0	584.3
Abrasive Blasting of Bridge Deck	Sq. Yd.	504.6	557.7
Bridge Deck Grinding	Sq. Yd.	504.6	557.7
* Concrete Patching Material	Cu. Ft.	13.9	13.9
* Concrete Removal, Class A	Sq. Yd.	2.0	2.0
* Concrete Removal, Class B	Sq. Yd.	2.0	2.0



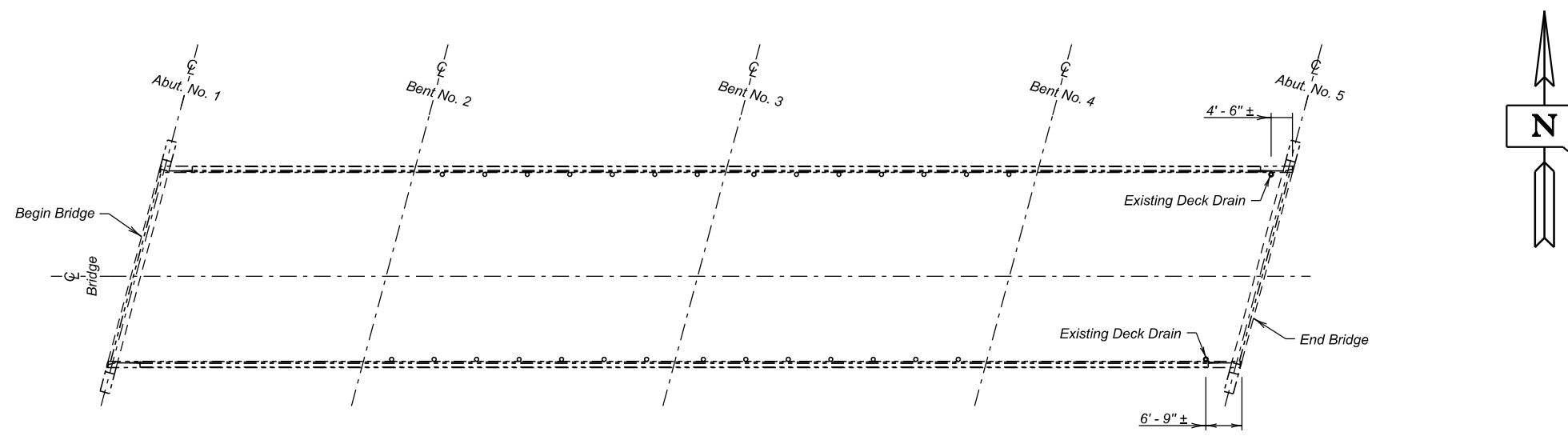
SECTION A - A



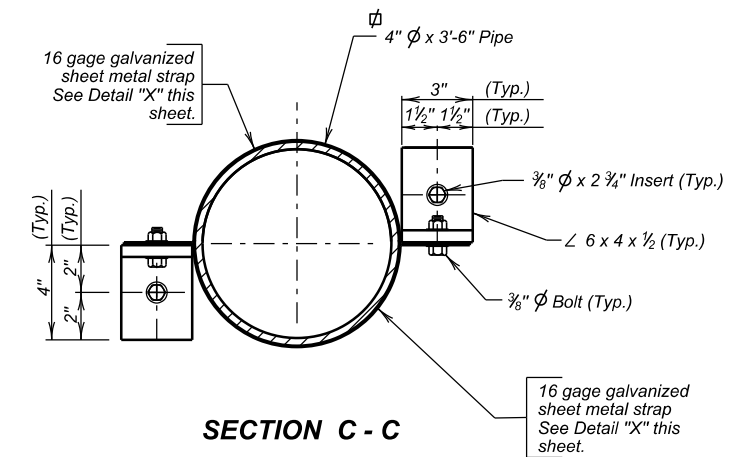
SECTION B - B

**(WESTBOUND LANES)
 EPOXY CHIP SEAL DETAILS
 FOR
 240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 15° SKEW LHF
 OVER JAMES RIVER SEC. 14-T123N-R62W
 STR. NO. 07-222-329 NH 0012(160)298**

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2012

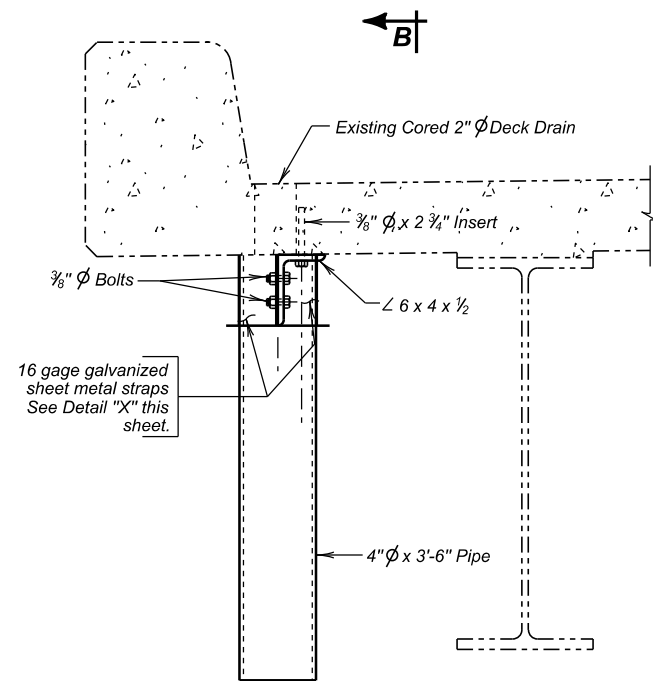


EXISTING DECK DRAIN LAYOUT

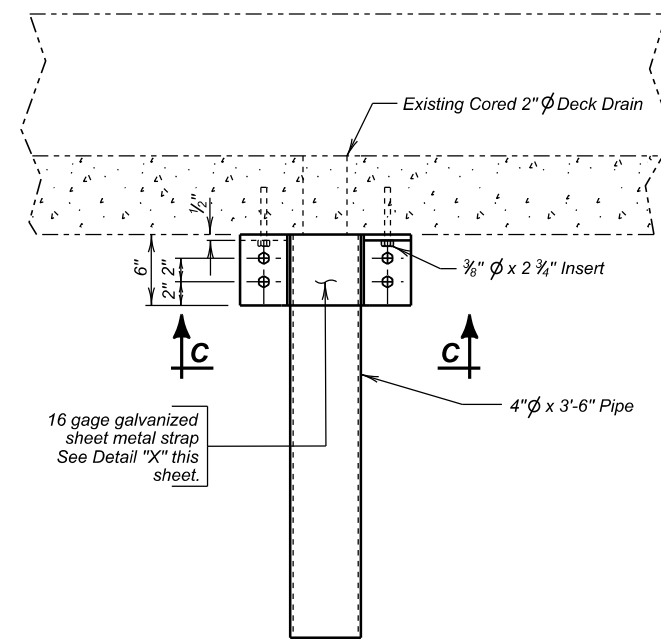


SECTION C - C

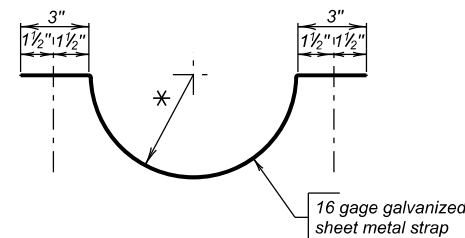
Center 4" ϕ x 3'-6" Pipe over existing deck drain.



SECTION A - A



SECTION B - B



* Inside radius of 16 gage metal strap shall be $\frac{1}{16}$ " less than the outside radius of the 4" ϕ ABS Plastic Pipe.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Extend Deck Drain	Each	1	1

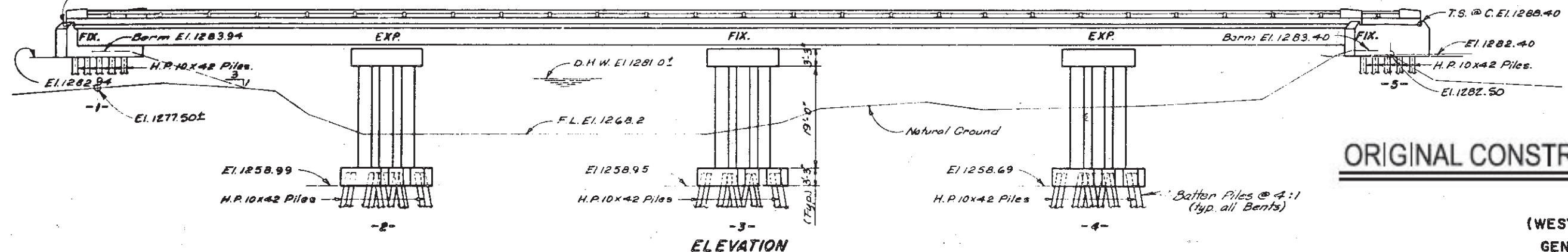
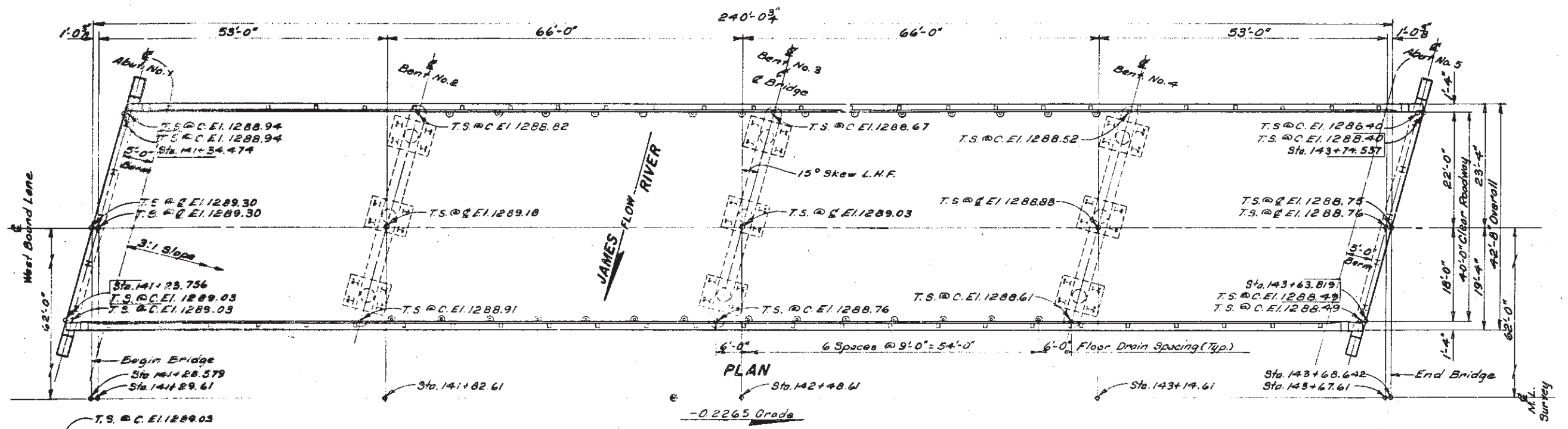
(WESTBOUND LANES)
DECK DRAIN EXTENSION DETAILS
 FOR
240' - 0" $\frac{3}{4}$ " CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 15° SKEW LHF
 OVER JAMES RIVER SEC. 14-T123N-R62W
 STR. NO. 07-222-329 NH 0012(160)298

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2012

B.M. #12 Elev. 1277.38
Iron Pin on top of ditch
dike along 1/4 Line Fence
200' Rt. Sta. 141+00.

B.M. #13 Elev. 1276.91
Iron pin in ground by
underground tele. cable posts.
165' Lt. Sta. 147+00.

T.S. @ C. El. = Top of Slab at Curb Elevation.
T.S. @ Q. El. = Top of Slab at Centerline Elevation.



ORIGINAL CONSTRUCTION PLANS

Q30	5050 C.P.S.
A	1714 Sq. Ft.
V	30 P.P.S.

(WEST BOUND LANES)
GENERAL DRAWING
FOR
240'-0 3/4" CONT. COMP. GIRDER BRIDGE
40'-0" ROADWAY 15° SKEW L.H.F.
OVER JAMES RIVER SEC. 14 - T123N-R62W
STA. 141+28.579 TO 143+68.642 RF044-5(II)
BROWN COUNTY
SOUTH DAKOTA HS20-44
DEPARTMENT OF HIGHWAYS
NOV. 1971 8 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	E.P.	O.C.	H.C. Wilson BRIDGE ENGINEER

REINFORCING SCHEDULE

NO.	SIZE	LENGTH	TYPE
*A	228	5	43'-9" 15
*B	454	5	42'-3" Str.
*B1	38	5	47'-0" Str.
C	466	4	5'-5" T1
D	707	5	35'-6" Str.
D1	12	5	12'-0" Str.
*E	106	4	4'-0" Str.

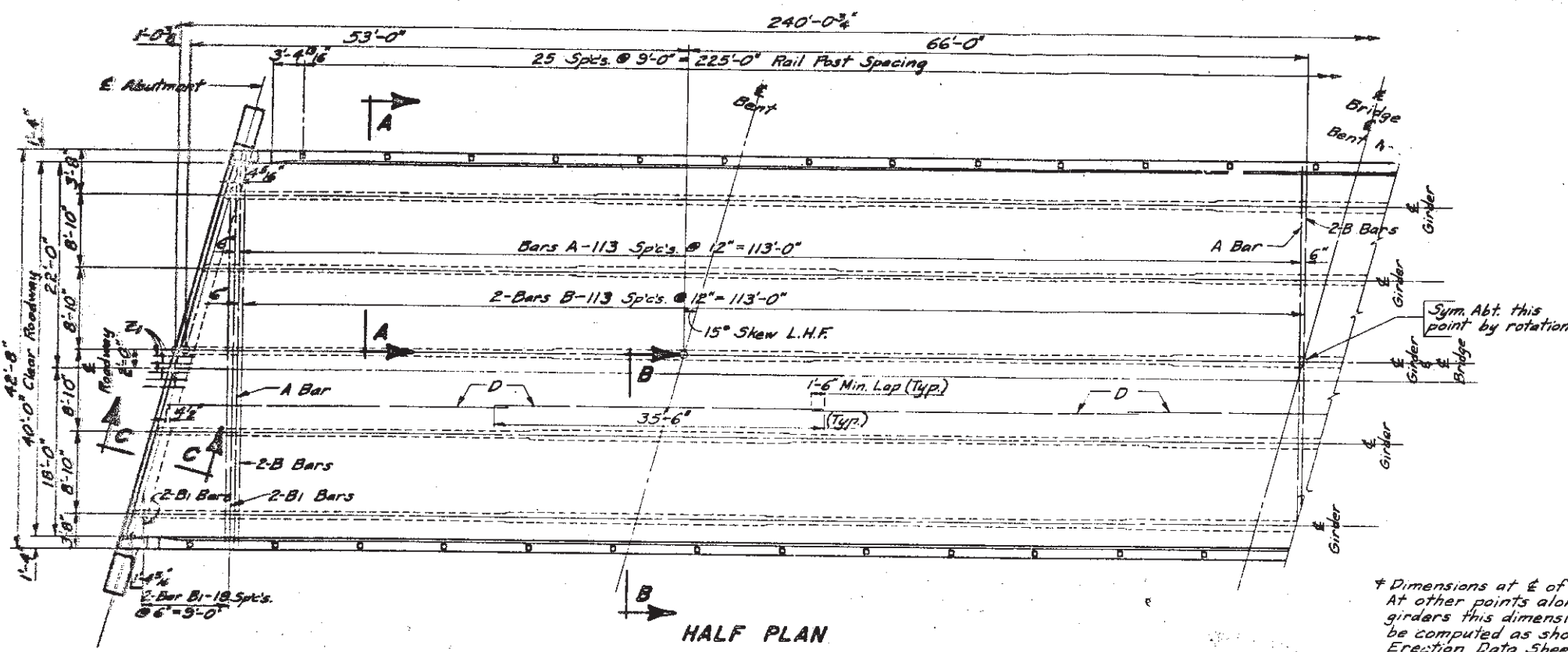
Bending Details

Type T1

* see sheet No. 10 for spacing

Type 15

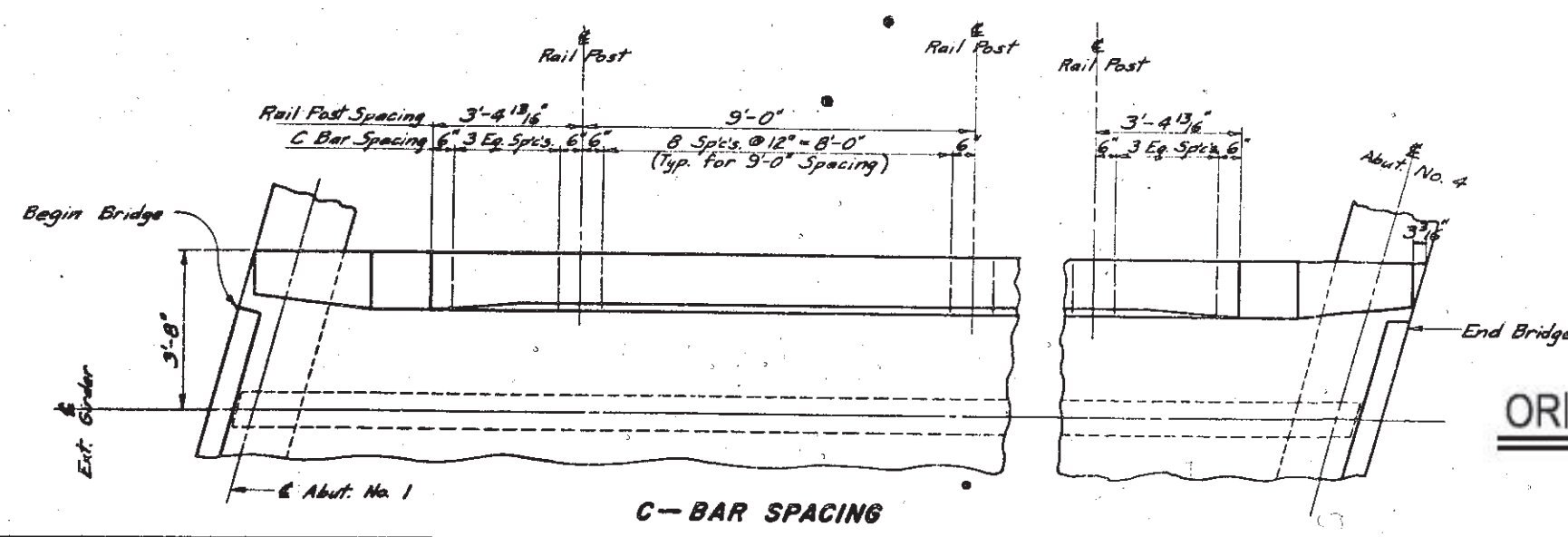
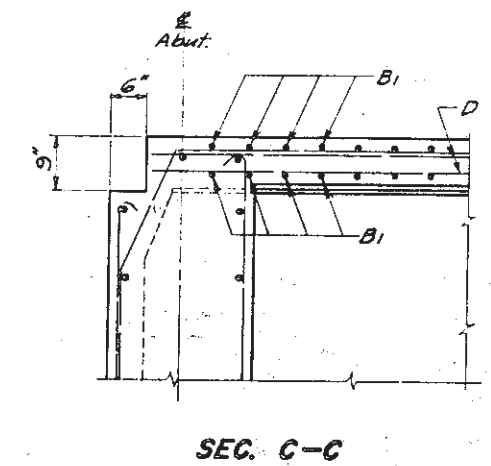
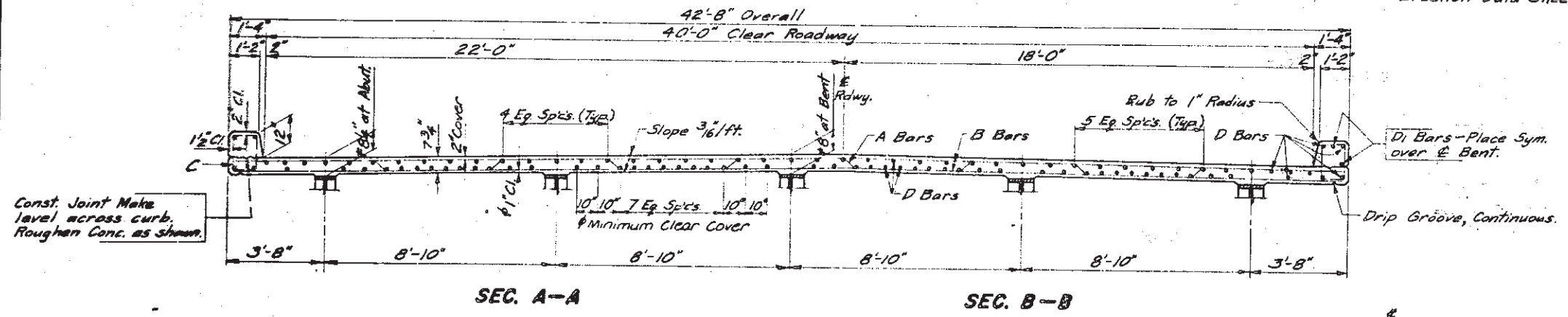
* These bars must conform to A.S.T.M. A615, Grade 60 steel, other bars may be A615, Grade 40.
NOTE: All dimensions are out to out of bars.



ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A concrete, Bridge	Cu. Yd.	269.5
Reinforcement Conc. Masonry	Lb.	60,570
Structural Steel	Lb.	152,335
Steel Railing, Type RT-4	L.F.	463.6
Oil Treatment	Gals.	43

- ### CONCRETE POURING NOTES —
- SLAB CONCRETE —**
- Concrete slab may be poured continuous, provided approved concrete retarders are used and the contractor has demonstrated capacity for such continuous operations.
 - Transverse construction joints are permitted in the slab and shall be positioned near the girder splices or at approximately the 1/4 points from the center line of Bents.
 - If transverse construction joints are used, the contractor shall submit to the Bridge Section, for approval, plans and details of proposed construction joints as well as proposed sequence of pouring.
 - Curbs and End Blocks shall be poured after all of the slab has been poured.
- ABUTMENT CONCRETE —**
- Abutment concrete shall be placed at a time when a relatively stable temperature can be expected, as directed by the ENGINEER. This may require placing concrete at a time other than normal working day.
 - It will be necessary to secure the formwork to the girders so that the forms will move longitudinally with the girders.
 - The girders shall be braced near abutment end to prevent transverse movement during concrete placing.
 - Type III cement shall be used in Abutment concrete, unless acceptable alternate method of obtaining early strength is approved by the ENGINEER.

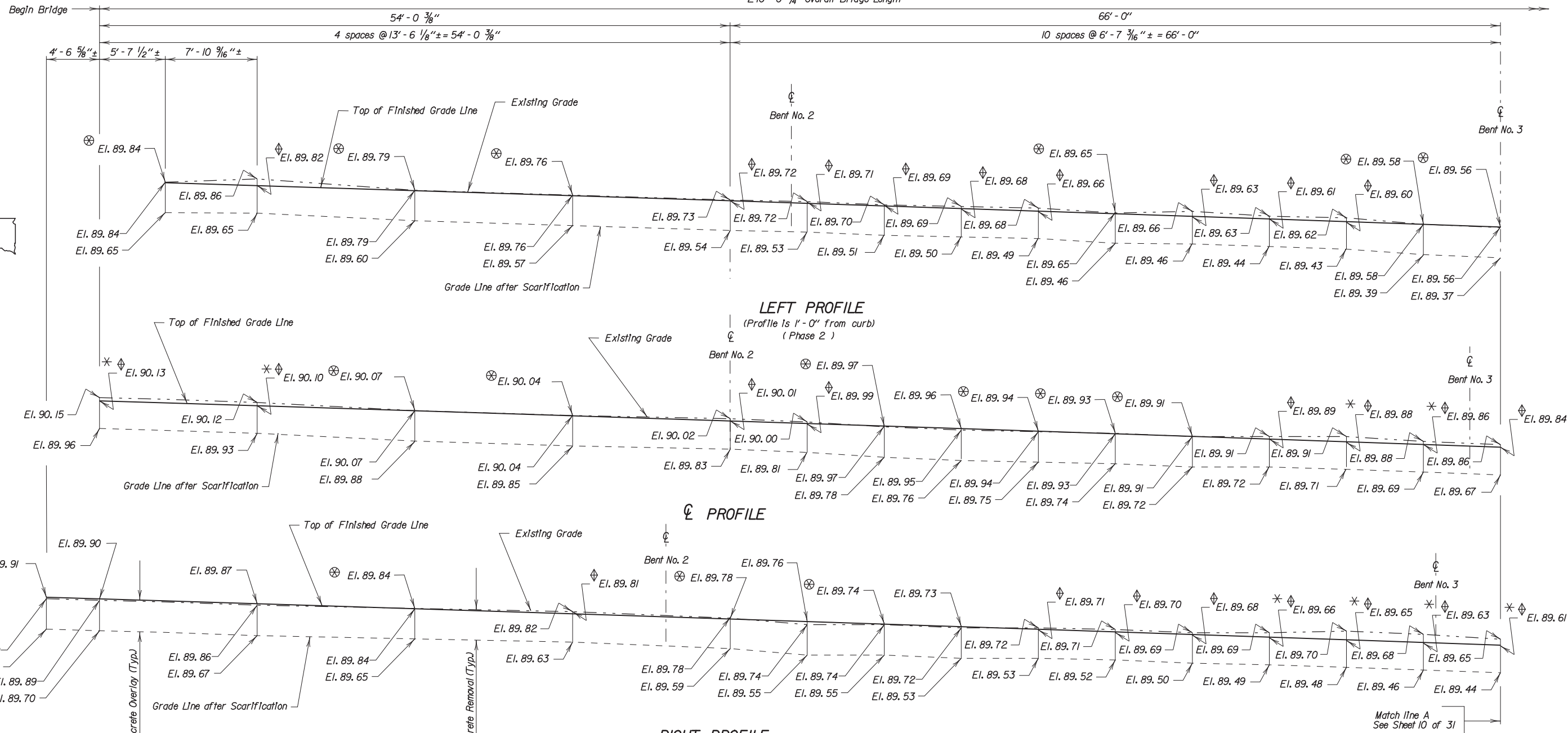


(WEST BOUND LANES)
SLAB DETAILS
FOR
240'-0 3/4" CONT. COMP. GIRDER BRIDGE
40'-0" ROADWAY 15° SKEW L.H.F.
OVER JAMES RIVER SEC. 14-T123N-R62W
STA. 141+28.579 TO 143+68.642 RF 044-5(II)
BROWN COUNTY
SOUTH DAKOTA HS20-44
DEPARTMENT OF HIGHWAYS
NOV. 1971 9 OF 13

ORIGINAL CONSTRUCTION PLANS

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	C.D.	W.C.P.	K.C. Wilson BRIDGE ENGINEER

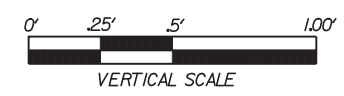
240' - 0 3/4" Overall Bridge Length



ORIGINAL CONSTRUCTION PLANS

(WEST BOUND LANES)
 DECK PROFILE FOR LOW SLUMP
 DENSE CONCRETE OVERLAY
 FOR
 240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 15° SKEW LHF
 OVER JAMES RIVER SEC. 14-T123N-R62W
 STR. NO. 07-222-329 BRF 0012(117) 301

NOTE-
 This sheet is to be used in conjunction with Sheet No. 10 of 31.
 Add 1200.00 to all elevations shown on profiles.
 * Scarify in excess of 1 1/2" in these areas.
 ⊗ Existing Elevation is same as Finished Surface Elevation.
 ⬠ Existing Elevation is Higher than Finished Surface Elevation.



Benchmark Description
 Benchmark No. 001113
 0.1 Mile East of the East end of the bridge
 Benchmark El. 1506.84

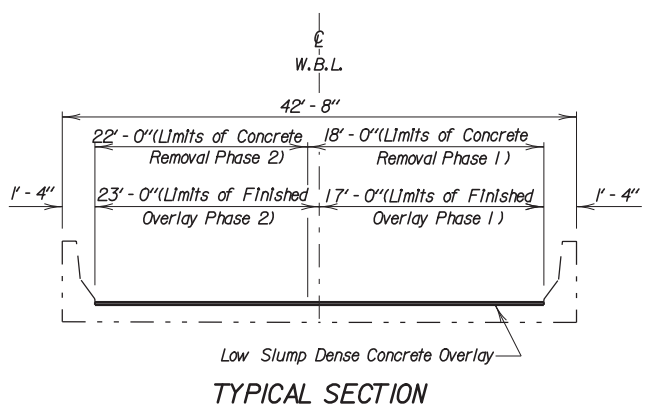
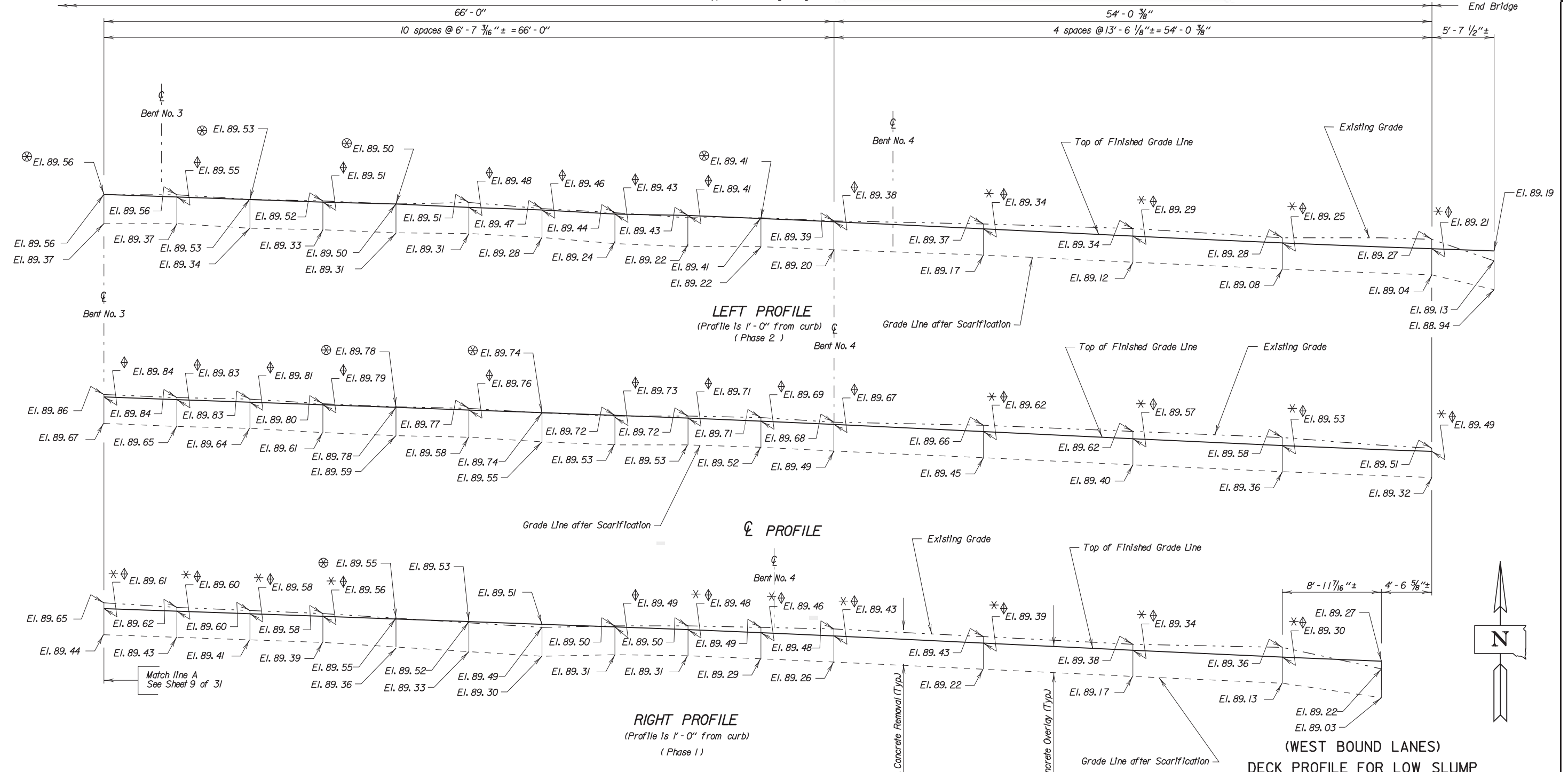
BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 FEBRUARY 2007 **10 OF 13**

DESIGNED BY NP BRWN6245	DRAWN BY SMS 6245GA09	CHECKED BY BB	Kevin N. Coeden BRIDGE ENGINEER
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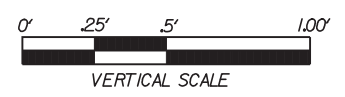
ORIGINAL CONSTRUCTION PLANS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E13	E30

240' - 0 3/4" Overall Bridge Length



NOTE-
 This sheet is to be used in conjunction with Sheet No. 9 of 31.
 Add 1200.00 to all elevations shown on profiles.
 * Scarify in excess of 1 1/2" in these areas.
 ⊕ Existing Elevation is same as Finished Surface Elevation.
 ⬠ Existing Elevation is Higher than Finished Surface Elevation.



Benchmark Description
 Benchmark No. 12301.29
 Brass Cap in Conc. NE Corner
 of Str. NW Corner of Appr.
 Benchmark El. 1284.96

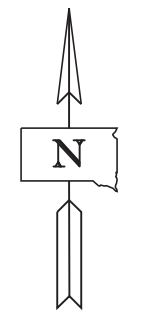
ITEM	UNIT	QUANTITY	
		PHASE 1	PHASE 2
Low Slump Dense Concrete Bridge Deck Overlay	Cu. Yd.	34.5	41.9
Concrete Removal Type 1A	Sq. Yd.	504.6	551.7
Concrete Removal Type 2A	Sq. Yd.	126.2	139.4
Concrete Removal Type 1B	Sq. Yd.	50.5	55.8
Concrete Removal Type 1C	Sq. Yd.	25.3	27.9
Concrete Removal Type 1D	Sq. Yd.	25.3	27.9
Concrete Removal Type B	Ft.	10.0	10.0
Finishing and Curing	Sq. Yd.	478.1	584.3
Class A45 Concrete Fill	Cu. Yd.	5.1	5.6

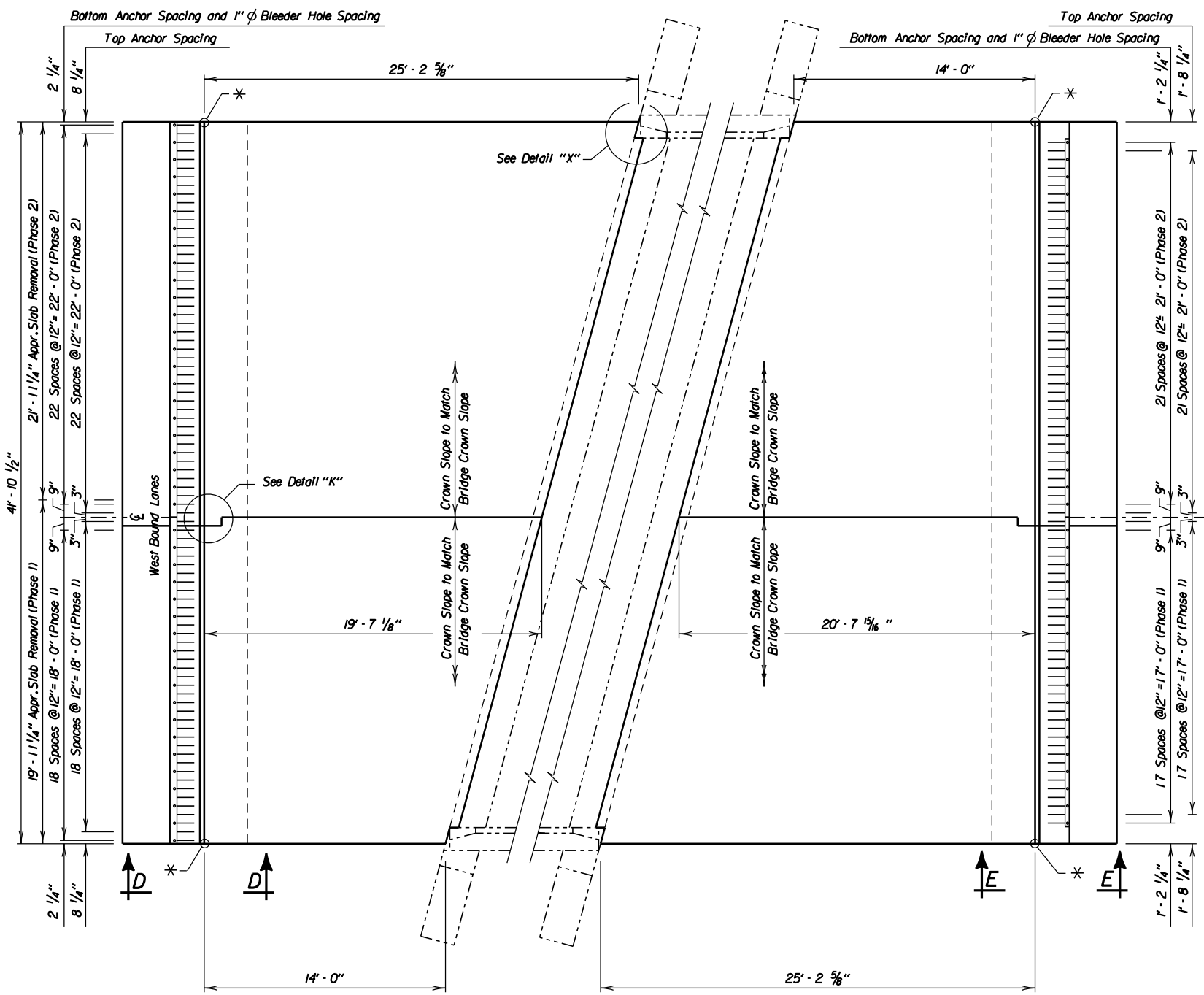
240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER JAMES RIVER
 STR. NO. 07-222-329

15° SKEW LHF
 SEC. 14-TI23N-R62W
 BRF 0012(117) 301

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 FEBRUARY 2007

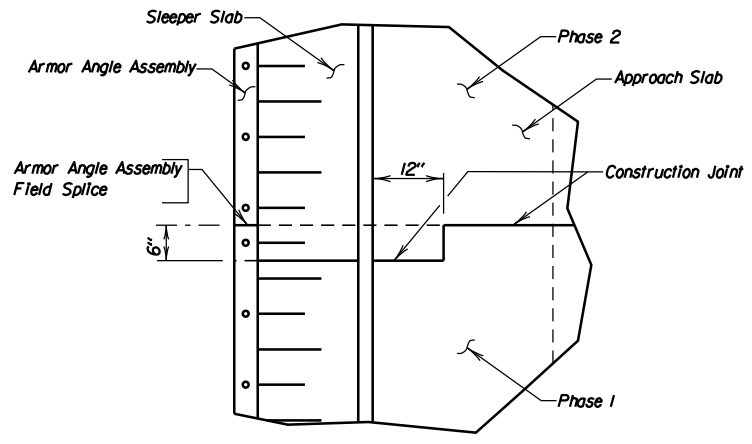
DESIGNED BY NP BRWN6245	DRAWN BY SMS 6245GA10	CHECKED BY BB	Kevin N. Coeden BRIDGE ENGINEER
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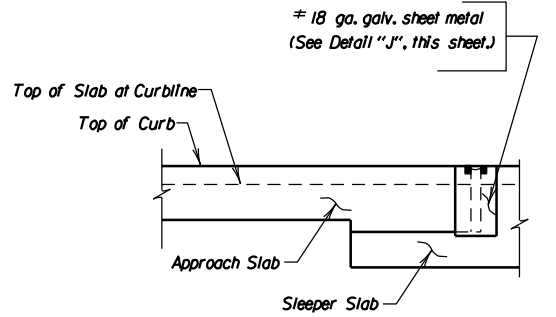


PLAN

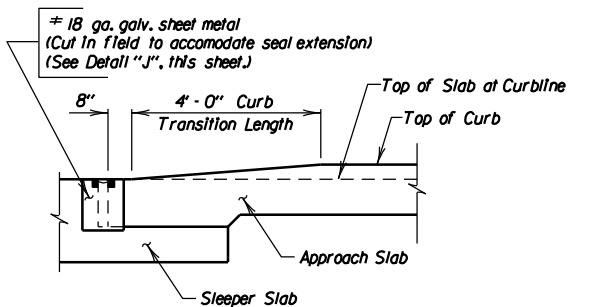
* Elevation is Top of Slab back of Curb at this point. See Approach Slab Notes.



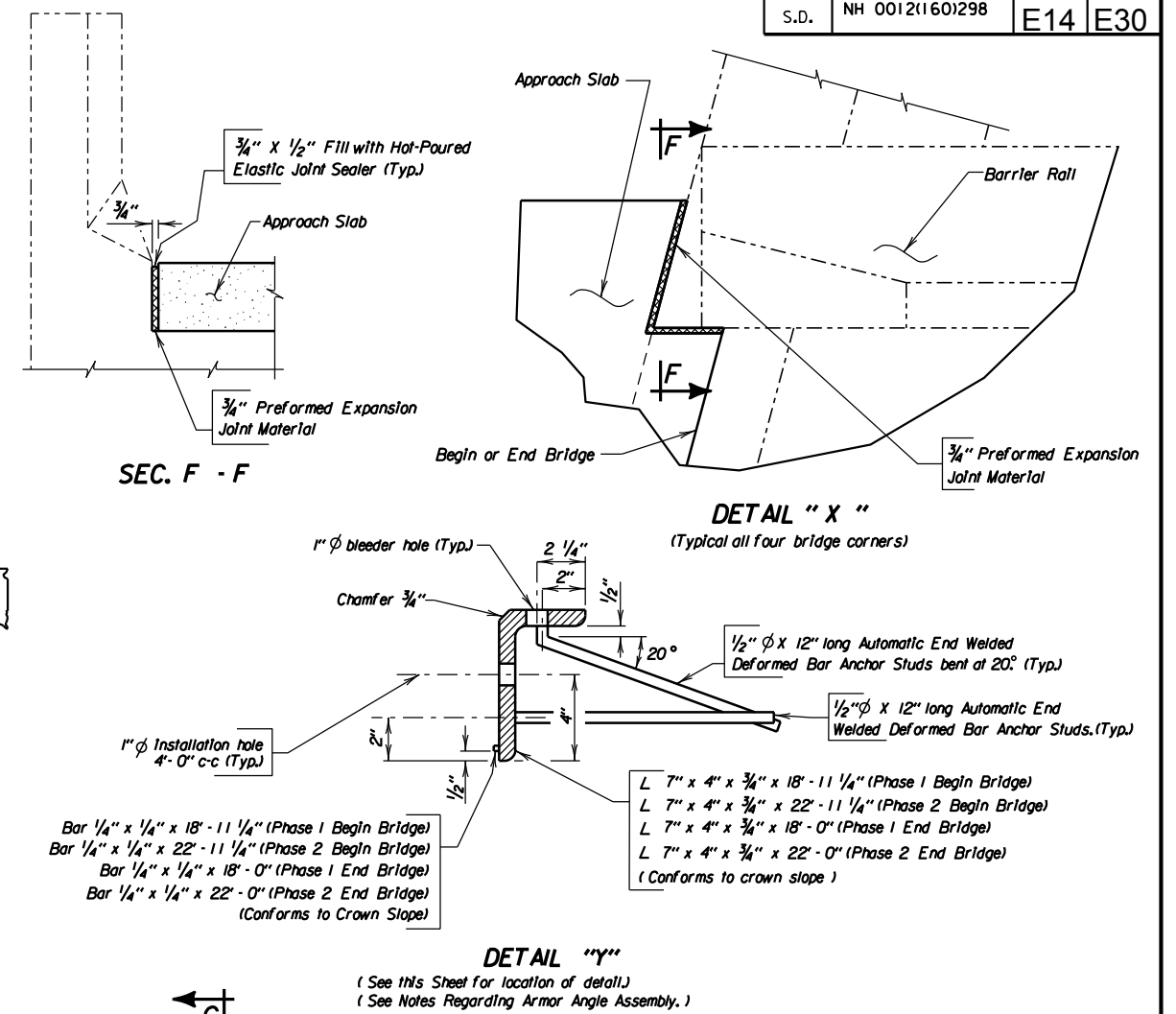
DETAIL "K"



VIEW E - E

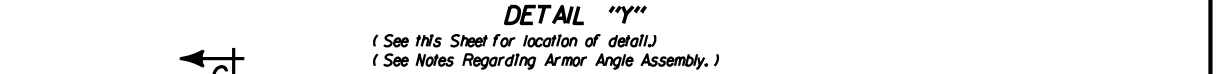


VIEW D - D

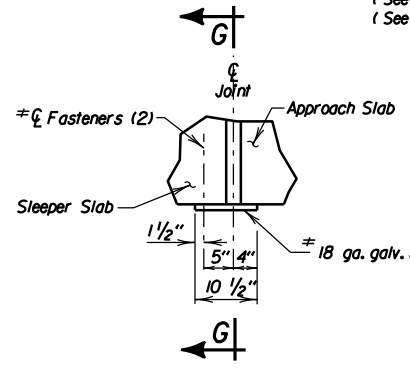


SEC. F - F

DETAIL "X"
(Typical all four bridge corners)



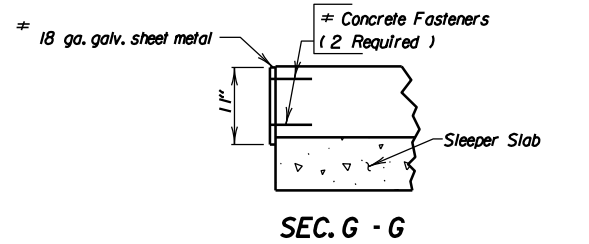
DETAIL "Y"



PLAN - DETAIL "J"

* Attach 18 ga. galv. Sheet Metal to both ends of Sleeper Slab only after slab has been poured. Use fasteners that will not spall concrete, as approved by the Engineer.

ORIGINAL CONSTRUCTION PLANS



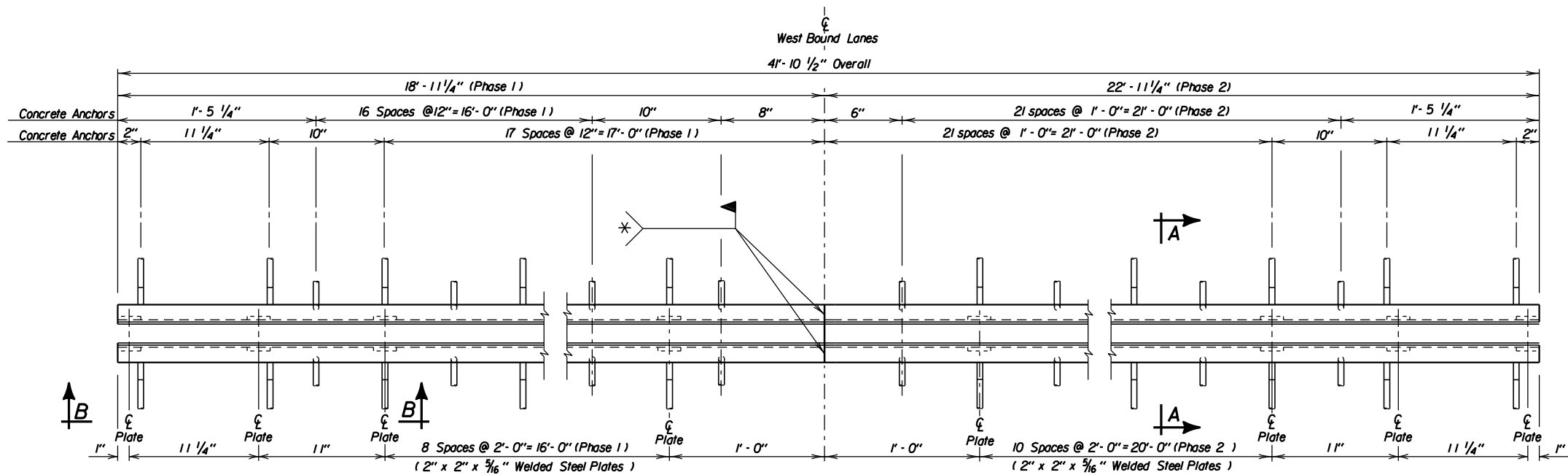
SEC. G - G

(WEST BOUND LANES)
LAYOUT OF APPROACH SLABS
FOR
240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY
OVER JAMES RIVER
STR. NO. 07-222-329

15° SKEW L.H.F.
SEC. 14-T123N-R62W
BRF 0012(117)301

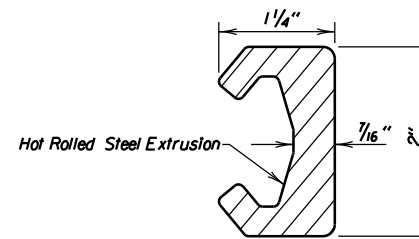
BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2007

TEMP.	DIMENSION "X"
30°	2 3/8"
40°	2 3/16"
50°	2 3/16"
60°	2 1/8"
70°	2"
80°	1 7/8"
90°	1 1/2"

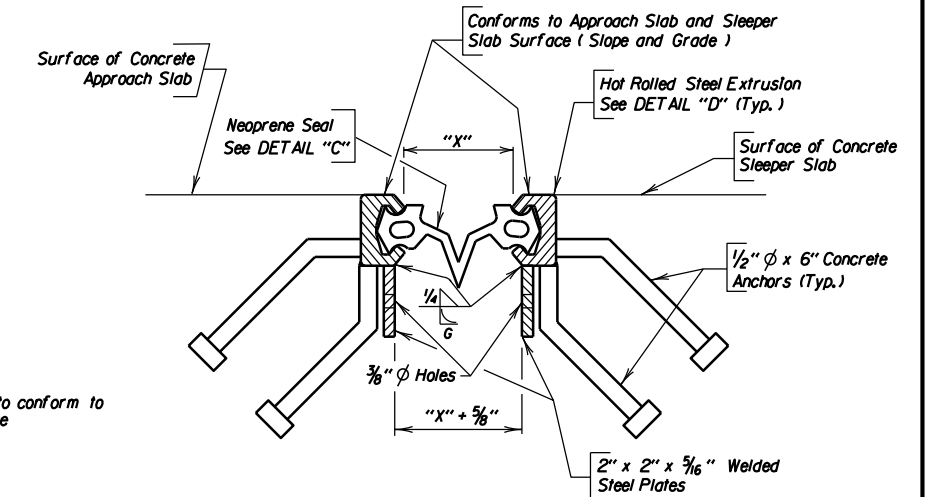


DETAIL "C"
Neoprene Seal shall have a 3" movement capability.

PLAN OF STRIP SEAL
(Neoprene Seal not shown)



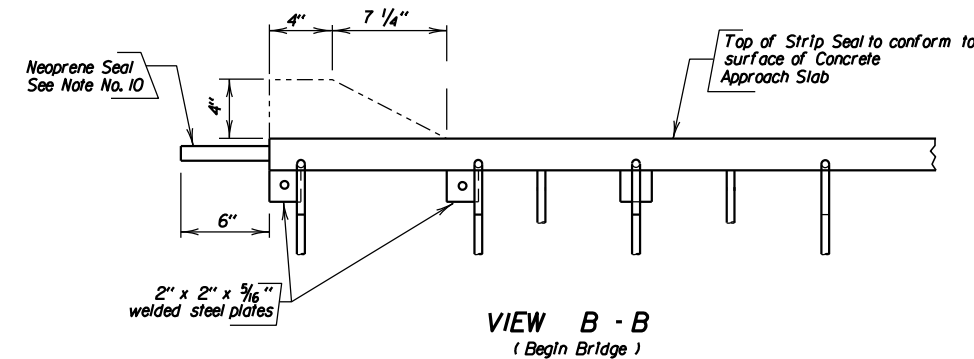
DETAIL "D"



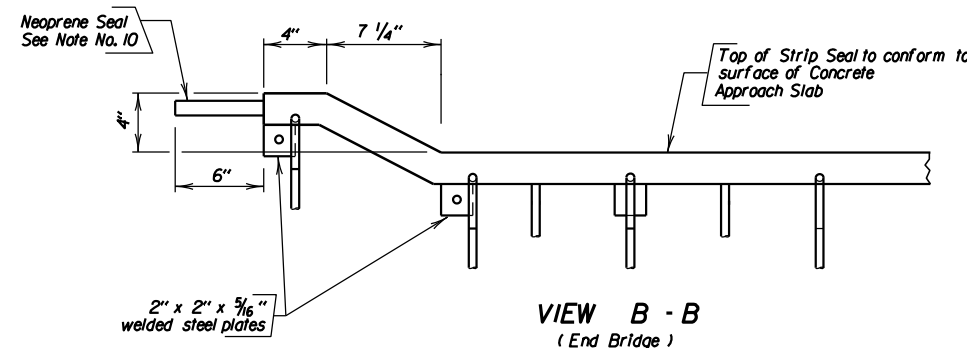
SEC. A - A

GENERAL NOTES:

- Materials for the Steel Extrusion shall conform to ASTM-A36, A242 or A588. Materials for the 2" x 2" x 3/16" welded steel plates shall conform to ASTM-A36. Material for the 1/2" diameter x 6" Concrete Anchors shall conform to Type A steel studs of Section 7 of the latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel.
- Material for the neoprene seal shall conform to ASTM D2628 modified to omit the recovery test. No splices will be permitted in the neoprene seal.
- The lubricant-adhesive used to install the neoprene seal shall conform to the requirements of ASTM D4070. The neoprene seal and the lubricant adhesive should be supplied or recommended by the same source as they must be compatible.
- The installation of the neoprene seal shall be as recommended by its Manufacturer and approved by the Engineer, but in general shall be as follows: The neoprene seal shall be installed and bonded to the steel extrusion with a high-solids lubricant adhesive. The neoprene surfaces shall be roughened with a wire brush before the application of the lubricant adhesive. The neoprene seal may be installed either prior to or after the time the steel extrusions are concreted in the approach slabs. The steel extrusion shall be dry, clean, free from dirt, grease and contaminants at the time the neoprene seal is installed.
- Due to the length of the steel extrusions, splices are permitted. No welds shall be permitted in the internal section of the extrusion where the neoprene seal is located. Weld details shall be shown on the shop plans for approval by the Engineer. Welding shall be in accordance with latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel. Galvanize the steel extrusions and anything welded to them after all welding is completed. They shall be galvanized in accordance with AASHTO M111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding shall be included with the shop plans. Repair of galvanizing shall be by the zinc-based solder method in accordance with ASTM A780.
- The thickness and shape of the neoprene seal may vary from the sketch shown (Detail "C" on this sheet) according to the manufacturer's design; however, the wedge lugs must properly fill the groove in the steel extrusion. Before installation, the shop plans of the proposed neoprene seal showing the fixed dimensions, thickness of neoprene seal, and dimensions pertinent to the fit of the neoprene seal in the steel extrusion shall be submitted to and approved by the Engineer.
- Since the configuration and dimensions of the steel extrusion may vary according to each manufacturer's design, they need not conform exactly to that shown in Detail "D", however, any deviations from the plan shown configuration or dimensions must be approved by the Office of Bridge Design.
- The Strip Seal Expansion Joint supplier shall submit a detailed gland installation procedure with the shop plans for approval. Installation one half bridge width at a time will not be allowed unless approved in writing by the Bridge Construction Engineer prior to installation.
- The cost of welding shall be incidental to the contract unit price per foot for Strip Seal Expansion Joint.
- The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond each end of the steel extrusions.
- The Strip Seal Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Strip Seal Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.
- Due to phased construction, the steel extrusion shall be spliced in the field at the location shown above. The Weld Details and the procedures for preparing the surface for welding and repairing the galvanizing after welding shall be included with the shop plans.



VIEW B - B
(Begin Bridge)



VIEW B - B
(End Bridge)

ESTIMATED QUANTITIES				
(For Two Approach Slabs)				
ITEM	UNIT	PHASE 1 QUANTITY	PHASE 2 QUANTITY	
Strip Seal Expansion Joint	Ft.	37.9	45.9	

ORIGINAL CONSTRUCTION PLANS

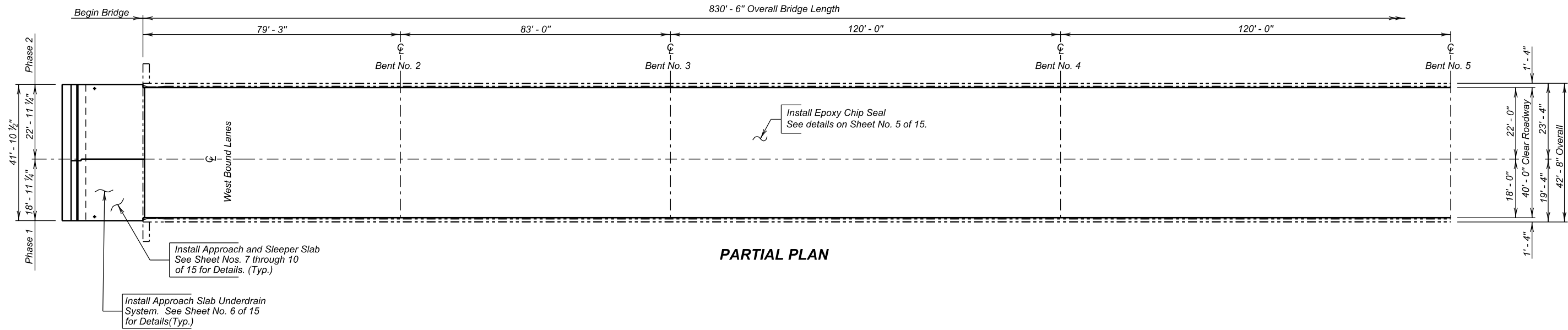
(WEST BOUND LANES)
APPROACH SLAB JOINT DETAILS
FOR

240' - 0 3/4" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY
OVER JAMES RIVER
STR. NO. 07-222-329

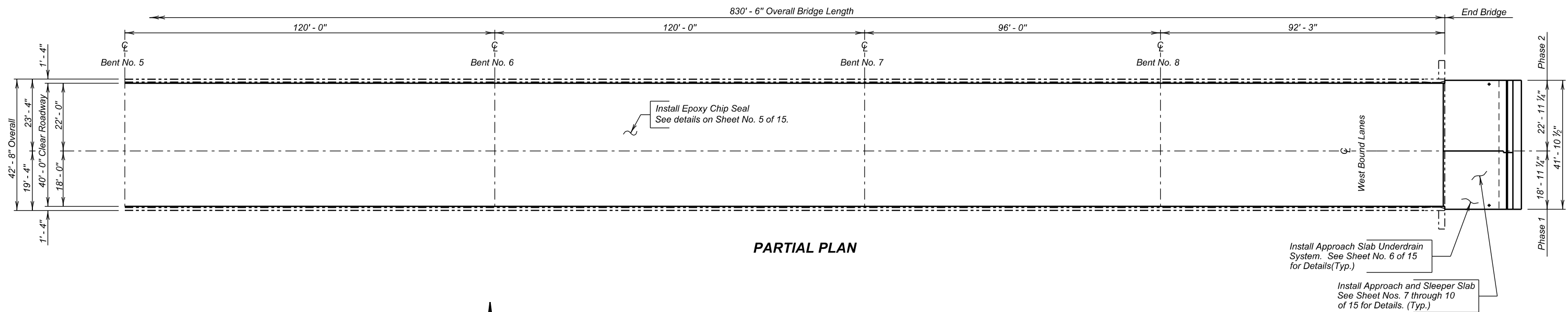
15° SKEW LHF
SEC. 14-T123N-R62W
BRF 0012(17) 301

BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2007

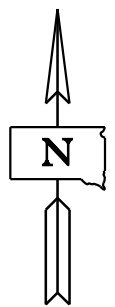
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E16	E30



PARTIAL PLAN



PARTIAL PLAN



INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Upgrade
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Epoxy Chip Seal Details
- Sheet No. 6 - Details of Approach Slab Underdrain System
- Sheet No. 7 - Approach Slab Layout
- Sheet No. 8 - Approach Slab Details
- Sheet No. 9 - Approach Slab Details (Continued)
- Sheet No. 10 - Approach Slab Joint Details
- Sheet No. 11 - Details of Standard Plate No. 680.03
- Sheet Nos. 12 thru 15 - Original Construction plans

Install Approach Slab Underdrain System. See Sheet No. 6 of 15 for Details(Typ.)

Install Approach and Sleeper Slab See Sheet Nos. 7 through 10 of 15 for Details. (Typ.)

**(WESTBOUND LANES)
LAYOUT FOR UPGRADE**

FOR

830' - 6" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
 STR. NO. 07-267-329 NH 0012(160)298
 PCN 023C

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION

JANUARY 2012

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
430E0300	Granular Bridge End Backfill	49.3	CuYd
430E0510	Approach Slab Underdrain Excavation	55.5	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	67.5	SqYd
460E0170	Concrete Patching Material	131.1	CuFt
460E0380	Install Dowel in Concrete	54	Each
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	48	Each
480E0506	No. 6 Rebar Splice	44	Each
491E0015	Two Coat Epoxy Bridge Deck Chip Seal	3681.9	SqYd
491E0110	Abrasive Blasting of Bridge Deck	3681.9	SqYd
491E0120	Bridge Deck Grinding	3681.9	SqYd
491E0130	Concrete Removal, Class A	18.4	SqYd
491E0140	Concrete Removal, Class B	18.4	SqYd
680E0040	4" Underdrain Pipe	104	Ft
680E2010	Precast Concrete Headwall for Drain	2	Each
680E2500	Porous Backfill	11.7	Ton

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans.

- Perform Bridge Deck Grinding for the first phase of construction.
- Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction.
- Remove the existing asphalt concrete pavement adjacent to both bridge ends to the limits shown elsewhere in the plans for Phase 1.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS (CONT.)

- Excavate the existing granular material behind the abutment backwalls to the limits shown in the plans for Phase 1 of construction.
- Install new Approach Slab Underdrain to the limits shown by the plans for Phase 1 of construction.
- Install the Sleeper slabs and Approach slabs for the first phase of construction.
- Place the Two Coat Epoxy Bridge Deck Chip Seal for the first phase of construction.
- Switch traffic and repeat steps 1 through 8 for the second phase of construction.

GENERAL CONSTRUCTION NOTES

- All new reinforcing steel shall conform to ASTM-A615, Grade 60.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Use 2 inch clear cover on all reinforcing steel except as shown otherwise.
- All exposed concrete corners and edges shall be chamfered $\frac{3}{4}$ " unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items Concrete Approach Slab for Bridge and Concrete Approach Sleeper Slab for Bridge.
- The type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the bid items Concrete Approach Slab for Bridge and Concrete Approach Sleeper Slab for Bridge and shall conform to the requirements of Section 460 of the Construction Specification.

REMOVAL OF LOOSE AND DELAMINATED CONCRETE

- This work consists of preparation of the existing bridge deck for Two Coat Epoxy Bridge Deck Chip Seal by removing and replacing the loose and delaminated concrete.
- Concrete used to repair the deck surface shall be in accordance with the Concrete Patching Material notes in this set of plans.
- Concrete Removal on the bridge deck shall be divided into one of the following two classes:
 - Concrete Removal, Class A: Concrete Removal, Class A shall consist of the removal of delaminated and visibly loose concrete and any bituminous patches (when present) from the top of existing bridge deck down to a depth no deeper than the top of the top mat of bridge deck reinforcing steel.
 - Concrete Removal, Class B: Concrete Removal, Class B areas shall be determined after completion of the Concrete Removal, Class A has been accomplished. Concrete Removal, Class B shall consist of the removal of delaminated and visibly loose concrete that exists below the bottom limits of the Concrete Removal, Class A (*below the top of the top mat of reinforcing steel*).
- Concrete Removal shall be by jackhammers and chipping hammers or other methods as approved by the Engineer. Jackhammers and chipping hammers shall be used as follows:
 - Jackhammers heavier than 30 pounds will not be permitted.
 - Chipping hammers heavier than 15 pounds will not be permitted for removing concrete below the top of the top mat of reinforcing steel.
 - Jackhammers and chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the concrete.
 - Extreme care shall be taken when using jackhammers and chipping hammers to assure that existing reinforcing steel is not damaged or debonded from the sound concrete.
- Removal shall begin near the center of the loose or delaminated concrete and shall progress outwardly until the loose or delaminated concrete is removed and sound concrete is encountered such that the amount of concrete removal is minimized.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 830' – 6" CONT. COMP. GIRDER BRIDGE

Str. No. 07-267-329

JANUARY 2012

2 OF 15

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E18	E30

REMOVAL OF LOOSE AND DELAMINATED CONCRETE (CONT.)

- The edges of the resulting areas of removed concrete shall be nearly vertical or slightly tapered inward from the top down to a minimum depth of one inch. If this condition is not able to be achieved with jackhammers or chipping hammers, saw cutting the edges of the removal area may be required to attain satisfactory results.
- Care shall be taken during concrete removal to not nick, gouge, or in any other way damage the in-place reinforcing steel. Any inadvertent damage to the in-place reinforcing steel shall be brought to the attention of the Bridge Construction Engineer and shall be repaired by the Contractor as directed by the Engineer at no additional cost to the Department.
- Concrete Removal, Class A will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square yard. Concrete Removal, Class A will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to remove the specified concrete, concrete sawing, and disposing of removed material.
- Concrete Removal, Class B will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square yard. Concrete Removal, Class B will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to remove the specified concrete, concrete sawing, and disposing of removed material.

CONCRETE PATCHING MATERIAL

- Concrete patching material will be used to fill in the removal areas of the loose and delaminated concrete.
- Concrete patching material shall be packaged, dry, rapid-hardening cementitious mortar or concrete materials conforming to the requirements of ASTM C 928, Type R-3 and shall contain no chlorides or magnesium phosphates.
- Water used for the concrete patching material shall be in conformance with Section 790 of the Construction Specifications.
- Upon completion of the concrete removal and immediately prior to placing any concrete patching material into the concrete removal areas, the removal areas shall be thoroughly cleaned of loose and foreign material by abrasive blasting. The abrasive blasting shall be to the extent that all surface laitance is removed. Abrasive blast cleaning shall expose the coarse aggregate and remove rust from any exposed reinforcing steel. After abrasive blasting, the surface shall be cleaned by the use of compressed air to the satisfaction of the Engineer.
- The existing surface at the time of placement of the concrete patching material shall be at least 40° F, measured by a thermometer placed against the concrete surface and covered with an insulating blanket. The concrete patching material shall be mixed and placed in accordance with the manufacturer's technical data sheet. The Contractor shall provide a manufacturer's technical data sheet to the Engineer prior to performing the work. The concrete patching material shall be maintained at or above 45° F for at least 72 hours after placement.

CONCRETE PATCHING MATERIAL (CONTINUED)

- Immediately after finishing the concrete patching material, the surface of the concrete patching material shall be covered with a double layer of wet burlap. Within one hour of covering with wet burlap, polyethylene sheeting shall be placed on the wet burlap. The surface shall be wet cured for a minimum of 48 hours or in accordance with the manufacturer's recommendations, whichever is more stringent. Following the wet cure, the burlap and polyethylene sheeting shall be removed and the surface allowed to air dry for a minimum of 48 hours after removal of the burlap and polyethylene sheeting before application of the epoxy chip seal is permitted.
- Concrete Patching Material will be measured to nearest 0.1 cubic feet as determined from the theoretical yield per bag of Concrete Patching Material. Concrete Patching Material will be paid for at the contract unit price per cubic foot. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to abrasive blast clean the removal areas, and furnish, place and cure the concrete patching material within the removal areas.

EPOXY CHIP SEAL

The Epoxy Chip Seal shall be applied in accordance with the Special Provision for "Two Coat Epoxy Bridge Deck Chip Seal".

INSTALLING DOWELS IN CONCRETE

- Holes drilled in the existing concrete shall be true and normal or as shown in the plans. Drilling holes using a core drill shall not be allowed. Care shall be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the in-place reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes shall be completely filled with the epoxy resin specified in note number 2 under "Installing Dowels in Concrete" as approved by the Engineer.
- The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3). Grade 3 epoxy shall be used for all horizontal dowels.
- The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

INSTALLING DOWELS IN CONCRETE (CONTINUED)

- Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
- No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- Dowel bars shall be deformed bars conforming to ASTM A615 Grade 60.
- The cost of epoxy resin, dowels, installation and other incidental items shall be incidental to the contract unit price per each for "Install Dowel in Concrete".

APPROACH SLAB UNDERDRAIN SYSTEM

The Approach Slab Underdrain system shall be constructed in accordance with the Special Provision for Approach Slab Underdrain System and the following notes.

- The existing approach pavement within the removal limits of the new approach slab underdrain system is estimated between two feet and three feet thick. If actual asphalt depths differ, the Bridge Construction Engineer shall determine recommended repairs.
- The depression in the existing ground surface below the approach pavement shall be leveled using a soil leveling course.
- The soil used as a leveling course shall be furnished by the contractor. The soil shall have a maximum Liquid Limit (LL) of 45 and a Plastic Index (PI) greater than 10 but less than 25. The contractor shall be responsible for one LL and PI test for each borrow source and each soil type within each borrow source.

**NOTES (CONTINUED)
FOR
830' - 6" CONT. COMP. GIRDER BRIDGE**

Str. No. 07-267-329

JANUARY 2012

3 OF 15

DESIGNED BY: EJA	DRAWN BY: EJA	CHECKED BY: NP	<i>Kevin N. Borden</i> BRIDGE ENGINEER
BRWN023C	023CNOTE		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E19	E30

APPROACH SLABS

1. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine shall be kept parallel to the screed.
2. The concrete in the approach slab shall be tined perpendicular to the centerline of roadway.
3. The Concrete Approach Slabs Adjacent to Bridge shall be cured in accordance with Section 460.3.N. of the Construction Specifications.
4. The new approach slabs and sleeper slabs shall have a surface finish as stipulated in Section 460.3.M.4 of the Construction Specifications.

APPROACH SLABS (CONTINUED)

5. The top of approach slab elevations shall be established during construction and shall be subject to the approval of the Engineer. Care shall be taken to provide a smooth transition from the bridge deck elevations to the new pavement elevations established in the field so as to prevent any dips or bumps in the areas of the bridge ends or ends of the new approach slabs.
6. Sleeper slab riser shall be cast with the Approach Slab. Care shall be taken to ensure the correct grade is maintained across the joint.
7. Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, concrete anchors, and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment and any incidentals necessary to complete this item of work.
8. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, placing and/or shaping of the underlying gravel material, furnishing, hauling and placing all materials, including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

MEMBRANE SEALANT EXPANSION JOINT

1. Install all membrane sealant expansion joints at the plan shown locations in conformance to the following notes.
2. The Membrane Sealant is a foam sealant consisting of an open-cell high density polyurethane foam impregnated with either a polymer modified bitumen or a neoprene rubber suspended in chlorinated hydrocarbons. The Membrane Sealant shall be supplied by one the following companies:

Wabo HSeal
 Watson Bowman Acme Corp.
 95 Pineview Drive, Amherst NY 14228
 Phone: 716-691-7566
 Fax: 716-691-9239
 Web site: <http://www.wbacorp.com>

MEMBRANE SEALANT EXPANSION JOINT (CONTINUED)

Sealtite 50N
 Schul International Company, LLC
 One Industrial Drive
 Pelham, NH 03076
 Phone: 800-848-1120
 Fax: 800-998-9105
 Web site: <http://www.sealtiteusa.com>

Polytite N
 Sunshine Industrial
 5051 Merriam Drive
 Merriam, KS 66203
 Phone: 913-362-6300

3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. Miter the ends of each piece for ease of joining to the adjacent pieces. The membrane sealant shall have a minimum depth of 4 inches. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be a waterproof epoxy adhesive that adheres to concrete surfaces and is approved by the membrane sealant supplier.
6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
7. The Styrofoam filler material shall be closed cell and water-tight as approved by the Engineer.
8. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
9. A technical representative of the membrane sealant supplier shall be present at the jobsite during installation.
10. The joint opening shall be formed during the concrete placement by Styrofoam block out material. The Styrofoam block out material shall remain in-place until the adjacent concrete has cured for a minimum of 7 days. After curing the 7 days the Styrofoam shall be removed to the plan specified depth to allow for placement of the membrane sealant material.

MEMBRANE SEALANT EXPANSION JOINT (CONTINUED)

11. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.
12. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
13. Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant supplier shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
14. Traffic shall not be allowed on the joint for a minimum 3 hours unless otherwise directed by the Engineer.
15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

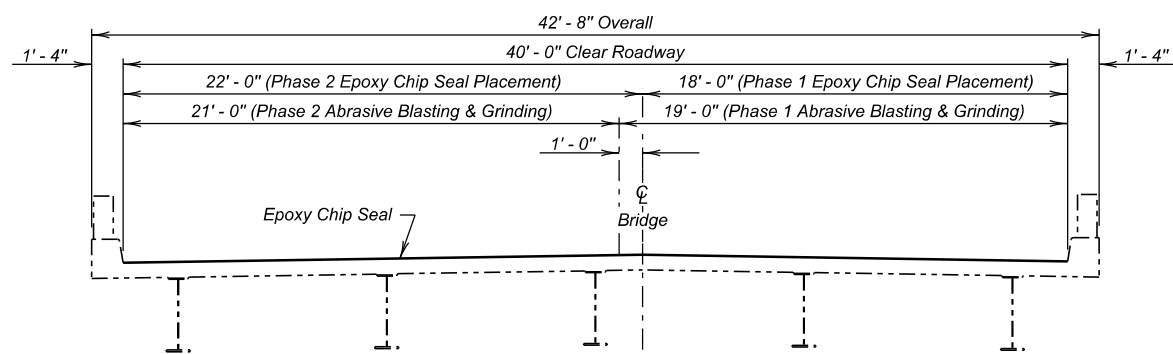
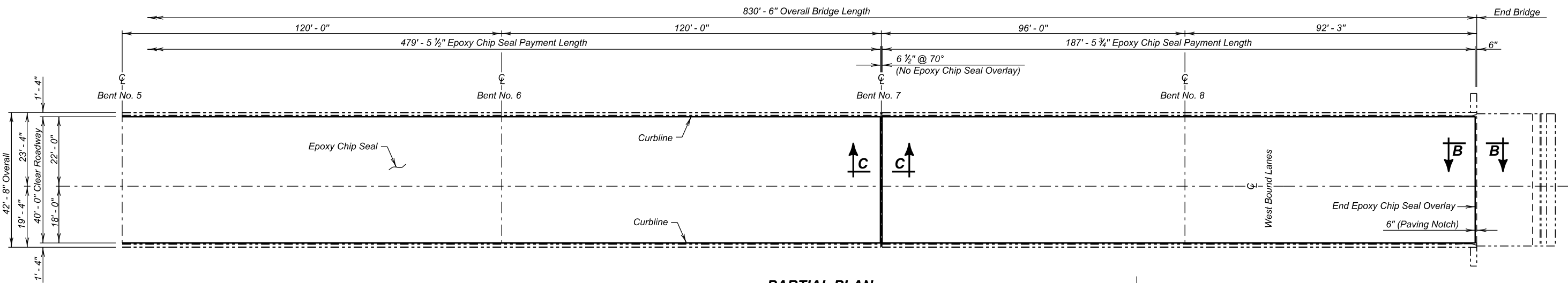
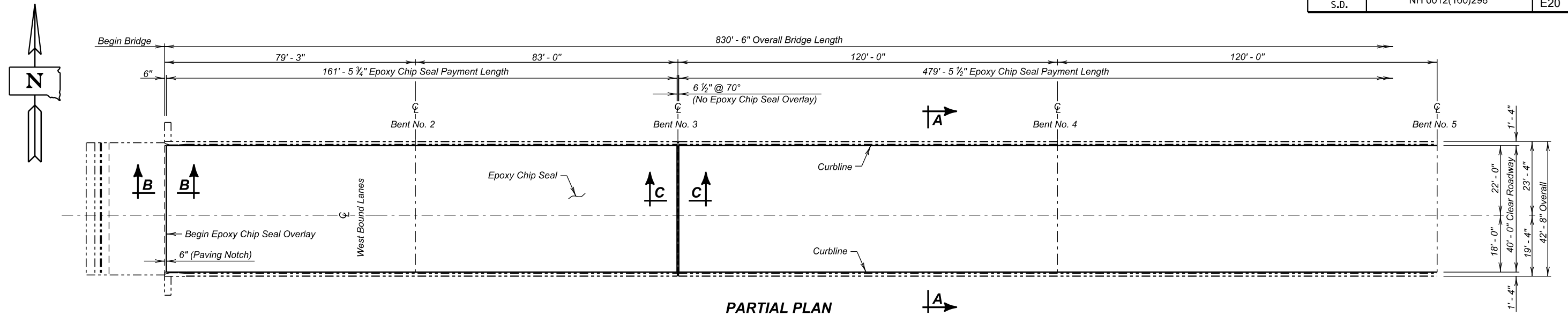
**NOTES (CONTINUED)
 FOR
 830' – 6" CONT. COMP. GIRDER BRIDGE**

Str. No. 07-267-329

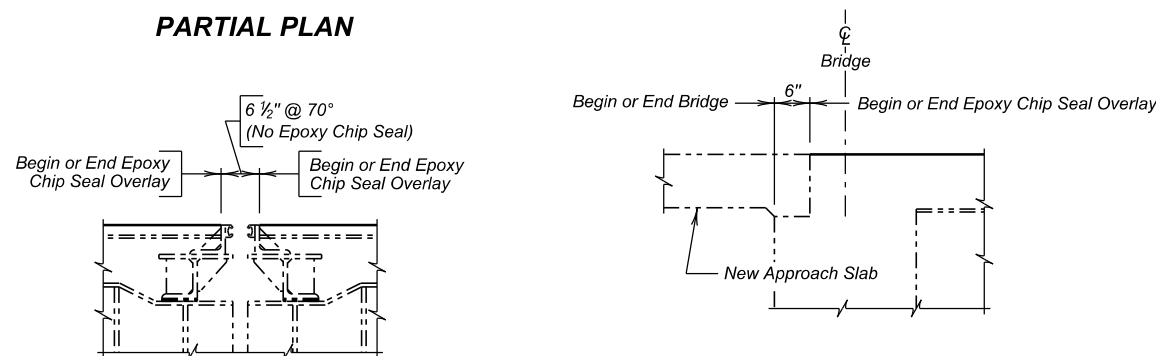
JANUARY 2012

4 OF 15

DESIGNED BY: EJA BRWN023C	DRAWN BY: EJA 023CNOTE	CHECKED BY: NP	<i>Kevin N. Borden</i> BRIDGE ENGINEER
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SECTION A - A



SECTION C - C

SECTION B - B

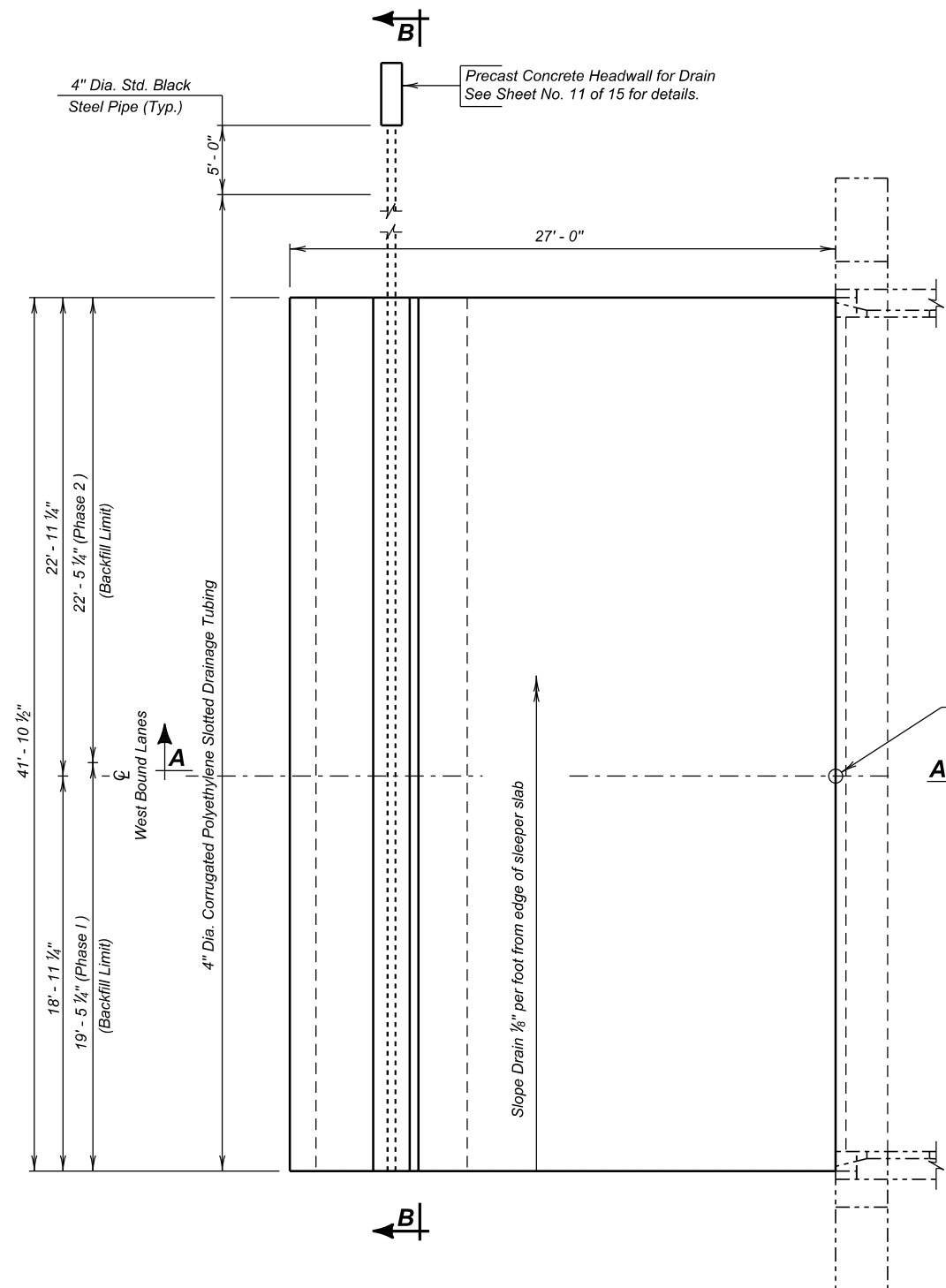
(WESTBOUND LANES)
EPOXY CHIP SEAL DETAILS

FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
STR. NO. 07-267-329 NH 0012(160)298

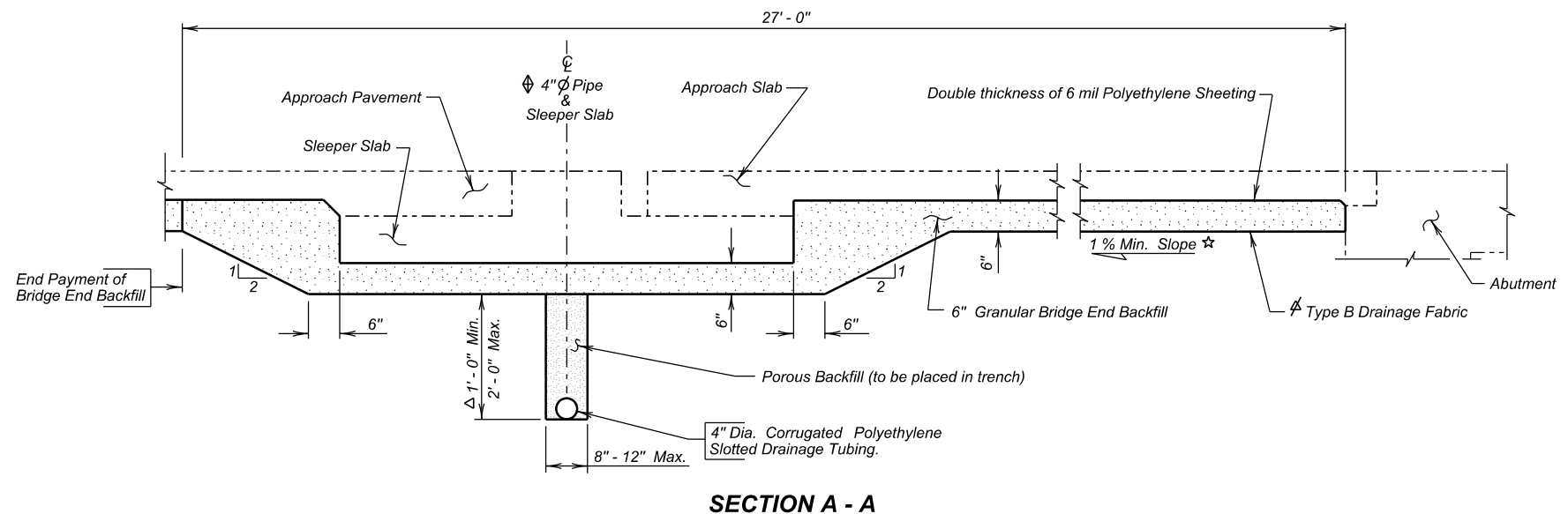
BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2012

NOTE:
* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

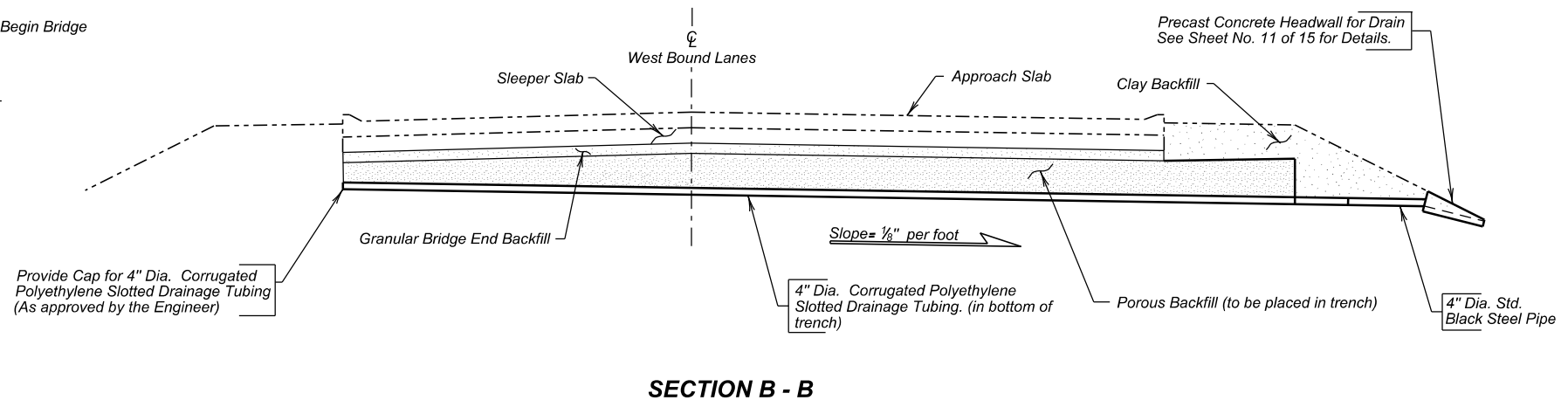
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Two Coat Epoxy Bridge Deck Chip Seal	Sq. Yd.	1656.9	2025.0
Abrasive Blasting of Bridge Deck	Sq. Yd.	1748.9	1933.0
Bridge Deck Grinding	Sq. Yd.	1748.9	1933.0
Concrete Patching Material	Cu. Ft.	59.0	72.1
Concrete Removal, Class A	Sq. Yd.	8.3	10.1
Concrete Removal, Class B	Sq. Yd.	8.3	10.1



PLAN
(Abutment No. 1 shown, Abutment No. 9 similar opposite hand)



SECTION A - A



SECTION B - B

ESTIMATED QUANTITIES			
(For Both Drain Systems)			
ITEM	UNIT	PHASE 1 QUANTITY	PHASE 2 QUANTITY
⊕ Granular Bridge End Backfill	CuYd	22.9	26.4
⊕ Approach Slab Underdrain Excavation	CuYd	26.4	29.1
* 4" Underdrain Pipe	Ft	39	65
⊕ Precast Concrete Headwall for Drain	Each	2	2
* Porous Backfill	Ton	5.4	6.3

- * For informational purposes only, 10 feet of 4" Dia. Std. Black Steel Pipe is needed for Phase 2, which is contained in the above bid items.
- * For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert Cu. Yds. to Tons.
- ⊕ Includes 325 Sq. Yd. of 6 mil. Polyethylene Sheeting (not including laps) and 255 Sq. Yd. of Type B Drainage Fabric.

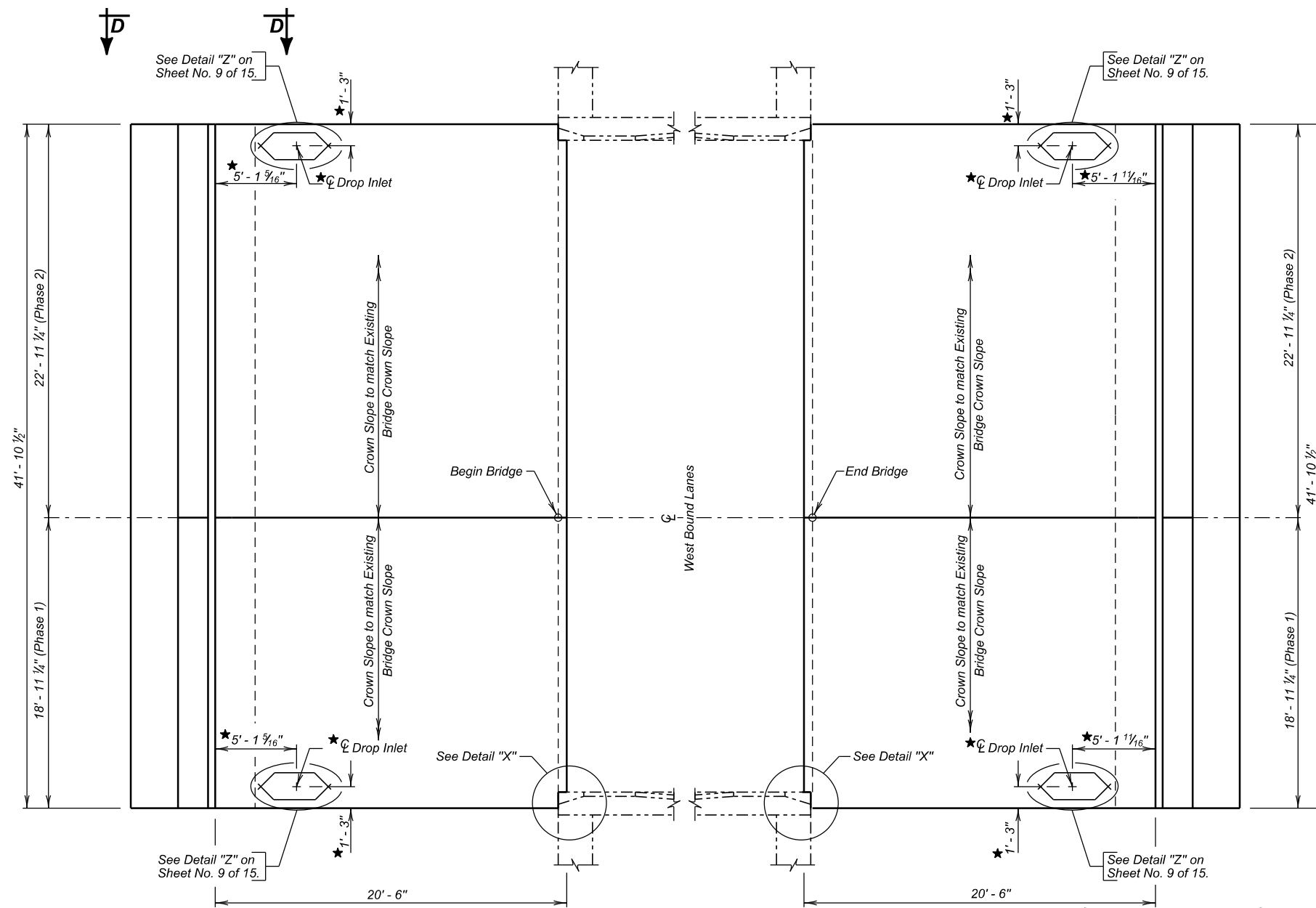
GENERAL NOTES:

- Δ The depth of the trench shall be 2' - 0" unless the roadway ditch topography will not allow it. The trench depth shall never be less than 1' - 0".
- ⚡ Type B Drainage fabric shall be placed between the Granular Bridge End Backfill and any inplace material predominately larger than 3/8" diameter. See the Approach Slab Underdrain System notes.
- ⚡ The centerline of the trench may be adjusted by one foot toward or away from the bridge, as approved by the Engineer, to miss the location of the guardrail posts.
- ☆ For locations where the approach slab is on a zero grade to one percent grade provide this minimum slope. For all other grades finish this surface to match the finished grade of the approach slab.

(WESTBOUND LANES)
DETAILS OF APPROACH SLAB UNDERDRAIN SYSTEM
FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
STR. NO. 07-267-329 NH 0012(160)298

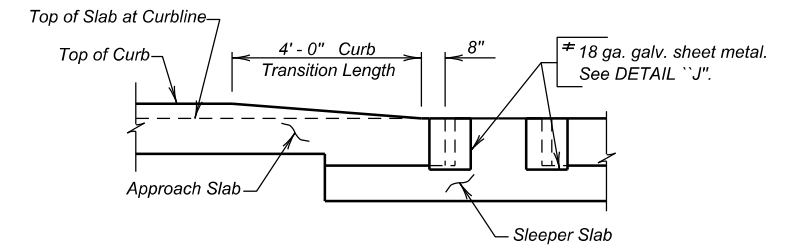
BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2012

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E22	E30

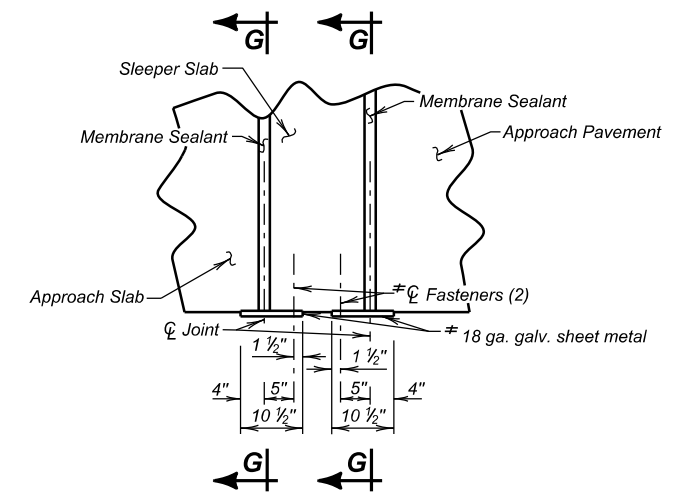


PLAN

★The Drop Inlet should be field verified at each location

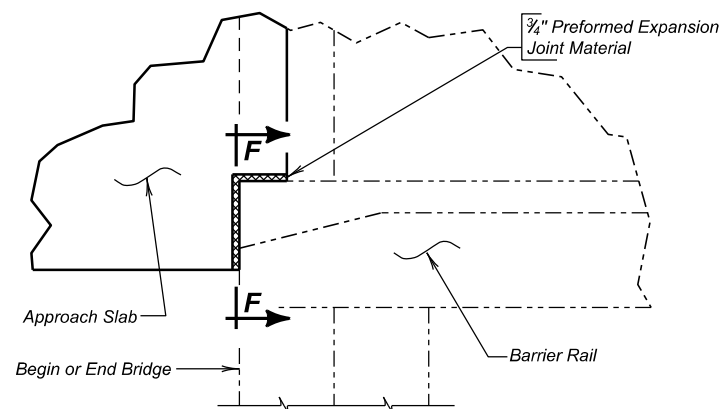


VIEW D - D

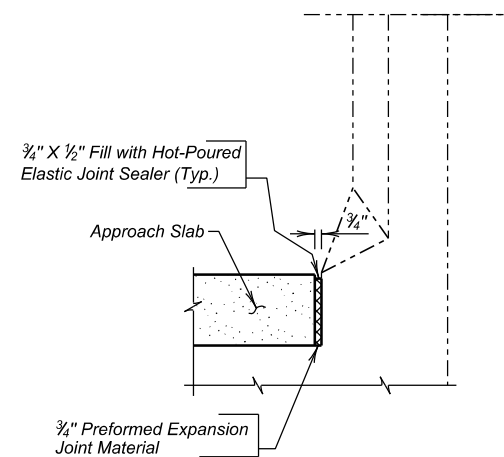


PLAN - DETAIL "J"

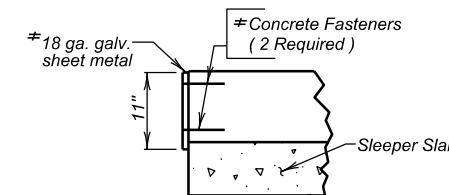
⚠ Attach 18 ga. galv. Sheet Metal to both ends of Sleeper Slab only after slab has been poured. Use fasteners that will not spall concrete, as approved by the Engineer.



DETAIL "X"



SEC. F - F



SEC. G - G

(WESTBOUND LANES)
APPROACH SLAB LAYOUT

FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
STR. NO. 07-267-329 NH 0012(160)298

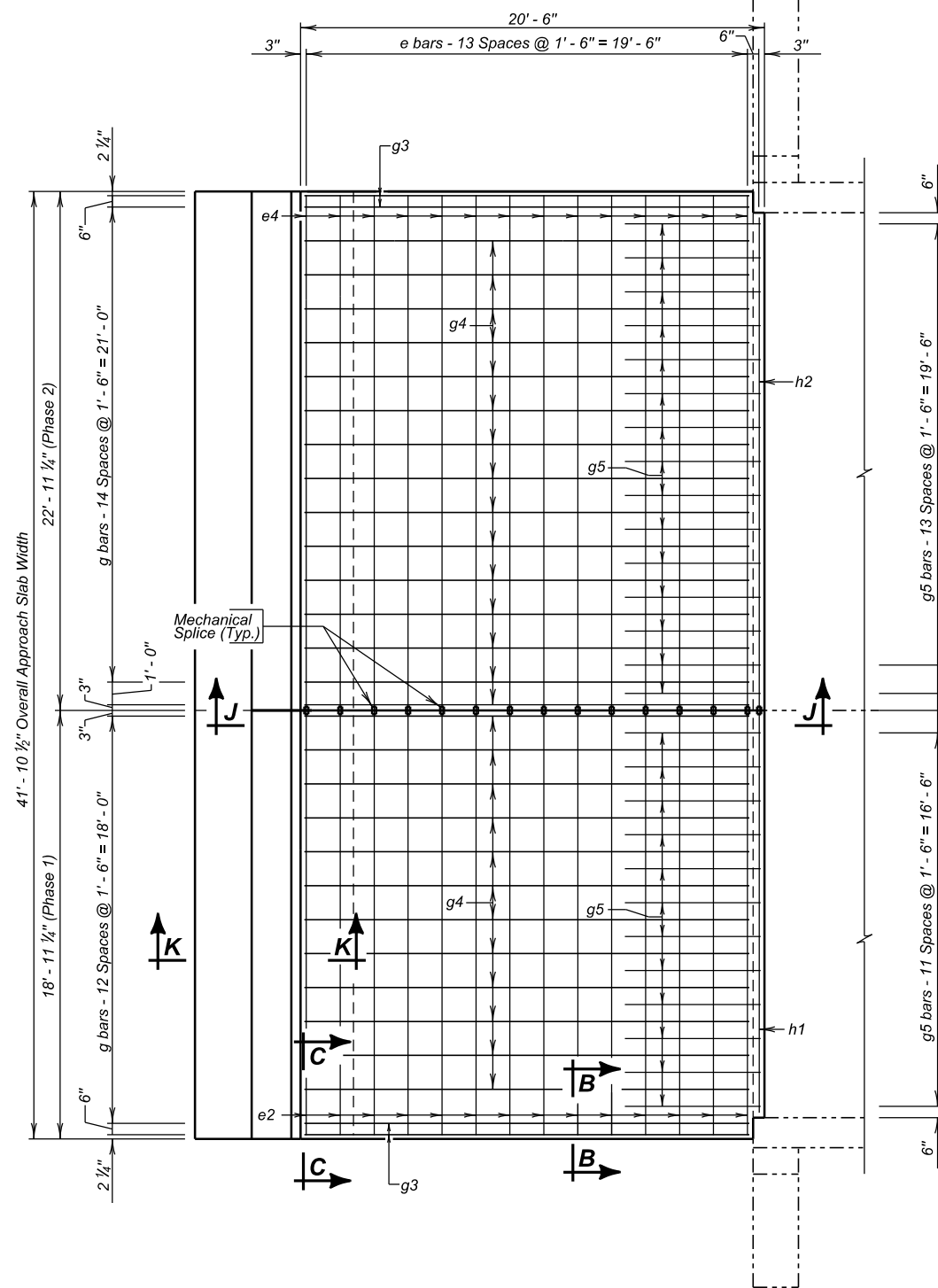
BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION

JANUARY 2012

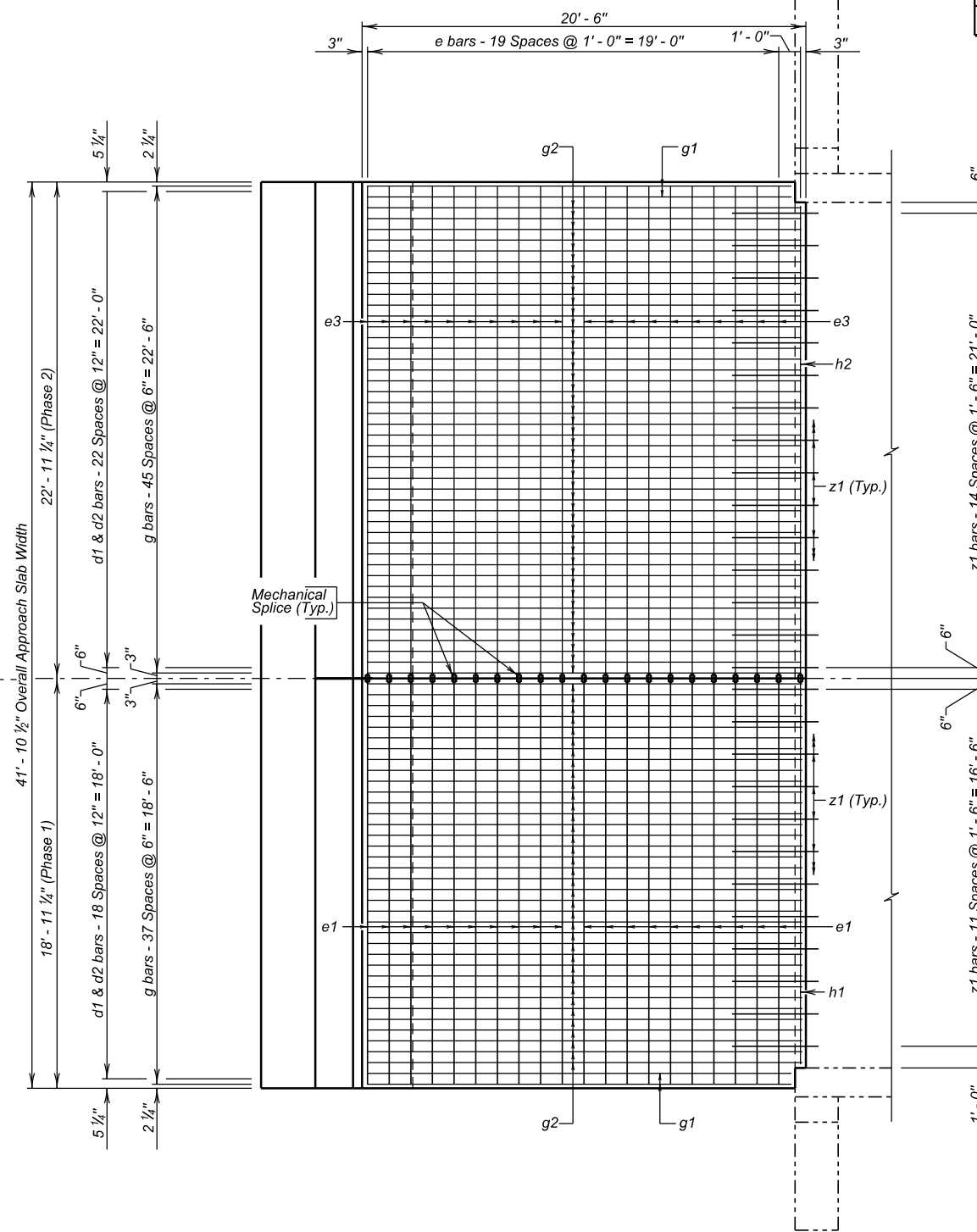
7 OF 15

DESIGNED BY EJA/NP BRWN023C	DRAWN BY JRK 023CSA07	CHECKED BY NP/EJA	Kevin N. Coeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E23	E30



Top Steel
 (Approach Slab shown adjacent to Abutment No. 1 -
 Approach Slab adjacent to Abutment No. 9 similar opposite hand)



Bottom Steel
 (Approach Slab shown adjacent to Abutment No. 1 -
 Approach Slab adjacent to Abutment No. 9 similar opposite hand)

**(WESTBOUND LANES)
 APPROACH SLAB DETAILS**

FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
 STR. NO. 07-267-329 NH 0012(160)298

BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2012

DESIGNED BY EJA/NP BRWN023C	DRAWN BY JRK 023CSA08	CHECKED BY NP/EJA	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(160)298	E24	E30

REINFORCING SCHEDULE
(For Two Approach and Sleeper Slabs)

Mk.	No.	Size	Length	Type	Bending Details
a3	4	4	7'-4"	19A	
c1	48	5	18'-9"	Str.	
d1	76	4	7'-9"	2	
d2	38	4	6'-3"	T2	
e1	40	6	18'-9"	Str.	
e2	28	4	18'-9"	Str.	
g1	4	8	19'-8"	Str.	
g2	72	8	20'-2"	Str.	
g3	4	4	19'-8"	Str.	
g4	24	4	20'-2"	Str.	
g5	24	4	6'-0"	Str.	
h1	4	6	17'-10"	Str.	
z1	24	6	4'-0"	Str.	
a3	4	4	7'-4"	19A	
c2	48	5	22'-9"	Str.	
d1	92	4	7'-9"	2	
d2	46	4	6'-3"	T2	
e3	40	6	22'-9"	Str.	
e4	28	4	22'-9"	Str.	
g1	4	8	19'-8"	Str.	
g2	88	8	20'-2"	Str.	
g3	4	4	19'-8"	Str.	
g4	30	4	20'-2"	Str.	
g5	30	4	6'-0"	Str.	
h2	4	6	21'-10"	Str.	
z1	30	6	4'-0"	Str.	

Note -
All Bars to be Epoxy Coated.
All Dimensions are out to out of bars.
Dowels
★ These bars shall be spliced with mechanical splice devices. Equivalent Splice Lengths
No. 4 - 2'-0"
No. 5 - 2'-6"
No. 6 - 3'-0"

ESTIMATED QUANTITIES
(For Two Approach and Sleeper Slabs)

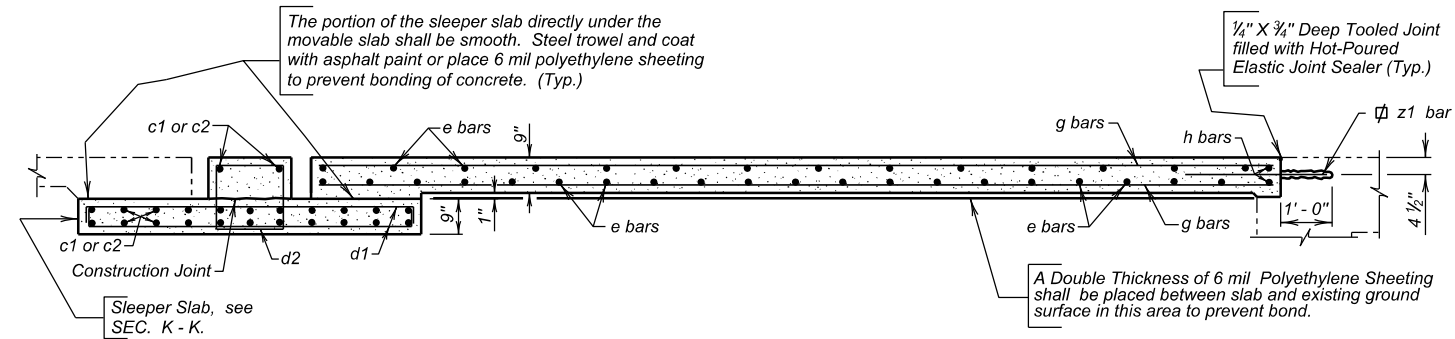
ITEM	UNIT	PHASE 1 QUANTITY	PHASE 2 QUANTITY
Install Dowel In Concrete	Each	24	30
Concrete Approach Slab for Bridge	Sq. Yd.	86.2	104.4
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	30.5	37.0
No. 4 Rebar Splice	Each	28	—
No. 5 Rebar Splice	Each	48	—
No. 6 Rebar Splice	Each	44	—

	PHASE 1	PHASE 2
1. Concrete in Approach Slabs.	21.9 Cu. Yd.	26.6 Cu. Yd.
★ 2. Epoxy Coated Re-Steel in Approach Slabs.	6163 Lb.	7468 Lb.
3. Concrete in Sleeper Slabs	9.7 Cu. Yd.	11.7 Cu. Yd.
4. Epoxy Coated Re - Steel in Sleeper Slabs.	1491 Lb.	1807 Lb.

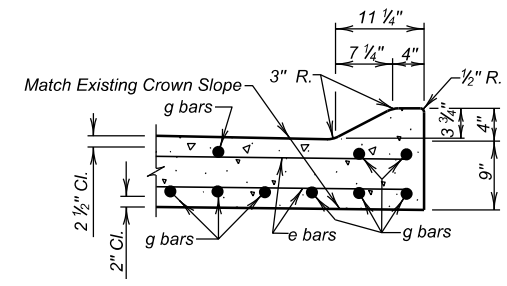
Items 1 thru 4 are approximate quantities contained in the above bid item and are for information only.
★ Does not include the following quantities for z1 bars as these are paid for in the Bid Item "Install Dowel in Concrete".

	PHASE 1	PHASE 2
	144 Lb.	180 Lb.

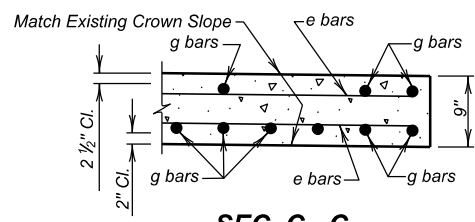
z1 bars are to be drilled in and grouted with epoxy. See notes on Sheet No. 3 of 15.



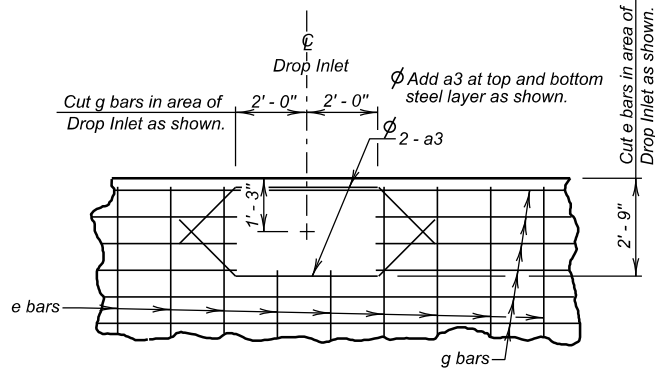
SEC. J - J



SEC. B - B

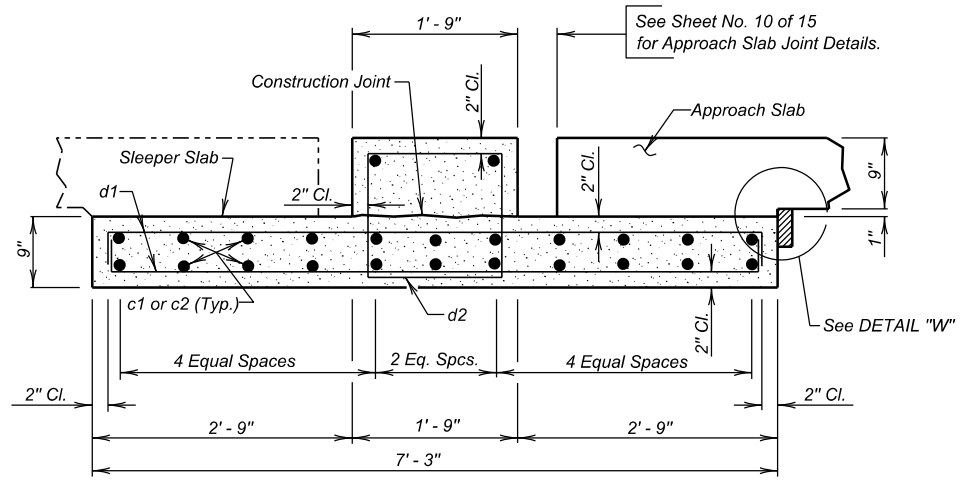


SEC. C - C

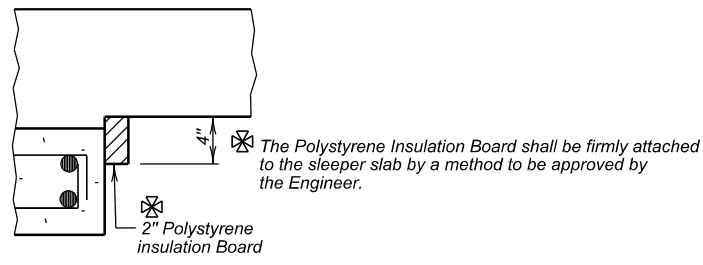


DETAIL 'Z'
(Bottom Steel Shown)

See Sheet No. 7 of 15 for location on Approach Slab.



SEC. K - K
(Sleeper Slab)



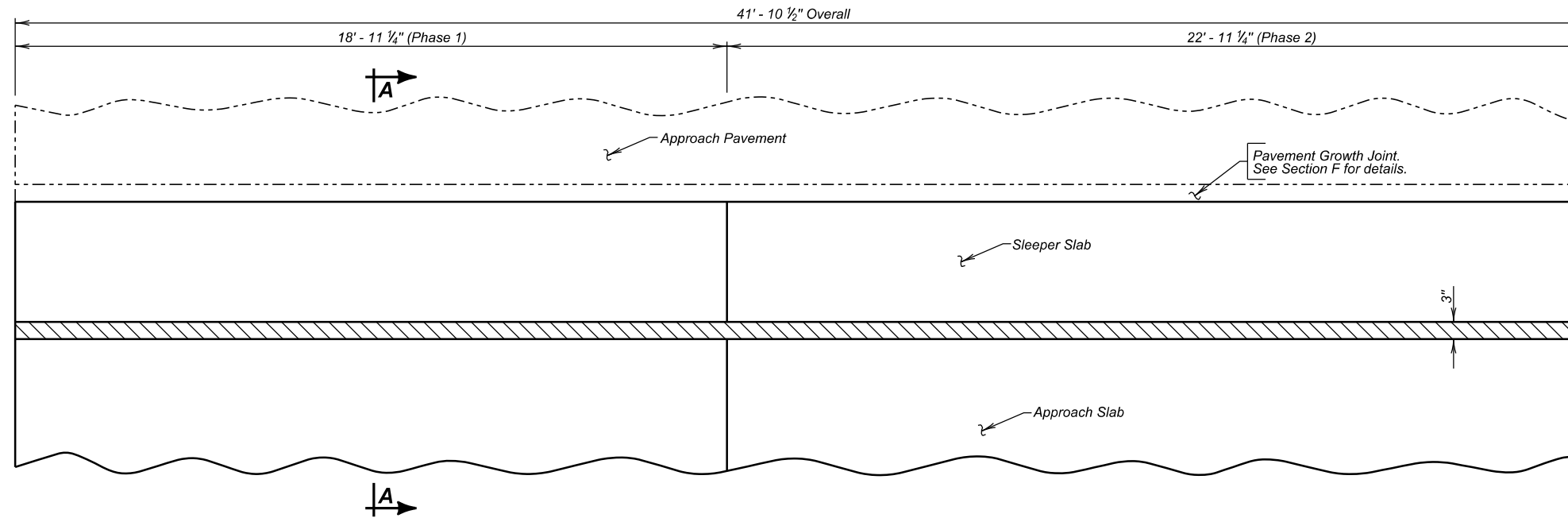
DETAIL 'W'

(WESTBOUND LANES) APPROACH SLAB DETAILS (CONTINUED)

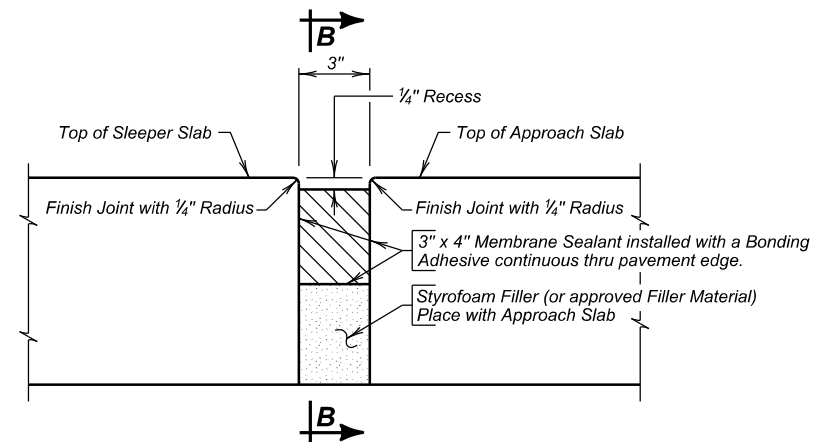
FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
STR. NO. 07-267-329 NH 0012(160)298

BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION

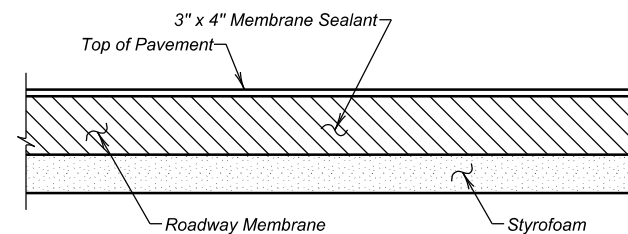
DESIGNED BY EJA/NP BRWN023C	DRAWN BY JRK 023CSA09	CHECKED BY NP/EJA	Kevin N. Coeden BRIDGE ENGINEER
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PLAN
(Abutment No. 1 shown, Abutment No. 9 similar opposite hand)



SECTION A - A



SECTION B - B

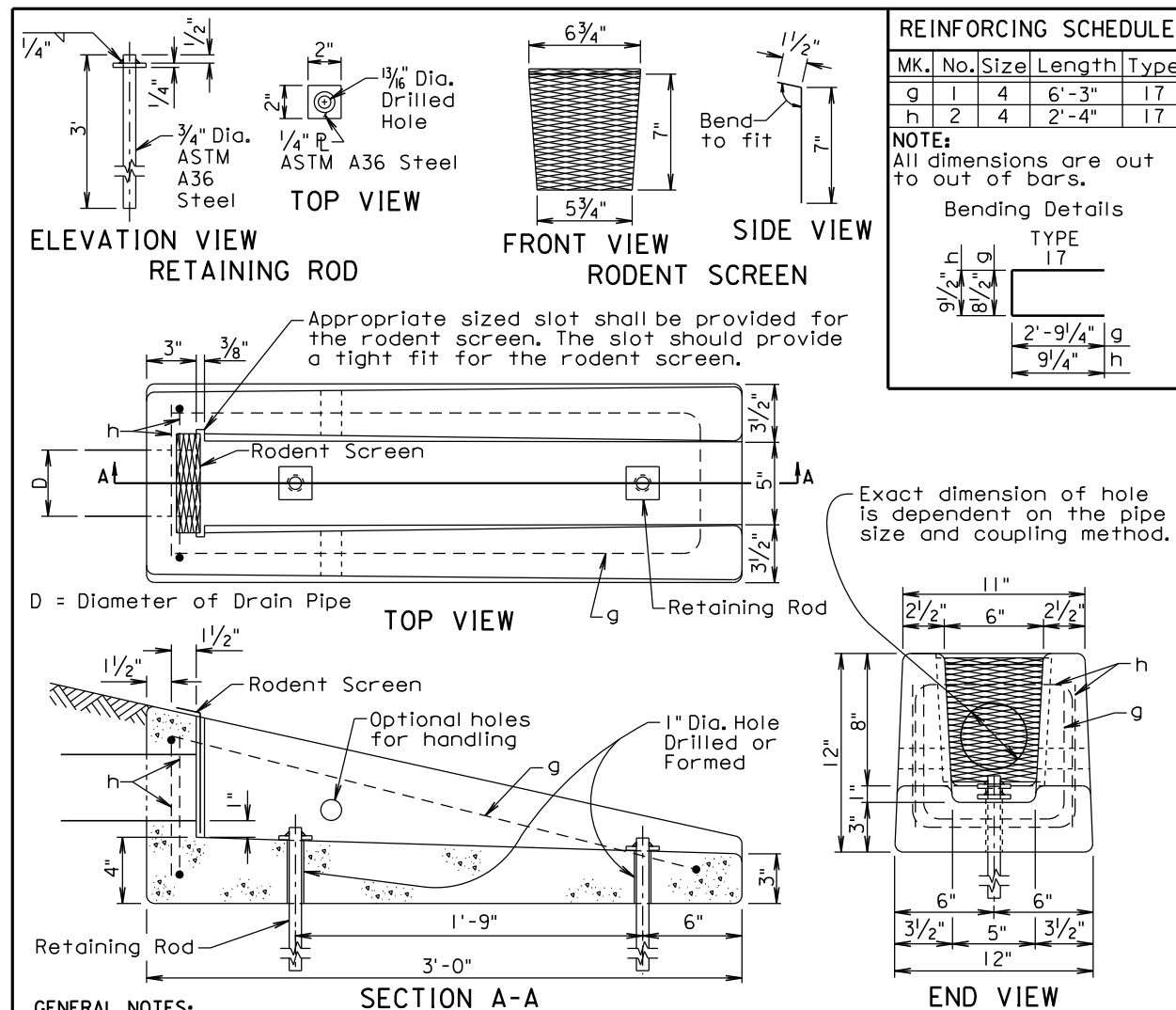
ESTIMATED QUANTITIES (For Two Approach Slabs)			
ITEM	UNIT	PHASE 1	PHASE 2
		QUANTITY	QUANTITY
Membrane Sealant Expansion Joint	Ft	37.9	45.9

**(WESTBOUND LANES)
APPROACH SLAB JOINT DETAILS
FOR**

830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER B.N.S.F. R.R. SEC. 16/21-T123N-R61W
STR. NO. 07-267-329 NH 0012(160)298

BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION

JANUARY 2012 (10) OF (15)



GENERAL NOTES:

The concrete shall be Class M6. The concrete shall conform to the requirements of section 462 of the Standard Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel shall conform to ASTM A615 Grade 60 and shall be epoxy coated. The reinforcing steel shall be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe shall be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

The retaining rod shall be galvanized in accordance with ASTM A123 after all shop welding has been completed.

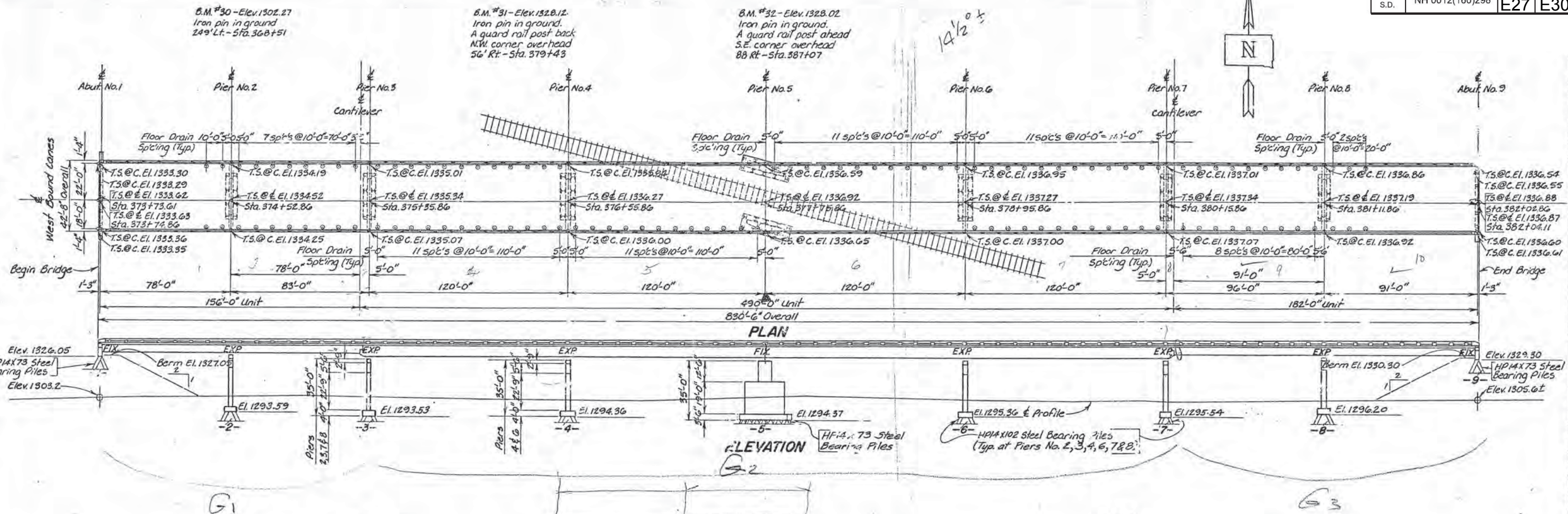
The drawing indicates using 1/2" fillets; however, 3/4" chamfers may be substituted for the 1/2" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen shall be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

December 23, 2010

S D D O T	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 680.03
		Sheet 1 of 1

Published Date: 4th Qtr. 2011



NOTE-
All stations shown on Plan along Δ of West Bound Lanes are 6'-0" left of main line.

**-X-71-
INDEX OF BRIDGE SHEETS -**

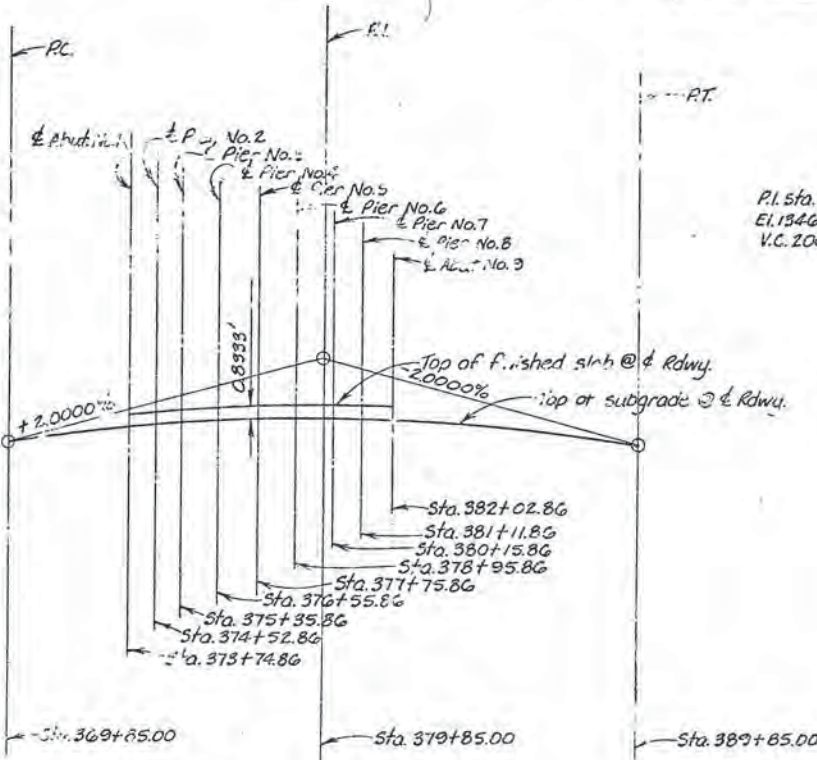
- Sheet No.1-General Drawing
- Sheet No.2-Horizontal and Vertical Clearances
- Sheet No.3-Details of Structure Quantities and Notes
- Sheet No.4-Subsurface Investigations
- Sheet No.5-Subsurface Investigations
- Sheet No.6-Details of Piers No. 2, 3, 4 & 5
- Sheet No.7-Details of Piers No. 6, 7 & 8
- Sheet No.8-Details of Piers No. 2, 3, 4 & 5
- Sheet No.9-Details of Piers No. 6, 7 & 8
- Sheet No.10-Slab Details (156'-0" Unit)
- Sheet No.11-Slab Details (490'-0" Unit)
- Sheet No.12-Slab Details (182'-0" Unit)
- Sheet No.13-Diaphragm Details (156'-0" & 182'-0")
- Sheet No.14-Diaphragm Details (490'-0")
- Sheet No.15-Girder Layout (156'-0")
- Sheet No.16-Girder Layout (490'-0")
- Sheet No.17-Girder Layout (182'-0")
- Sheet No.18-Transverse Girder Assembly at Pier No.5
- Sheet No.19-Transverse Girder Assembly at Pier No.5
- Sheet No.20-Camber Cutting Diagram
- Sheet No.21-Bolted Field Splice (156'-0" & 182'-0" Unit)
- Sheet No.22-Bolted Field Splice (490'-0" Unit)
- Sheet No.23-Bolted Field Splice and Fixed Shoe Details
- Sheet No.24-Cantilever Details
- Sheet No.25-Expansion Device
- Sheet No.26-Expansion Bearing Details
- Sheet No.27-Expansion Bearing Details
- Sheet No.28-Framing Diagram and Erection Data (156'-0" Unit)
- Sheet No.29-Framing Diagram and Erection Data (490'-0" Unit)
- Sheet No.30-Framing Diagram and Erection Data (182'-0" Unit)
- Sheet No.31-Slab Plan and Sequence Details
- Sheet No.32-Terrace RT-4 Steel Railing, Curb & Drain Details
- Sheet No.33-Terrace RT-4 Steel Railing Expansion Details
- Sheet No.34-End Clock Details
- Sheet No.35-Bridge End Backfill
- Sheet No.36-Standard Plates No. 302 & 305

ORIGINAL CONSTRUCTION PLANS

Sta.	F. Test	Dr. Test	Flow	Sp. Test	Flow	Sp. Test	Flow	Sp. Test	Flow	Sp. Test
62	133.7									
63	133.2									
64	135.7									
65	135.3									
66	132.3									
67	137.3									
68	137.3									
69	137.3									
70	137.3									
Total	1091	407.71	620.0	322.8	322.4	95.8	51.2	12.4	15.0	15.0

**GENERAL DRAWING
FOR
830'-6" CONT. COMP. GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER C.M.S.P. & P. R.R. SEC. 16/21-T123N-R61W
STA. 373+73.61 TO 382+04.11 RFO44-5(11)
STR. NO. 07-268-329**

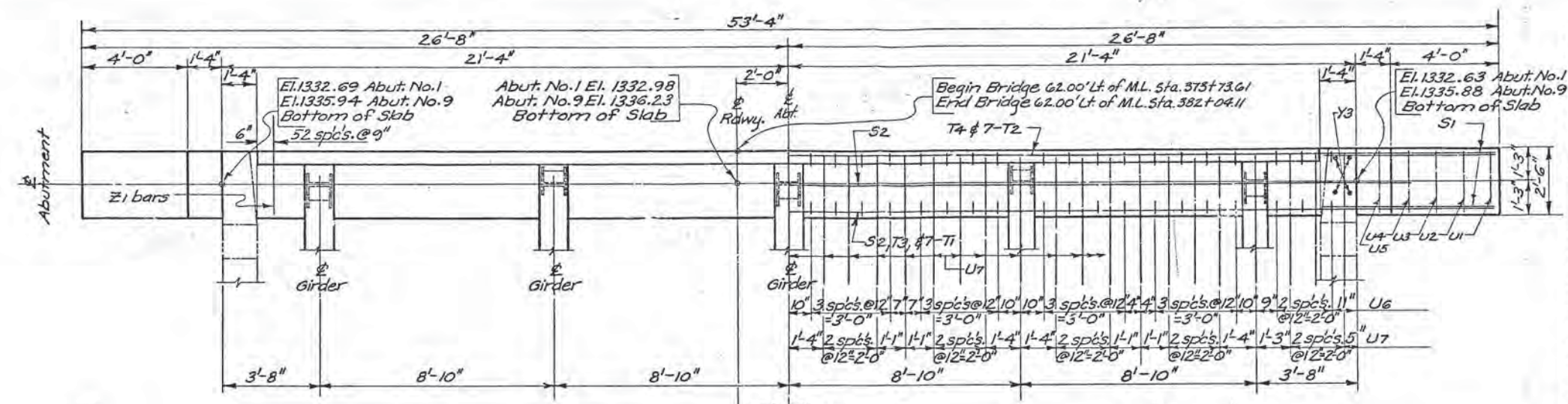
**BROWN COUNTY
SOUTH DAKOTA HD 20-44
DEPARTMENT OF HIGHWAYS
JAN. 1973 12 OF 15**



VERTICAL CURVE DATA

PLANS BY:
BRIDGE SEC., S. DAK. DEPT. HWYS.

-X171-
DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED: *H.C. Wilson*
BRIDGE ENGINEER



PLAN
(Abut. No. 1 shown Abut. No. 9 opposite hand)

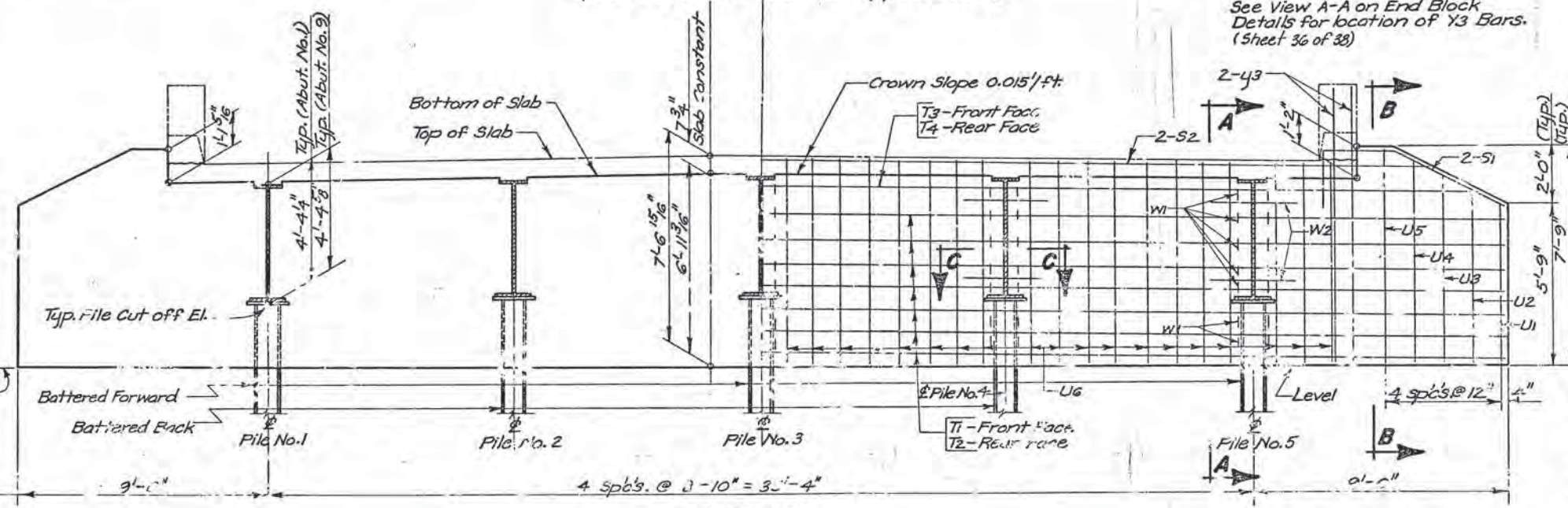
NOTE:
See View A-A on End Block
Details for location of Y3 Bars.
(Sheet 36 of 38)

REINFORCING SCHEDULE (For One Abutment)					
Mk. No.	Size	Length	Type	Bending Details	
S1	4	8'-3"	16A		
S2	2	47'-8"	Str.		
T1	7	53'-0"	Str.		
T2	7	53'-0"	Str.		
T3	1	6	51'-0"	Str.	
T4	1	6	51'-0"	Str.	
U1	2	6	16'-7"	T1	
U2	2	6	17'-7"	T1	
U3	2	6	18'-7"	T1	
U4	2	6	19'-7"	T1	
U5	2	6	20'-3"	T1	
U6	38	6	16'-1"	S3	
U7	39	6	12'-3"	14A	
W1	70	6	3'-3"	S10	
W2	8	8	5'-6"	13A	
Y3	8	11	9'-5"	Str.	

NOTE: All dimensions are out to out of bars.

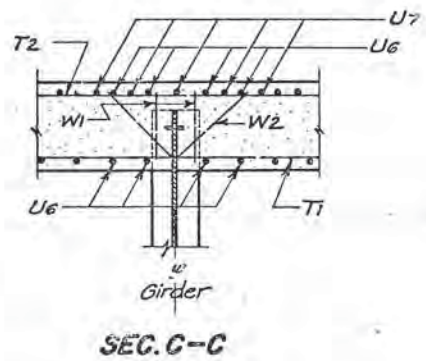
ESTIMATED QUANTITIES (For One Abutment)		
ITEM	UNIT	QUANTITY
Class "A" Concrete, Bridge	Cu. Yd.	38.6
Reinforcement Concrete, No. 3 spools	Lb.	5278
Structure Excavation, Bridge	Cu. Yd.	12
Steel Bedding Piles (HP 14 x 73)	No.	5
Structural Steel	Lb.	142

PILE CONNECTION NOTE
Cut off vertical piles at the elevation shown in the table and use bearing plate to pile. As is as necessary to make bearing plate level, and to permit proper positioning of the girder, if the vertical piles are driven out of position to the extent that bearing plates will not fit the contractor should submit his method of correction to the ENGINEER for approval. Piles shall NOT be pulled into position.
All girder erection shall be complete, with splices fully bolted and diaphragms in place, before welding girders to bearing plates. Diaphragms in place have erection bolts in place but need not be welded to stiffeners.
This connection shall NOT be made when the temperature is greater than 70°F or less than 20°F without permission from the ENGINEER.

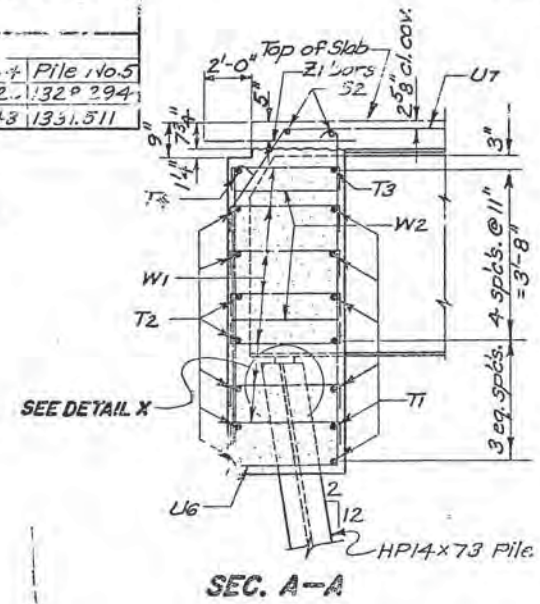


ELEVATION
(Abut. No. 1 shown, Abut. No. 9 opposite hand)

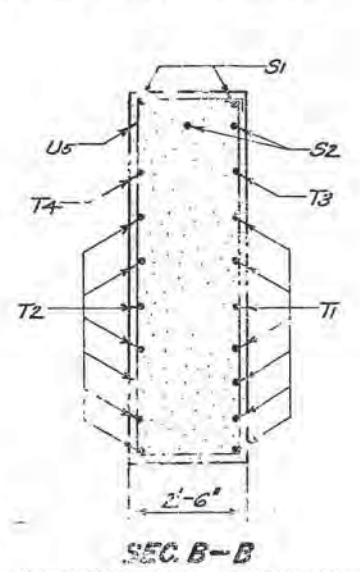
TABLE OF ELEV. & DIMENSIONS					
Abutment	Pile Cut-offs				
	Pile No. 1	Pile No. 2	Pile No. 3	Pile No. 4	Pile No. 5
No. 1	1328.357	1325.463	1328.559	1378.421	1329.294
No. 9	1331.570	1331.703	1331.776	1331.643	1331.511



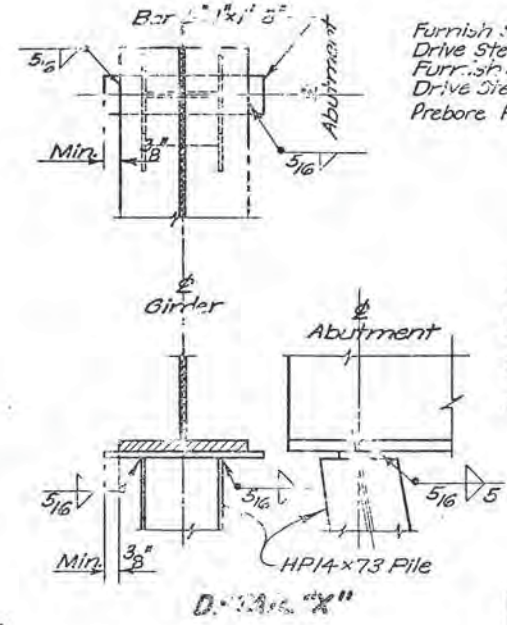
SEC. C-C



SEC. A-A



SEC. B-B

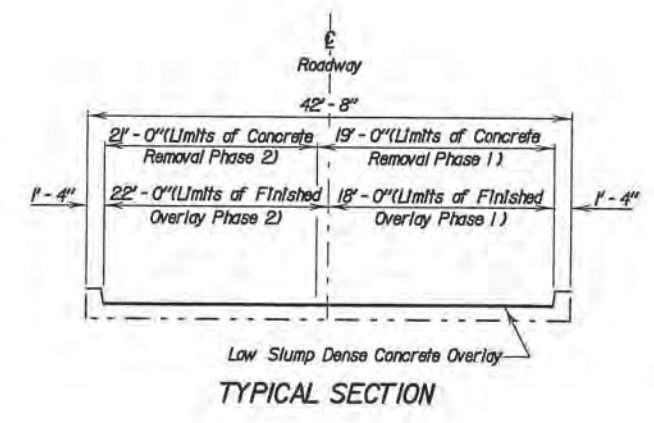
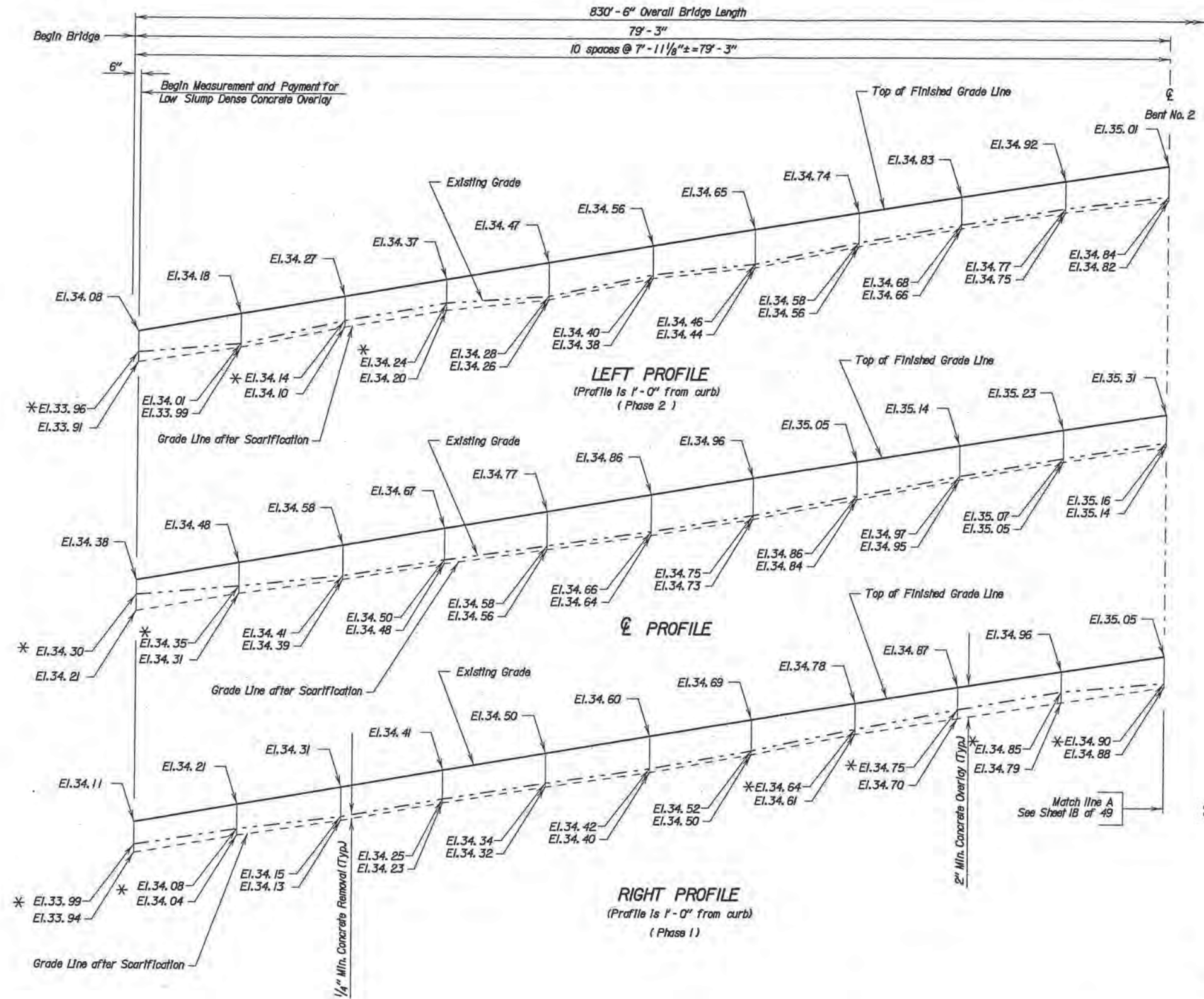


DETAIL 'X'

	ABUT. NO. 1	ABUT. NO. 9
Furnish Steel Test Pile	Lin. Ft. = 1@116' = 116'	1@110' = 110'
Drive Steel Test Pile	Lin. Ft. = 1@116' = 116'	1@110' = 110'
Furnish Steel Piles	Lin. Ft. = 4@117' = 468'	4@105' = 420'
Drive Steel Piles	Lin. Ft. = 4@117' = 468'	4@105' = 420'
Prebore Piling	Lin. Ft. = 115'	119'

ABUTMENT DETAILS FOR
830'-6" CONT. COMP. GIRDER BRIDGE
40'-0" ROADWAY OVER RAILROAD
0° SKEW
SEC. 16-21-T-23N-R6:W
STA. 373+73.61 TO 382+04.11 RF 044-5(11)
STR. NO. 07-268-329
BROWN COUNTY
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
DEC 1972

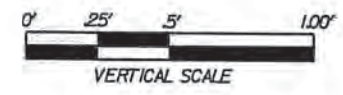
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	W.C.P.		H.C. Wilson BRIDGE ENGINEER



ORIGINAL CONSTRUCTION PLANS

DECK PROFILE FOR LOW SLUMP
 DENSE CONCRETE OVERLAY
 FOR
830' - 6" CONT. COMP. GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 STR. NO. 07-267-329 SEC. 16/21-T123N-R61W
 OVER B.N.S.F. BRF 0012(117)301

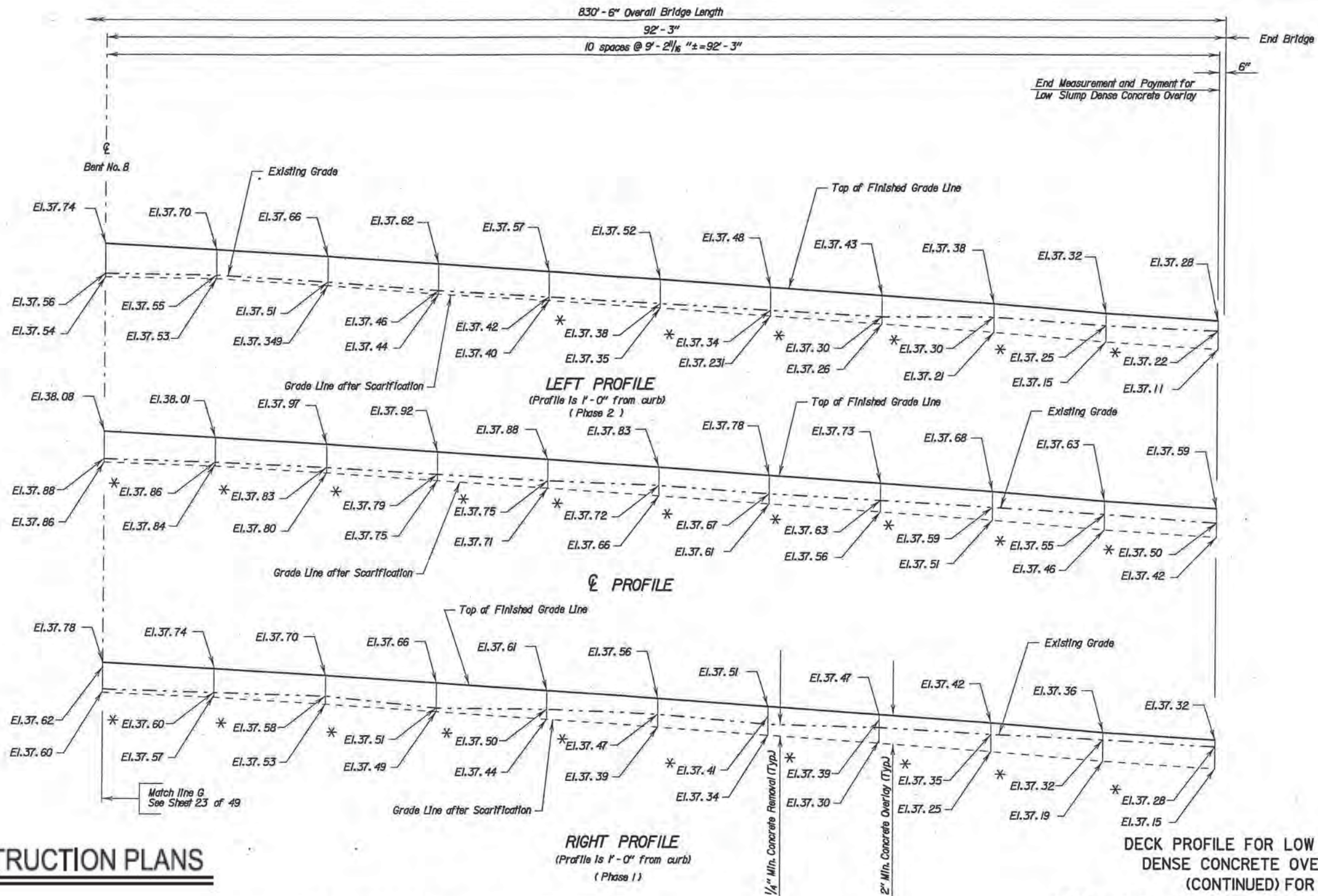
BROWN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2007



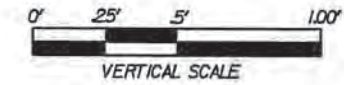
Benchmark Description
 Benchmark No. 12305.37
 Benchmark El. 1304.29

NOTE-
 Add 1300.00 to all elevations shown on profiles.
 * Scarify in excess of 1/4" in these areas.

DESIGNED BY BB BRWN6245	DRAWN BY SMS 6245CBI7	CHECKED BY NP	Kevin N. Gooden BRIDGE ENGINEER
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ORIGINAL CONSTRUCTION PLANS



Benchmark Description
Benchmark No. 12305.37
Benchmark El. 1304.29

ITEM	UNIT	QUANTITY	
		PHASE 1	PHASE 2
Low Slump Dense Concrete Bridge Deck Overlay	Cu.Yd.	130.4	158.1
Concrete Removal Type IA	Sq.Yd.	1730.1	1912.2
Concrete Removal Type IB	Sq.Yd.	173.0	191.2
Concrete Removal Type IC	Sq.Yd.	112.5	124.3
Concrete Removal Type ID	Sq.Yd.	112.5	124.3
Concrete Removal Type B	Sq.Yd.	27.0	20.0
Finishing and Curing	Sq.Yd.	1639.0	2003.2
Class A45 Concrete Fill	Cu.Yd.	27.4	25.8

NOTE-
Add 1300.00 to all elevations shown on profiles.
* Scarify in excess of 1/4" in these areas.

830' - 6" CONT. COMP. GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
STR. NO. 07-267-329 SEC. 16/21-T123N-R61W
OVER B.N.S.F. BRF 0012(117)301

BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2007 **15 OF 15**

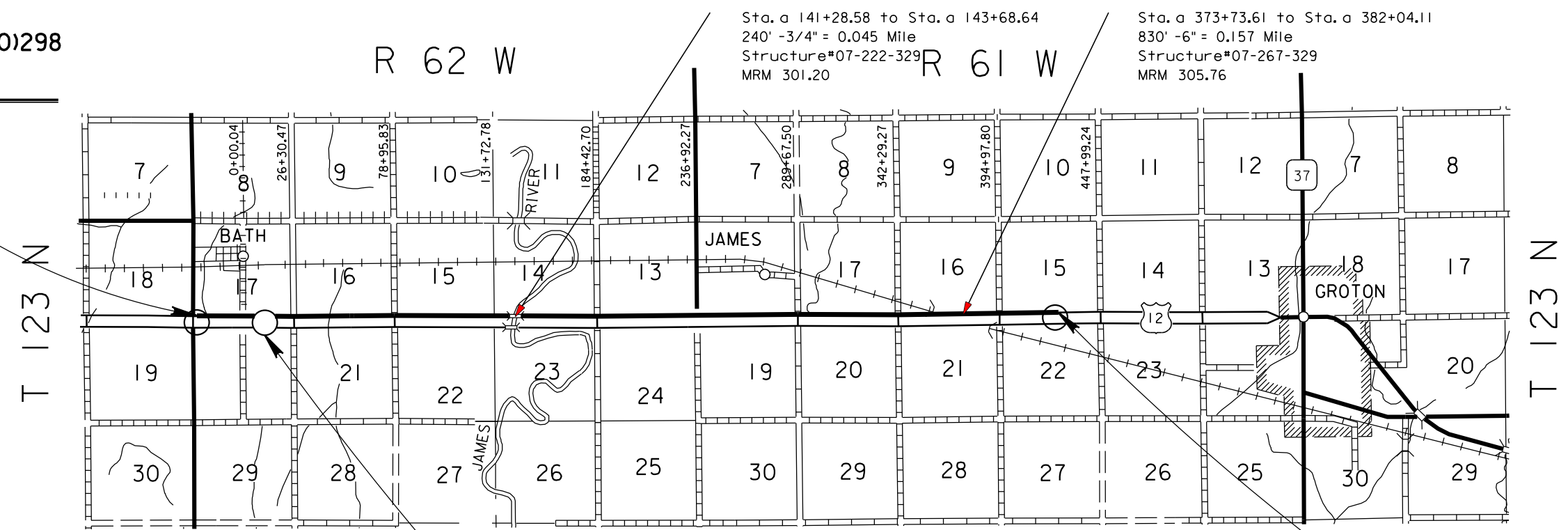
DESIGNED BY BB BRWNG245	DRAWN BY SMS 6245CB24	CHECKED BY NP Kevin N. Coeden BRIDGE ENGINEER
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Section F: Surfacing Plans

INDEX OF SHEETS

F1	General Layout with Index
F2 thru F15	Estimate of Quantities, Notes, Rates, and Tables
F16 thru F17	Typical Surfacing Sections
F18 thru F20	PCC Pavement Layouts
F21 thru F23	Traffic Control Crossovers
F24	Median Crossovers
F25	PCC Pavement Transition Layout
F26	Membrane Sealant Expansion Joint
F27 thru F28	Guardrail Layouts
F29	Traffic Control Guardrail Layouts
F30 thru F31	Guardrail Embankment and Surfacing
F32 thru F47	Centerline Profiles
F48 thru F50	Special Details
F51 thru F79	Standard Plates

BEGIN NH 0012(160)298
 Station 380+72.00
 MRM = 298.00 +0.087



Sta. a 141+28.58 to Sta. a 143+68.64
 240' -3/4" = 0.045 Mile
 Structure#07-222-329
 MRM 301.20

Sta. a 373+73.61 to Sta. a 382+04.11
 830' -6" = 0.157 Mile
 Structure#07-267-329
 MRM 305.76

EQUATION
 403+68.31 =
 a 0+00.00

DESIGN DESIGNATION

ADT (2009)	2878 (West Bound Lanes Only)
ADT (2029)	2993 (West Bound Lanes Only)
DHV	323 (West Bound Lanes Only)
D	100

END NH 0012(160)298
 Station a 429+94.00
 MRM = 306.00 +0.651

PLOT SCALE - 1:210

PLOTTED FROM - TRPR18387

PLOT NAME - 1

FILE - U:\MS\PR\UNBRW\023CVTTITLEF.DGN

SECTION F ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	8,359	Mile
009E3240	Graded Centerline Staking	8,359	Mile
009E3250	Miscellaneous Staking	8,359	Mile
009E3280	Slope Staking	8,359	Mile
009E3300	Three Man Survey Crew	40.0	Hour
110E0700	Remove 3 Cable Guardrail	555	Ft
110E0730	Remove Beam Guardrail	162.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	5	Each
110E0745	Remove 3 Cable Guardrail Slip Base Anchor Assembly	1	Each
110E1100	Remove Concrete Pavement	2,509.9	SqYd
110E6000	Remove 3 Cable Guardrail for Reset	1,041	Ft
110E6010	Remove 3 Cable Guardrail Anchor Assembly for Reset	3	Each
110E6210	Remove Thrie Beam Guardrail for Reset	50.0	Ft
110E6230	Remove W Beam Guardrail for Reset	262.5	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	4	Each
110E6260	Remove W Beam Guardrail Breakaway Cable Terminal for Reset	3	Each
110E6270	Remove W Beam Guardrail Flared End Terminal for Reset	1	Each
110E7500	Remove Pipe for Reset	8	Ft
110E7510	Remove Pipe End Section for Reset	1	Each
110E7700	Remove Drop Inlet Frame and Grate Assembly for Reset	6	Each
120E0010	Unclassified Excavation	2,450	CuYd
120E0100	Unclassified Excavation, Digouts	214	CuYd
120E0600	Contractor Furnished Borrow	11,801	CuYd
120E4100	Reprofiling Ditch	15.0	Sta
120E6100	Water for Embankment	152.2	MGal
120E6200	Water for Granular Material	545.6	MGal
120E9000	Pit Run Material	5,061.6	Ton
250E0010	Incidental Work	Lump Sum	LS
260E1010	Base Course	34,735.9	Ton
260E1030	Base Course, Salvaged	2,874.5	Ton
260E2060	Gravel Cushion, Modified	5,111.6	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	2,874.5	Ton
320E0006	PG 64-22 Asphalt Binder	689.7	Ton
320E1050	Class E Asphalt Concrete	11,954.1	Ton
320E1200	Asphalt Concrete Composite	1,706.9	Ton
320E5010	Saw and Seal Shoulder Joint	88,270	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	8.4	Mile
330E0010	MC-70 Asphalt for Prime	134.8	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	18.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	16.7	Ton
332E0010	Cold Milling Asphalt Concrete	1,716	SqYd
380E0050	8" Nonreinforced PCC Pavement	6,550.4	SqYd
380E1500	PCC Overlay, Furnish	30,065.7	CuYd
380E1580	8" PCC Overlay, Placement	121,039.0	SqYd
380E5030	Nonreinforced PCC Pavement Repair	144.4	SqYd
380E6000	Dowel Bar	52,866	Each
380E6110	Insert Steel Bar in PCC Pavement	48	Each
410E2600	Membrane Sealant Expansion Joint	167.6	Ft
450E8900	Cleanout Pipe Culvert	54	Each
450E9000	Reset Pipe	8	Ft
450E9001	Reset Pipe End Section	1	Each
600E0200	Type II Field Laboratory	1	Each
629E0100	3 Cable Guardrail	500	Ft

Bid Item Number	Item	Quantity	Unit
629E0220	Reset 3 Cable Guardrail, Cable Only	1,041	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	3	Each
629E0400	3 Cable Guardrail Anchor Assembly	4	Each
629E0410	Reset 3 Cable Guardrail Anchor Assembly	3	Each
629E1102	3 Cable Guardrail Intermediate Post	166	Each
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	25.0	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	100.0	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	2	Each
630E2020	W Beam Guardrail Tangent End Terminal	1	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	1	Each
630E2110	Beam Guardrail Post and Block	87	Each
630E5120	Reset Thrie Beam Rail	50.0	Ft
630E5160	Reset W Beam Rail	262.5	Ft
630E5180	Reset W Beam Guardrail Breakaway Cable Terminal	3	Each
630E5190	Reset W Beam to Thrie Beam Guardrail Transition	4	Each
630E5207	Reset W Beam Guardrail Flared End Terminal	1	Each
634E0510	4"x8" White Delineator Back to Back, Barrier Mounted	45	Each
634E0700	Traffic Control Movable Concrete Barrier	45	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
650E4380	Type D48 Concrete Curb and Gutter	60	Ft
670E5400	Precast Drop Inlet Collar	6	Each
670E7000	Reset Drop Inlet Frame and Grate Assembly	6	Each
831E0210	Non-woven Geotextile Separator	2,357	SqYd
831E1500	Geotextile Bond Breaker Fabric	186,214	SqYd
998E0100	Railroad Protective Insurance	Lump Sum	LS

UTILITIES

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

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

SURFACING THICKNESS DIMENSIONS

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

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

UNCLASSIFIED EXCAVATION

Unclassified Excavation consisting of earth embankment and/or granular base material shall be removed from the locations listed in the Table of Traffic Control Crossover Quantities, the Table of Pipe and Related Items and the following Table of Unclassified Excavation.

Unclassified excavation shall be used for inslope flattening and widening as directed by the Engineer.

Included in the Estimate of Quantities are 25 cubic yards of Unclassified Excavation-Digouts per mile for the shoulders.

Payment will be based on plans quantity. Further measurements will not be made unless there is a change made to the limits of work.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F2	F79

TABLE OF UNCLASSIFIED EXCAVATION

<i>Begin and End of Project and Tie Ins to Structures</i>			
Sta	to	Sta.	Volume (CuYd)
380+72.00	to	383+92.00	218
a 137+86.76	to	a 141+06.76	218
a 143+88.55	to	a 147+08.55	218
a 368+69.88	to	a 373+48.46	325
a 382+21.83	to	a 387+00.20	325
a 426+74.00	to	a 429+94.00	218
Total:			1,522

COLD MILLING ASPHALT CONCRETE

In order to construct the median crossover surfacing flush with the asphalt concrete on the median shoulders, it will be necessary to mill the existing asphalt concrete the width of the existing median crossovers. This is shown on the median crossover detail sheet. Payment is based on plans quantity for "Cold Milling Asphalt Concrete" in the following table.

Location	Cold Milling (SqYd)
Median Crossovers	1,536
Approaches and Intersecting Roads	180
Total:	1,716

SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL

Asphalt Mix and Granular Base Material shall be salvaged from the Westbound lanes of Highway 12 at the beginning and end of the project and at the tie ins at the 2 structures and shall be used as Base Course, Salvaged. The salvaged material shall be stockpiled at a site, which may include the shoulders and inslopes of the westbound lanes, to the satisfaction of the Engineer.

Proper drainage shall be maintained so water will not pond on the mainline granular surfacing or embankment. Proper drainage will be to the satisfaction of the Engineer.

The quantity of salvaged granular material may vary from the plans. The Contractor will be required to use all salvaged material on this project by decreasing or increasing the quantity of Gravel Cushion, Modified or Base Course, Salvaged as necessary, or as directed by the Engineer. Plans quantity will be the basis of measurement and payment for the above mentioned work. No adjustment in the contract unit price per ton for salvaged material will be made because of a variation in salvaged material quantities.

If the Contractor experiences any loss of Base Course, Salvaged during the salvage and replacement operations, additional Gravel Cushion, Modified shall be required.

SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL - CONTINUED

If the existing Base Course, Salvaged, that is to be incorporated into the completed surface, becomes contaminated, it shall be replaced with acceptable Base Course, Salvaged and Gravel Cushion, Modified. Acceptance of Base Course, Salvaged shall be determined by the Engineer. Additional Base Course, Salvaged and Gravel Cushion, Modified required to bring the surfacing to the typical section shall be furnished by the Contractor at no additional cost to the State.

Base Course, Salvaged that remains after the final surfacing has been brought to the typical section may not be placed on the inslopes unless otherwise approved by the Engineer, and shall be disposed of by the Contractor at a site approved by the Engineer. The outside shoulder inslope shall be at a 4:1 or flatter and the median shoulder inslope shall be at a 5:1 or flatter. Care shall be taken so that a minimum 4" depth of topsoil shall be placed over the entire disturbed area while proper drainage is maintained. See Section D for placement of topsoil. Final acceptance of the inslopes will be at the discretion of the Engineer. If proper drainage can not be obtained or the inslopes can not be finished to the satisfaction of the Engineer, the Contractor will be required to remove the excess material to the satisfaction of the Engineer at no additional cost to the State.

The salvaged material shall be reused on this project as per the note for Base Course, Salvaged.

CULVERTS

All pipe entrances will be cleared of dirt and debris prior to replacing pipe end sections.

All costs of removing damaged portions of culverts shall be included in the price bid for culverts and ends.

The Contractor shall verify the pipe sizes prior to ordering material.

CULVERT CLEANOUT

Material in all existing culverts shall be cleaned out by water flushing or other approved methods.

It is the responsibility of the Contractor to visit the sites to determine the extent of culvert cleaning work required. The Engineer will have final determination as to which pipes will be cleaned out during construction.

Cost for this work shall be incidental to the contract unit price per each for CLEANOUT PIPE CULVERTS.

The Contractor shall implement appropriate sediment control measures prior to water flushing in order to prevent discharges from project boundaries to comply with the Storm Water Permit.

TIE BOLTS FOR RCP CULVERTS

Tie bolts shall be installed on all reset and newly installed RCP Flared Ends that are connected to both existing and newly installed RCP.

NOTICE – GALVANIZED COATINGS

Be advised that the galvanized coatings on pipe culverts contain lead. The Contractor should plan his/her operations accordingly, and inform his/her employees of the hazards of lead exposure when a torch is used for cutting pipes.

REPROFILING DITCH

Reshaping and clearing is needed in the existing median ditch and north ditch to accommodate appropriate drainage. Longitudinal slopes must be 10:1 or flatter adjacent to reprofiling locations. This work shall be done to the satisfaction of the Engineer. All costs associated with clearing and reshaping of the existing median ditch and north ditch, including labor, excavation, equipment, and incidentals shall be paid for by the station at the contract unit price for Reprofiling Ditch. All work will be within the state's ROW.

TABLE OF REPROFILING DITCH

Station	Culvert	Reprofiling Ditch Stations
395+01.00	18" RCP & FE - 89'	0.5
a 8+99.00	18" RCP & FE	0.5
a 20+36.00	24" RCP Arch & SE - 113'	0.5
a 36+45.00	48" RCP & FE - 121'	1
a 45+27.00	48" RCP - 142'	1
a 59+99.00	18" RCP - 134'	0.5
a 70+99.00	48" RCP - 181'	1
a 80+99.00	18" RCP - 102'	0.5
a 102+98.00	18" RCP - 98'	0.5
a 115+99.00	18" RCP - 99'	0.5
a 162+24.00	---	0.5
a 169+98.00	---	0.5
a 182+98.00	---	0.5
a 189+97.00	---	0.5
a 199+98.00	---	0.5
a 206+57.00	---	0.5
a 219+38.00	24" RCP & SE - 140'	0.5
a 229+97.00	18" CMP - 98'	0.5
a 287+97.00	18" RCP - 71'	0.5
a 296+16.00	41" RCP Arch & FE - 182'	1
a 302+96.00	24" RCP 116'	0.5
a 307+96.00	18" RCP - 100'	0.5
a 328+96.00	18" RCP - 99'	0.5
a 343+97.00	24" RCP & FE - 106'	0.5
a 356+97.00	18" RCP & FE - 107'	0.5
a 393+96.00	24" RCP & FE - 162'	0.5
	Total:	15

INCIDENTAL WORK

The Contractor will verify all maintenance crossovers and ditch blocks have the correct inslopes, 10:1 with no culvert and 6:1 with longitudinal culvert. The Contractor shall reshape all maintenance crossovers and ditch blocks not in compliance with South Dakota Standard Specifications. See standard plates. The Contractor will ensure proper drainage to all transverse culverts. The inslope for maintenance crossovers and ditch blocks with transverse culverts located adjacent to them will be 10:1.

Cost for this work shall be incidental to the contract lump sum price for INCIDENTAL WORK.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F3	F79

REMOVE POLYMER MODIFIED ASPHALT GROWTH JOINT

All costs to remove the polymer modified asphalt growth joints shall be incidental to the contract unit price per foot for MEMBRANE SEALANT EXPANSION JOINT.

CONTRACTOR FURNISHED BORROW

The Contractor shall provide a suitable site for Contractor Furnished Borrow material for use in pipe end repair and inslope flattening. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer.

Payment is based on plans quantity for "Contractor Furnished Borrow" in the "TABLE OF PIPE AND RELATED ITEMS", and the following table.

Restoration of the Contractor Furnished Borrow site shall be the responsibility of the Contractor.

Contractor Furnished Borrow	Water for Embankment (Mgal)	Volume (CuYd)
Sta. 380+72 to 403+68.31	4.8	375
Sta. a 0+00.00 to a 141+06.76	51.2	3,969
Sta. a 143+88.55 to a 373+48.46	79.2	6,142
Sta. a 382+21.83 to a 429+94	16.8	1,304
Totals:	152.1	11,791

GRAVEL CUSHION, MODIFIED GRADATION

Gravel Cushion, Modified shall conform to the following gradation:

Passing 1" sieve	100%
Passing 3/4" sieve	80-100%
Passing 1/2" sieve	68-91%
Passing No. 4 sieve	46-70%
Passing No. 8 sieve	34-58%
Passing No. 40 sieve	13-35%
Passing No. 200 sieve	3.0-12.0%

All other requirements for Gravel Cushion shall apply.

GRAVEL CUSHION, MODIFIED AND BASE COURSE, SALVAGED

The Base Course, Salvaged shall be obtained from the stockpile site(s) provided by the Contractor from the material salvaged on this project and may be used without further quality and gradation testing. The Gravel Cushion, Modified material shall be combined with the salvaged Lime Treated Base for the tie ins to structures within the project limits and at the beginning and the end of the project. Blending of the material on the roadway will be allowed. Plans quantity will be the basis of measurement and payment for Base Course, Salvaged.

Base Course, Salvaged taken from stockpile sites other than from the shoulder and inslope sites, shall be run over a 1 1/2 inch screen prior to placement.

GRAVEL CUSHION, MODIFIED AND BASE COURSE, SALVAGED - CONTINUED

Included in the Estimate of Quantities are 50 tons of Gravel Cushion, Modified or Base Course, Salvaged per mile and 0.6 Mgal of Water for Granular Material per mile for backfilling of digouts of the existing surface at locations to be designated by the Engineer. Compaction of the Gravel Cushion, Modified or Base Course, Salvaged for the digouts shall be to the satisfaction of the Engineer. There is an estimated 8.4 miles required for the project.

PIT RUN MATERIAL

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

Passing 6 inch sieve	100%
Passing No. 4 sieve	0-60%
Passing No. 200 sieve	0-20%

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

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

Nonwoven Geotextile Separator Fabric has been included in the bid items. This fabric is to be used as a separator between the Pit Run and the Gravel Cushion, Modified to prevent migration of fines from the Gravel Cushion, Modified into the Pit Run. If the Pit Run Material contains enough fines as placed to prevent the loss of material from the Gravel Cushion, Modified, the separator fabric may be eliminated by CCO. Nonwoven Geotextile Separator Fabric will conform to Section 831, Standard Specifications.

ALKALI SILICA REACTIVITY

Fine aggregate shall conform to Section 800.2.D Alkali Silica Reactivity (ASR) Requirements of the Standard Specifications.

The Department will use the running average of the last three known expansion test results or less for determining acceptability of source and the required Type of cement. These expansion results are reported in the following table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with acceptable test values (less than 0.250) is discovered after letting to require Type V cement (greater than 0.250) the Department will accept financial responsibility for the change from Type II to Type V cement.

Type II or Type V cement will not change the requirement for the fly ash. The cost for either type of cement shall be subsidiary to the contract item.

Below is a list of known fine aggregate sources and the average corresponding 14 day expansion values:

TABLE OF KNOWN FINE AGGREGATE SOURCES

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Birdsall S&G	Creston, SD	0.158
Birdsall S&G	Oral, SD	0.131
Birdsall S&G	Wasta, SD	0.170
Bitterman	Delmont, SD	0.314*
Concrete Materials	Corson, SD	0.170
Croell – Cheyenne River Pit	Hot Springs, SD	0.089
Emme Sand & Gravel	Oneil, NE	0.217
Fischer S&G	Rapid City, SD	0.092
Fischer S&G	Spearfish, SD	0.053
Fuchs	Pickstown, SD	0.275*
Higman	Akron, IA	0.198
Higman	Hudson, SD	0.187
Hilde	Madison, SD	0.116
Jensen	Herried, SD	0.276*
L.G. Everist	Brookings, SD	0.153
L.G. Everist	Hawarden, IA	0.166
L.G. Everist	Summit, SD	0.141
Morris	Blunt, SD	0.192
Morris - Richards pit	Onida, SD	0.188
Myrl & Roys Paving-Nelson Pit	Sioux Falls, SD	0.158
Northern Concrete Agg.	Rauville, SD	0.104
Northern Concrete Agg.	Luverne, MN	0.124
Opperman - Gunvordahl Pit	Burke, SD	0.337*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.226
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Wagner, SD	0.241
Wasta Sand & Gravel	Wasta, SD	0.159

- These sources will require Type V cement in the concrete mix design and Class F (Modified) fly ash as specified.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1 or Type 2.

Included in the Estimate of Surfacing Quantities is 10 tons of Asphalt Concrete Composite for repair of spalls in the existing surface to fill and level joints, cracks and other surface irregularities designated by the Engineer. This material shall be placed and compacted by methods and to a density satisfactory to the Engineer.

Included in the Estimate of Surfacing Quantities is 150 tons of Asphalt Concrete Composite per mile to repair the median and outside shoulders prior to placing the fabric.

All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 58-28, PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F4	F79

CLASS E ASPHALT CONCRETE

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

All other requirements for Class E shall apply.

EXISTING PCC PAVEMENT

The existing 8.0" Jointed P.C.C. Pavement is nonreinforced. The existing skewed transverse contraction joints are constructed on a repetitive random spacing.

The 8" Nonreinforced PCC Pavement removed from this project may be crushed and reused as Gravel Cushion, Modified provided the material meets the Standard Specifications for Gravel Cushion, Modified. If the material is utilized as Gravel Cushion, Modified, payment for the material will be at the contract unit price per ton for Gravel Cushion, Modified. There is approximately 914.1 tons of PCC Pavement on this project that could be crushed and reused.

REMOVAL OF CONCRETE PAVEMENT

Location	In Place PCC Pavement
	SqYd
Structure #07-222-329 Tie ins	
Sta. a 137+86.76 to Sta. a 141+06.76	853.3
Sta. a 143+88.55 to Sta. a 147+08.55	853.3
Median Crossover Area	
Sta. a 26+41, 396 th Avenue	658.8
Sta. a 426+07, Weigh in Motion Scale Site	144.4
Total	2,509.9

REMOVAL OF SCALE SITE

Four Weigh in Motion Scales are located west of Groton at approximate Sta. a 426+07. The Scale Plates are bolted in place and the Scale frames to which the plates are bolted are embedded in the PCC Pavement with epoxy. The Contractor shall remove the Scale Plates and load them onto SDDOT trailers for hauling. The Contractor shall contact Ken Marks (605-773-3336) to coordinate this loading. All Scale frames shall be removed from the pavement and shall become the property of the Contractor.

All costs for the Removal of Scales and Scale frames and the Placement of 12" NONREINFORCED PCC PAVEMENT shall be incidental to the contract unit price per square yard for NONREINFORCED PCC PAVEMENT REPAIR.

NONREINFORCED PCC PAVEMENT REPAIR – GENERAL

PCC Pavement Repair shall be done prior to placing the Geotextile Bond Breaker Fabric and PCC Overlay.

Locations and size (length or width) of concrete repair areas are subject to change in the field, at the discretion of the Engineer. Payment will be based on actual area replaced.

Existing concrete pavement shall be sawed full depth at the beginning and end of the PCCP repair areas. When either the beginning or end of a PCCP repair area falls close to an existing joint or crack, the PCCP repair area shall be extended to eliminate the existing joint or crack. Where possible, new working joints shall be adjacent to existing working joints.

Saw cuts that extend beyond the repair area shall be minimized and filled with a non-shrinkage mortar mix at the Contractor's expense.

Existing concrete pavement in the replacement areas shall be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. All removed material shall be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor's operations shall be removed and replaced at the Contractor's expense.

If the pavement replacement area is entirely on either side of the existing contraction joint, the location of one of the working joints will be at the original location. Any existing dowel bar assemblies shall be sawed off or removed.

Concrete placed adjacent to asphalt concrete shoulders shall be formed full depth to match the width of existing concrete pavement. Asphalt concrete shoulders adjacent to concrete pavement replacements shall be repaired with new asphalt concrete composite.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor shall place a ¼" preformed asphalt expansion joint material along the longitudinal joint from the existing working joint to the new working joint. The expansion joint material shall meet the requirements of AASHTO M33. Cost for this material shall be incidental to the contract unit price per square yard for NONREINFORCED PCC PAVEMENT REPAIR.

NONREINFORCED PCC PAVEMENT REPAIR

New pavement thickness shall be a minimum thickness of 12" where the existing pavement thickness is 12".

Concrete shall meet the requirements of the Standard Specifications Section 380, except as modified by the following notes:

The fine aggregate shall be screened over a one-inch square-opening screen just prior to introduction into the concrete paving mix if required by the Engineer.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete shall contain 4.5% to 7.0% entrained air. The concrete mix shall contain a minimum of 50% coarse aggregate by weight. Coarse aggregate shall be crushed ledge rock, Size #1 unless an alternative gradation is approved by the Concrete Engineer as part of the mix design submittal. The concrete mix shall contain at least 650 lbs of Type I or II cement or 600 lbs. of Type III cement per cubic yard. The minimum 28 day compressive strength shall be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor shall submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

Concrete shall be cured with white pigmented curing compound (AASHTO M148, Type 2) applied as soon as practical at a rate of 125 square feet per gallon. Concrete shall be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60° F or higher throughout the cure period. If the concrete temperature falls below 60° F, the cure time shall be extended or other measures shall be taken, at no additional cost to the State. In addition to the curing requirements, a strength of 3,800 psi must be attained prior to opening to traffic.

Concrete shall be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket shall have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket shall be left in place, except for joint sawing operations, until the 3,800 psi is attained. Insulation blanket shall be overlapped on to the existing concrete by 4'. The initial contraction joint sawing shall be performed as soon as practical after placement to avoid random cracking.

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, repairing asphalt and gravel shoulders, labor, tools and equipment shall be included in the contract unit price per square yard for NONREINFORCED PCC PAVEMENT REPAIR.

TABLE OF PCC PAVEMENT REMOVAL AND REPAIR

Location	Lane	Width	Length	Repair Area
		Feet	Feet	SqYd
Sta. a 426+07	Both	26	50	144.4
			Total	144.4

RESTORATION OF GRANULAR MATERIAL IN PCC PAVEMENT REPAIR AREAS

An inspection of the granular material subgrade shall be made after removing concrete from each pavement replacement area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose material shall be removed. Each replacement area shall be leveled and compacted to the satisfaction of the Engineer.

If additional Gravel Cushion, Modified material is required, the Contractor shall furnish, place and compact Gravel Cushion, Modified to the satisfaction of the Engineer at no additional cost to the State.

Cost for this work shall be incidental to the contract unit prices per square yard for NONREINFORCED PCC PAVEMENT REPAIR.

STEEL BAR INSERTION

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars (1 ¼" x 18" epoxy coated plain round dowel bars and No. 8 x 18" epoxy coated deformed tie bars for transverse joints and No. 5 x 24" epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Plain round dowel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

Steel bars shall be inserted in the transverse joint on 18" centers. The first steel bar in the transverse joint shall be placed 9" from the edge of the slab closest to centerline. Steel bars shall be inserted in the longitudinal joint on 30" centers and shall be a minimum of 15" from either transverse joint. A typical one-lane patch 12' wide and 6' long will require 18 steel bars (8 in each transverse joint and 2 in the longitudinal joint).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate.

Fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion by the dipping method will not be allowed.

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for INSERT STEEL BAR IN PCC PAVEMENT.

TABLE OF INSERT STEEL BAR INSTALLATION

Location	1 ¼" X 18" Plain Round Dowel Bars
Sta. a 426+07	48
Total	48

TIE BARS AND LONGITUDINAL JOINTS

The use of automatic tie bar inserters will only be allowed on the vertical edge of longitudinal construction joints. The use of automatic tie bar inserters will not be allowed on sawed longitudinal joints.

Tie bars or tie bar baskets shall be held in the specified position parallel to the slab surface and perpendicular to the centerline by a supporting device. Tie bars or tie bar baskets shall be securely staked to the roadbed and shall hold the bar at the correct spacing, alignment, and elevation.

Tie bars will not require supports if inserted into the side of the pavement during slip form paving of the longitudinal construction joint operation. Failure to acquire the correct tie bar locations in the construction joint shall require the bars to be corrected and a change made to the operation which may include drilling and epoxy bars or other methods as approved by the Engineer.

The final position of each tie bar shall be within the following tolerances:

-- Vertical Placement: ±T/6 for any part of the tie bar (T = slab thickness)

-- Transverse Placement (side shift): ±3 inches when measured perpendicular to the longitudinal joint line.

If the tie bar does not meet the requirements and tolerances specified, corrective action shall be performed at the Contractor's expense to the satisfaction of the Engineer.

8" NONREINFORCED CONCRETE PAVEMENT AND 8" PCC OVERLAY PAVEMENT

The fine aggregate shall be screened over a 1 inch square opening screen just prior to introduction into the concrete paving mix. The Contractor will screen all of the aggregate to prevent the incorporation of foreign materials (i.e.: mud balls) into the concrete mix.

Fine aggregate shall conform to Section 800.2.D Alkali Silica Reactivity (ASR) Requirements of the Standard Specifications.

The concrete mix shall conform to the special provision for Contractor Furnished Mix Design for PCC Pavement.

There will be no direct payment for trimming of the Gravel Cushion, Modified for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming shall be performed as required by Section 380.3 C. of the Standard Specifications.

A minimum of 8 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

Automatic dowel bar inserters will not be allowed on this project.

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

The transverse contraction joints shall be perpendicular to the centerline as detailed in the special details. In multilane areas the transverse contraction joints shall be perpendicular to the centerline and be in a straight line across the width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints that are not pre-approved shall be removed at the Contractor's expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

In addition to traditional field inspection of reinforcement, a Ground Penetrating Radar (GPR) unit may be used to verify reinforcement locations in the hardened concrete. The GPR may be used any time prior to the Acceptance of Field Work being issued. All costs related to corrective measures, including but not limited to concrete removal or cutting of reinforcement, price deducts, and delays to the project schedule shall be the responsibility of the Contractor.

TABLE OF MAINLINE – 8" PCC OVERLAY PAVEMENT

Sta	to	Sta.	8" PCC OVERLAY PAVEMENT Area (SqYd)
383+92.00	to	403+68.31	5,709.3
a 0+00.00	to	a 137+86.76	39,828.3
a 147+08.55	to	a 368+69.88	64,021.5
a 387+00.20	to	a 426+74.00	11,479.8
Total:			121,039.0

TABLE OF MAINLINE – 8" NONREINFORCED PCC PAVEMENT

Mainline Pavement			
Sta	to	Sta.	8" NONREINFORCED CONCRETE PAVEMENT Area (SqYd)
380+72.00	to	383+92.00	924.4
a 137+86.76	to	a 141+06.76	924.4
a 143+88.55	to	a 147+08.55	924.4
a 368+69.88	to	a 373+48.46	1,382.6
a 382+21.83	to	a 387+00.20	1,382.0
a 426+74.00	to	a 429+94.00	924.4
Shoulder Nonreinforced PCC Pavement			
West end of Str. # 07-222-329			18.9
East end of Str. # 07-222-329			18.8
West end of Str. # 07-267-329			25.5
East end of Str. # 07-267-329			24.9
Total:			6,550.4

METAL TINE FINISH – RANDOM TRANSVERSE TINING

The surface of the mainline paving shall have a metal tine finish according to Section 380.N.6.a.

SAWING IN EXISTING SURFACING

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

TABLE OF GEOTEXTILE BOND BREAKER FABRIC

Mainline Location			Geotextile Bond Breaker Fabric Area
Sta	to	Sta.	SqYd
383+92.00	to	403+68.31	8,784
a 0+00.00	to	a 137+86.76	61,274
a 147+08.55	to	a 368+69.88	98,495
a 387+00.20	to	a 426+74.00	17,661
Total:			*186,214

*This is the actual square yardage required with no laps.

RUMBLE STRIPS

Rumble Strips for the median shoulder shall be constructed as per Special Detail. Payment for forming rumble strips, on the median shoulder, including labor, materials and incidentals shall be at the contract unit price per mile for GRIND 12" RUMBLE STRIP OR STRIPE IN ASPHALT CONCRETE. It is estimated that 8.4 miles of asphalt concrete rumble strip will be required for the median shoulder.

Rumble Strips for the outside shoulder shall be constructed as per Standard Plate 380.15. Payment for forming rumble strips, on the outside shoulder, including labor, materials and incidentals shall be incidental to the contract unit price per square yard for 8" NONREINFORCED PCC PAVEMENT and 8" PCC OVERLAY PAVEMENT.

LOCATION OF CONCRETE PAVEMENT JOINTS

The location of joints, as shown on the "PCC Pavement Layout" sheets, are only approximate locations to be used as a guide in the final location of joints and to afford bidders a basis for estimating the construction costs of the joints. The new joint locations will need to be adjusted +- in the field to miss the existing joint locations by at least 6". The final locations of the joints are to be designated by the Engineer during construction.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F7	F79

PAVEMENT SMOOTHNESS

The following locations shall be tested for smoothness with a Contractor furnished and operated 25 foot California style profilograph in accordance with Section 380.3.O.2 of the Standard Specifications.

US 12 - Sta. 380+72.00 to Sta. 403+68.31 WBL
 US 12 - Sta. a 0+00.00 to Sta. a 141+06.76 WBL
 US 12 - Sta. a 143+88.55 to Sta. a 373+48.46 WBL
 US 12 - Sta. a 382+21.83 to Sta. a 429+94.00 WBL

Equation Sta. 403+68.31 = Sta. a 0+00.00

INSLOPE TRANSITIONS

Inslope transitions will be required at various pipe locations. Refer to Standard Plate 120.05 for details.

RESET 3 CABLE GUARDRAIL

Cable guardrail shall be reset on this project as listed in the Table of Guardrail. The guardrail layout sheets show the complete installations. There are sufficient lengths of existing 3 cable guardrail on the project to accomplish the work without undue splicing of cables. Lengths and locations shall be the responsibility of the Contractor.

All 3 Cable Guardrail designated for reset shall be installed using new steel posts. All hardware used to reset the cables shall be new. All reset cables shall be in good condition. The ends of the existing cables shall be cut back to have good ends. **Approximately 5 L.F. per bridge end of the existing 3 Cable Guardrail is estimated to not be reset for this purpose.** The cost of the hook bolts, W beam to 3 cable transition bracket, and other miscellaneous hardware shall be incidental to the contract unit price per foot for "Reset 3 Cable Guardrail, Cable Only". All costs associated with furnishing and installing steel posts shall be incidental to the contract unit price per each for "3 Cable Guardrail Intermediate Post".

RESET STEEL BEAM GUARDRAIL

Steel beam guardrail shall be reset on this project as listed in the Table of Guardrail. The guardrail layout sheets show the complete installations. There are sufficient lengths of existing steel beam guardrail on the project to accomplish the work. Lengths and locations shall be the responsibility of the Contractor.

All steel beam guardrail designated for reset shall be installed using new wood posts and blocks. All hardware used to reset the steel beam guardrail shall be new. All reset steel beam shall be in good condition. The cost of the post and splice bolts, washers, nuts and other miscellaneous hardware shall be incidental to the contract unit price per foot for "Reset Thrie Beam Rail" or "Reset W Beam Rail". All costs associated with furnishing and installing wood posts and blocks shall be incidental to the contract unit price per each for "Beam Guardrail Post and Block".

TEMPORARY BRIDGE END PROTECTION

The Contractor shall place and maintain Type F movable concrete barriers. Type F movable concrete barriers shall be placed at the locations listed in the Guardrail Tables and as shown in the Guardrail Layout Sheets.

Type F movable concrete barriers placed end to end and adjacent to the bridge end shall be secured together and to the bridge to prevent separation of individual barrier sections should impact occur.

The Contractor shall pick up the concrete barriers at the South Dakota Department of Transportation Maintenance Yard located on the south side of US12, 1/2 mile west of the US12/US281 Junction and install the concrete barriers as shown in the plans. At the completion of the project the Contractor shall remove and deliver all the Type F movable concrete barriers to the South Dakota Department of Transportation Maintenance Yard located on the south side of US12, 1/2 mile west of the US12/US281 Junction.

The Contractor shall contact Mr. Phil Dwight (605-626-7898) at the Aberdeen Area Office to arrange for pick up and return of the barrier.

The bottoms of the connecting pins shall be secured with the retaining plate, bolt and nut as shown on shown on Plate Number 628.01 Sheet 1 of 2.

All costs to place, maintain, remove and deliver the Type F movable concrete barrier shall be paid for per contract unit price per each for "TRAFFIC CONTROL MOVABLE CONCRETE BARRIER".

Each Type F movable concrete barrier section is to have an end to end connection and each Type F movable concrete barrier section adjacent to the bridge is to have a connection to the bridge by insertion of a pin through loops formed by rebars. The cost to anchor the Type F movable concrete barriers including wood posts and blocks shall be incidental to contract unit price per each for "TRAFFIC CONTROL MOVABLE CONCRETE BARRIER".

TRAFFIC CONTROL CONCRETE BARRIER DELINEATORS

One 4 inch X 8 inch delineator shall be attached to the top of each of the concrete barrier sections. All costs associated with furnishing, installing, and maintaining these delineators shall be incidental to the contract unit price per each for 4" by 8" White Delineator Back to Back, Barrier Mounted.

MOVABLE CONCRETE BARRIER END PROTECTION (CRASH ATTENUATION)

The Contractor shall furnish crash tested and approved end protection on movable concrete barrier installed on this project. End protection shall be installed parallel to the roadway and a minimum of two concrete barriers shall be installed in line with and behind the end protection. The end protection shall be attached to the concrete barrier as specified by the manufacturer.

Costs for furnishing, installing, maintaining, and removing the end protection will be paid for at the contract unit price per each for "Temporary Concrete Barrier End Protection". The concrete Barrier End Protection shall meet the requirements of NCHRP 350 TL-3.

The Contractor will be required to have immediately available replacement parts for the end protection. The Contractor will be expected to repair the end protection within 24 hours after impact or damage. Costs for replacement modules shall be paid for at the contract unit price per each for "Temporary Concrete Barrier End Module Set or Repair Kit".

MEMBRANE SEALANT EXPANSION JOINT

1. Install all membrane sealant expansion joints at the plan shown locations in conformance to the following notes.

2. The Membrane Sealant is a foam sealant consisting of an open-cell high density polyurethane foam impregnated with either a polymer modified bitumen or a neoprene rubber suspended in chlorinated hydrocarbons. The Membrane Sealant shall be supplied by one the following companies:

Wabo HSeal
 Watson Bowman Acme Corp.
 95 Pineview Drive, Amherst NY 14228
 Phone: 716-691-7566
 Fax: 716-691-9239
 Web site: <http://www.wbacorp.com>

Sealtite 50N
 Schul International Company, LLC
 One Industrial Drive
 Pelham, NH 03076
 Phone: 800-848-1120
 Fax: 800-998-9105
 Web site: <http://www.sealtiteusa.com>

Polytite N
 Sunshine Industrial
 5051 Merriam Drive
 Merriam, KS 66203
 Phone: 913-362-6300

3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.

4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. Miter the ends of each piece for ease of joining to the adjacent pieces. The membrane sealant shall have a minimum depth of 4 inches. The foam sealant shall be ultra-violet and ozone resistant.

5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be a waterproof epoxy adhesive that adheres to concrete surfaces and is approved by the membrane sealant supplier.

6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.

7. The Styrofoam filler material shall be closed cell and water-tight as approved by the Engineer.

8. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.

MEMBRANE SEALANT EXPANSION JOINT - CONTINUED

9. A technical representative of the membrane sealant supplier shall be present at the jobsite during installation.

10. The joint opening shall be formed during the concrete placement by Styrofoam block out material. The Styrofoam block out material shall remain in-place until the adjacent concrete has cured for a minimum of 28 days. After curing the 28 days the Styrofoam shall be removed to the plan specified depth to allow for placement of the membrane sealant material.

11. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants such as oil, curing compounds, etc. from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.

12. After abrasive blasting and immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.

13. Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant supplier shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.

14. Traffic shall not be allowed on the joint for a minimum 3 hours unless otherwise directed by the Engineer.

15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

TABLE OF MEMBRANE SEALANT EXPANSION JOINTS

Structure Number	Membrane Sealant Joint
	Feet
Str. No. 007-222-329, MRM 301.20 WB	
Begin Bridge	41.9
End Bridge	41.9
Str. No. 07-267-329, MRM 305.76 WB	
Begin Bridge	41.9
End Bridge	41.9
TOTAL:	167.6

TABLE OF DROP INLET FRAME AND GRATE REMOVE AND RESET

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

Station	L/R	Quantity (Each)
a 143+94	L	1
a 143+95	R	1
a 373+55	L	1
a 373+55	R	1
a 382+14	L	1
a 382+14	R	1
Total:		6

TABLE OF DROP INLET COLLARS

Station	L / R	Drop Inlet Size	Drop Inlet Type	Concrete Collar (Each)
a 143+94	L	1.5'x3'	D	1
a 143+95	L	1.5'x3'	D	1
a 373+55	L	1.5'x3'	D	1
a 373+55	L	1.5'x3'	D	1
a 382+14	R	1.5'x3'	D	1
a 382+14	R	1.5'x3'	D	1
Total:				6

TABLE OF TYPE D48 CONCRETE CURB AND GUTTER

Station to	Station	L/R	Quantity (Ft)
a 140+91.7	a 141+06.7	L	15.0
a 140+91.7	a 141+06.7	R	15.0
a 143+88.5	a 144+03.5	L	15.0
a 143+88.5	a 144+03.5	R	15.0
Totals:			60.0

BALD EAGLE

Bald eagles are known to occur in this area. If a nest is observed within one mile of the project site, notify the Environmental Project Scientist of the DOT Environmental Office at 605-773-3268.

WHOOPIING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that typically roosts overnight at a single location. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, notify the Environmental Project Scientist of the DOT Environmental Office at 605-773-3268 and cease construction activities in the affected area until the Whooping Crane departs.

WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the DOT Environmental Office.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the DOT Environmental Office.

The DOT Environmental Office contact is the Environmental Project Scientist, 605-773-3268. The WATER SOURCE plan note does not relieve the Contractor of his/her responsibility to obtain the necessary permits from other agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE).

WORK AFFECTING WATERWAYS

A. WATER QUALITY

Storm Water

The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the DENR General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by offsite activities, such as borrow and staging areas, which are the responsibility of the Contractor.

A major component of the storm water construction permit is development and implementation of a storm water pollution prevention plan (SWPPP). This plan is a joint effort and responsibility of the DOT and the Contractor. The SWPPP is a dynamic document and is to be available on-site at all times. Information on storm water requirements and SWPPP are available on the following websites:

DOT: http://www.sddot.com/pe/projdev/environment_stormwater.asp
DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on 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 no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

HISTORICAL PRESERVATION OFFICE CLEARANCES - CONTINUED

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

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.

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.

TRAFFIC CONTROL CROSSOVERS

Traffic Control Crossovers shall be constructed per layouts provided in these plans at the following locations:

- Sta. 366+00 WBL
- Sta. a 439+00 WBL

The maximum horizontal degree of curve shall be 6°45' and the vertical alignment shall be constructed to provide adequate stopping sight distance. Any existing drainage impacted by the Traffic Control Crossovers shall be addressed. All costs associated with the temporary modification of an existing drainage shall be incidental to the various contract items needed to construct the Traffic Control Crossovers. The Engineer shall have final approval of the horizontal and vertical alignment of the Traffic Control Crossovers.

Any pipe necessary to drain water under the Traffic Control Crossovers are considered incidental to the Traffic Control Crossovers and shall be incidental to the various contract items for the Traffic Control Crossovers. The Contractor is responsible for sizing the pipe and providing appropriate end sections as directed by the Engineer.

See Section D, Erosion and Sediment Control Plans, for removing and replacing topsoil.

REMOVE TRAFFIC CONTROL CROSSOVERS

Upon completion of the project the Traffic Control Crossovers shall be removed. The asphalt concrete, granular material and pit run material shall be disposed of by the Contractor as approved by the Engineer. All culverts, pipe end sections and interim crossover closure materials shall become the property of the Contractor.

Cost for removing the asphalt concrete and granular material and removal of culverts and pipe end sections shall be incidental to the contract lump sum price for REMOVE TRAFFIC DIVERSION(S).

CONTROL OF ACCESS

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

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

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

TYPE II FIELD LABORATORY

Substitution of a cellular telephone for the hard-wired touch-tone telephone is not allowed, as state personnel need the ability to download information over direct phone lines. The phone is intended for state personnel usage only. Contractor personnel are prohibited from using this phone unless pre-approved by the Project Engineer.

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

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items shall be incidental to the contract unit price per each for "Type II Field Laboratory".

The Contractor will provide an extra oven and a 6'x4' 4" thick concrete level pad placed outside of the lab to the satisfaction of the Engineer.

PCC OVERLAY CENTERLINE PROFILE

The PCC Overlay centerline profile shown in these plans was used to calculate the cubic yards for the PCC Overlay furnished. The PCC Overlay centerline profile was designed so that there will be a minimum of 8 inches of PCC at all locations of the typical sections. The PCC Overlay centerline profile sheets are included in the plans for information only. The Contractor shall create a new PCC Overlay centerline profile in accordance with the Special Provision for Contractor Staking.

TABLE OF SUPERELEVATION - Westbound Lanes, Centerline Alignment

Station to	Station	Remarks
380+72.00	388+46.55	13,000' Radius Curve Left
		3° 44'14" Curve Lt.
		0.02% Superelevation Rate
		Point of Rotation is Lt. Pavement Edge
388+58.55	389+78.55	Superelevation Transition
389+78.55	397+55.09	Normal Crown Section
		equation Sta. 403+68.31 = Sta. a 0+00.00
397+55.09	a 6+13.47	85943.67' Radius Curve Right
		0° 49'04" Curve Rt.
		0.00% Superelevation Rate
		Point of Rotation is Lt. Pavement Edge
a 6+13.47	a 429+94.00	Normal Crown Section

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F10	F79

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per mile.

Median Shoulders

Sta. 383+92 to Sta. 403+68.31
 Sta. a 0+00.00 to Sta. a 137+86.76
 Sta. a 147+08.55 to Sta. a 368+69.88
 Sta. a 387+00.20 to Sta. a 426+94

BASE COURSE

Crushed Aggregate 1,541.2 Tons.

Water for Granular Material at the rate of 18.5 M. Gallons.

MC-70 Asphalt for Prime at the rate of 6.4 ton applied 6.5 feet wide (Rate = 0.30 gallon per square yard).

CLASS E ASPHALT CONCRETE

Crushed Aggregate	437.5 Tons
PG 64-22 Asphalt Binder	<u>26.4 Tons</u>
Total	463.9 Tons

The exact proportions of this material will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.75 ton applied 6.0 feet wide (Rate = 0.05 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.69 ton applied 5.5 feet wide (Rate = 0.05 gallon per square yard).

Outside Shoulders

Sta. 383+92 to Sta. 403+68.31
 Sta. a 0+00.00 to Sta. a 137+86.76
 Sta. a 147+08.55 to Sta. a 368+69.88
 Sta. a 387+00.20 to Sta. a 426+94

BASE COURSE

Crushed Aggregate 1,888.7 Tons.

Water for Granular Material at the rate of 22.7 M. Gallons.

MC-70 Asphalt for Prime at the rate of 7.8 ton applied 8.5 feet wide (Rate = 0.30 gallon per square yard).

CLASS E ASPHALT CONCRETE

Crushed Aggregate	621.7 Tons
PG 64-22 Asphalt Binder	<u>37.6 Tons</u>
Total	659.3 Tons

The exact proportions of this material will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 1.0 ton applied 8.0 feet wide (Rate = 0.05 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.94 ton applied 7.5 feet wide (Rate = 0.05 gallon per square yard).

TABLE OF CONSTRUCTION STAKING – MEDIAN CENTERLINE ALIGNMENT

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Grade Staking					Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Graded Centerline Staking Quantity (Mile)
				Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)			
Resurfacing											
Hwy 12 Mainline - WBL	380+72.00	403+68.31	2	2,296.31	0.435	1	1	0.435	0.435	0.435	0.435
	a 0+00.00	a 141+06.76	2	14,106.76	2.672	1	1	2.672	2.672	2.672	2.672
	a 143+88.55	a 373+48.46	2	22,959.91	4.348	1	1	4.348	4.348	4.348	4.348
	a 382+21.83	a 429+94.00	2	4,772.17	0.904	1	1	0.904	0.904	0.904	0.904
Totals:								8.359	8.359	8.359	8.359

* 1 = Paving Hub Stakes (PCC Pavement)
 ** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

TABLE OF ADDITIONAL QUANTITIES

LOCATION			WATER FOR GRANULAR MATERIAL	GRAVEL CUSHION, MODIFIED/ BASE COURSE, SALVAGED	BASE COURSE	CLASS E ASPHALT CONCRETE	PG 64-22 ASPHALT BINDER	ASPHALT FOR PRIME	ASPHALT FOR TACK	ASPHALT FOR FLUSH SEAL
Station	to	Station	(MGal)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)
Mainline										
380 + 72.00	to	383 + 92.00	13.0	1,081.1	---	---	---	---	---	---
137 + 86.76	to	141 + 06.76	13.0	1,081.1	---	---	---	---	---	---
143 + 88.55	to	147 + 08.55	13.0	1,081.1	---	---	---	---	---	---
368 + 69.88	to	373 + 48.46	19.4	1,616.4	---	---	---	---	---	---
382 + 21.83	to	387 + 00.20	19.4	1,616.4	---	---	---	---	---	---
426 + 74.00	to	429 + 94.00	13.0	1,081.1	---	---	---	---	---	---
Shoulders										
380 + 72.00	to	383 + 92.00	1.4	---	119.6	68.1	3.9	0.9	0.1	0.1
137 + 86.76	to	141 + 06.76	1.4	---	119.6	68.1	3.9	0.9	0.1	0.1
143 + 88.55	to	147 + 08.55	1.4	---	119.6	68.1	3.9	0.9	0.1	0.1
368 + 68.88	to	373 + 48.46	2.2	---	179.2	102.0	5.8	1.3	0.2	0.1
382 + 21.83	to	387 + 00.20	2.1	---	178.8	101.8	5.8	1.3	0.2	0.1
426 + 74.00	to	429 + 94.00	1.4	---	119.6	68.1	3.9	0.9	0.1	0.1
Median Crossovers			44.2	---	3,738.0	2,173.5	132.0	12.0	2.4	2.4
Approaches and Intersecting Roads			10.0	---	803.0	235.8	13.8	1.4	0.6	0.6
Guardrail Embankment			9.7	---	812.8	155.0	8.8	1.7	0.3	0.3
Totals			164.6	7,557.2	6,190.2	3,040.5	181.8	21.3	4.1	3.9

TABLE OF PIPE AND RELATED ITEMS - CONTINUED

Station	Skewed Left or Right	Culvert	Median Drain	Offset	Contractor Furnished Borrow	Unclassified Excavation	Remove Pipe for Reset	Reset Pipe	Remove Pipe End Section for Reset	Reset Pipe End Section	Comments
			Each	Lt or Rt	CuYds	CuYds	Ft	Ft	Each	Each	
a 307+96.00	---	18" RCP - 100'	Yes	---	---	---	---	---	---	---	Median drain and pipe clean out
a 315+93.00	---	36" RCP Arch - 286'	---	---	---	---	---	---	---	---	pipe clean out
a 323+64.00	---	36" RCP Arch & FE - 231'	---	---	---	---	---	---	---	---	pipe clean out
a 327+66.00	---	24" RCP & SE - 82'	---	67.6' Lt	---	---	---	---	---	---	pipe clean out
a 328+96.00	---	18" RCP - 99'	Yes	---	---	---	---	---	---	---	Median drain and pipe clean out
a 342+25.00	---	24" RCP & SE - 94'	---	72.5' Lt	---	---	---	---	---	---	pipe clean out
a 343+97.00	---	24" RCP & FE - 106'	Yes	---	---	---	---	---	---	---	Median drain and pipe clean out
a 356+97.00	---	18" RCP & FE - 107'	Yes	---	---	---	---	---	---	---	Median drain and pipe clean out
a 393+96.00	---	24" RCP & FE - 162'	Yes	---	---	---	---	---	---	---	Median drain and pipe clean out
a 403+95.00	---	18" RCP & FE - 98'	---	---	---	---	---	---	---	---	pipe clean out
a 421+33.00	---	24" RCP & SE - 115'	---	76.9' Lt	---	---	---	---	---	---	pipe clean out
a 429+49.00	---	44" RCP Arch & FE	---	---	---	---	---	---	---	---	pipe clean out
Totals:					10	10	8	8	1	1	

TABLE OF TRAFFIC CONTROL CROSSOVER QUANTITIES

LOCATION	WATER FOR GRANULAR MATERIAL	BASE COURSE	PIT RUN	ASPHALT CONCRETE COMPOSITE		UNCLASSIFIED EXCAVATION
				1st Lift	2nd Lift	
	(MGal)	(Ton)	(Ton)	(Ton)	(Ton)	(CuYd)
Traffic Control Crossovers						
Sta 366+00 Crossover	20.1	543.2	2,064.3	100.6	80.5	375
Sta a 439+00 Crossover	29.1	785.7	2,997.3	145.5	116.4	543
Totals:	49.2	1,328.9	5,061.6	443.0		918

TABLE OF GUARDRAIL QUANTITIES – 1A

Location	Remove 3 Cable Guardrail	Remove 3 Cable Guardrail Anchor Assembly	Remove 3 Cable Guardrail Slip Base Anchor Assembly	Remove Beam Guardrail	Remove 3 Cable Guardrail Anchor Assembly for Reset	Remove W Beam Guardrail Flared End Terminal for Reset	Remove 3 Cable Guardrail for Reset	Remove Thrie Beam Guardrail for Reset	Remove W Beam Guardrail for Reset	Remove W Beam to Thrie Beam Guardrail Transition for Reset	Remove W Beam Guardrail Breakaway Cable Terminal for Reset	Reset 3 Cable Guardrail, Cable Only	Reset Thrie Beam Rail	Reset W Beam Rail	Reset W Beam to Thrie Beam Guardrail Transition	Reset W Beam Guardrail Breakaway Cable Terminal
	FT.	EACH	EACH	FT.	EACH	EACH	FT.	FT.	FT.	EACH	EACH	FT.	FT.	FT.	EACH	EACH
07-222-329, MRM 301.20 WBL																
East End Median Shoulder	14	---	1	---	1	---	135	12.5	62.5	1	1	135	12.5	62.5	1	1
East End Outside Shoulder	---	---	---	---	---	1	---	12.5	75.0	1	---	---	12.5	75.0	1	---
07-222-330, MRM 301.22 EBL																
East End Median Shoulder	134	2	---	81	---	---	---	---	---	---	---	---	---	---	---	---
East End Outside Shoulder	---	---	---	81	---	---	---	---	---	---	---	---	---	---	---	---
07-267-329, MRM 305.76 WBL																
East End Median Shoulder	182	1	---	---	1	---	422	12.5	62.5	1	1	422	12.5	62.5	1	1
East End Outside Shoulder	202	1	---	---	1	---	---	12.5	62.5	1	1	202	12.5	62.5	1	1
07-267-329, MRM 305.76 WBL																
West End Outside Shoulder	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
07-267-330, MRM 305.88 EBL																
East End Median Shoulder	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
East End Outside Shoulder	225	1	---	---	---	---	282	---	---	---	---	282	---	---	---	---
TOTALS:	757	5	1	162	3	1	839	50.0	262.5	4	3	1041	50.0	262.5	4	3

Guardrail Sheet Diagram	
1A	1B

TABLE OF GUARDRAIL QUANTITIES – 1B

Location	Reset 3 Cable Guardrail Anchor Assembly	Reset W Beam Guardrail Flared End Terminal	3 Cable Guardrail	3 Cable Guardrail Anchor Assembly	3 Cable Guardrail Intermediate Post	Beam Guardrail Post and Block	Straight Double Class A Thrie Beam Guardrail With Wood Posts FT	W Beam To Thrie Beam Guardrail Transition	Straight Class A W Beam Guardrail With Wood Posts	W Beam Guardrail Breakaway Cable Terminal	3 Cable Guardrail Slip Base Anchor Assembly	W Beam Guardrail Tangent End Terminal	Traffic Control Movable Concrete Barrier Type F	Temporary Concrete Barrier End Protection	Temporary Concrete Barrier End Protection Module Set or Repair Kit	Base Course for Additional Widening	Water for Granular Material	Obstacle bridge crosses	
	EACH	EACH	FT.	EACH	FT.	EACH	FT	EACH	FT	EACH	EACH	EACH	EACH	EACH	EACH	TONS	MGAL		
07-222-329, MRM 301.20 WBL																			
East End Median Shoulder	1	---	---	---	18	19	---	---	---	---	1	---	---	---	---	170.3	2.0	James River	
East End Outside Shoulder	---	1	---	---	---	30	---	---	25.0	---	---	---	---	---	---	275.2	3.3		
07-222-330, MRM 301.22 EBL																			
East End Median Shoulder	---	---	134	1	---	---	12.5	1	62.5	1	1	---	---	---	---	159.5	1.9	James River	
East End Outside Shoulder	---	---	---	---	---	---	12.5	1	12.5	---	---	1	---	---	---	41.6	0.5		
07-267-329, MRM 305.76 WBL																			
East End Median Shoulder	1	---	---	---	36	19	---	---	---	---	1	---	---	---	---	42.1	0.5	Over C.M.S.P. & P. R.R.	
East End Outside Shoulder	1	---	164	1	24	19	---	---	---	---	---	---	---	---	---	41.6	0.5		
07-267-329, MRM 305.76 WBL																			
West End Outside Shoulder	---	---	202	1	24	---	---	---	---	---	---	---	---	---	---	---	---	Over C.M.S.P. & P. R.R.	
07-267-330, MRM 305.88 EBL																			
East End Median Shoulder	---	---	---	---	---	---	---	---	---	---	---	---	21	1	1	35.3	0.4	Over C.M.S.P. & P. R.R.	
East End Outside Shoulder	---	---	---	1	64	---	---	---	---	---	---	---	24	1	---	47.8	0.6		
TOTALS:	3	1	500	4	166	87	25.0	2	100.0	1	3	1	45	2	1	813.4	9.7		

Temporary Concrete Barrier End Protection Module Set or Repair Kit - 1 each.
See Traffic Control Section C for Sequencing
Reset beam guardrail and 3 cable guardrail with new posts and blocks.

Guardrail Sheet Diagram	
1A	1B

TYPICAL SURFACING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(160)298	F16	F79

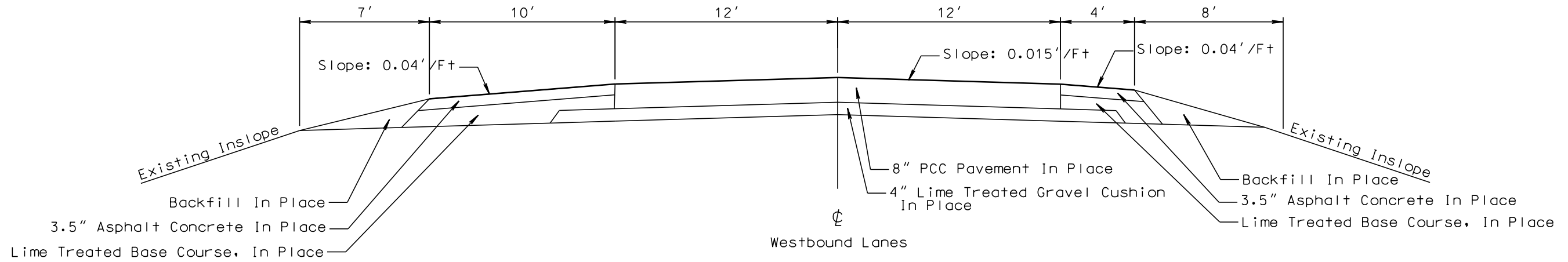
Plotting Date: 02/08/2012

In Place Surfacing

US12

Sta 383+92.00 to Sta 403+68.31
 Sta a 0+00.00 to Sta a 137+28.58

Sta a 147+98.58 to Sta. a 370+33.61
 Sta. a 385+44.11 to Sta. a 426+74.00



PLOT SCALE - 1:6

PLOTTED FROM - TRPR18387

PLOT NAME - 2

FILE - ... \PRJ\BRW\023C\023C TYPICAL.S.DGN

TYPICAL SURFACING SECTION

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET F17	TOTAL SHEETS F79
-----------------------	----------------------------	--------------	---------------------

Plotting Date: 02/08/2012

Equation:
Sta 403+68.31 = Sta a 0+00.00

Structures

#07-222-329
Sta. a 141+06.76 to Sta. a 143+88.55
MRM 301.20

#07-267-329
Sta. a 373+48.46 to Sta. a 382+21.83
MRM 305.76

Beginning of Project - Sta. 380+72.00 to Sta. 383+92.00

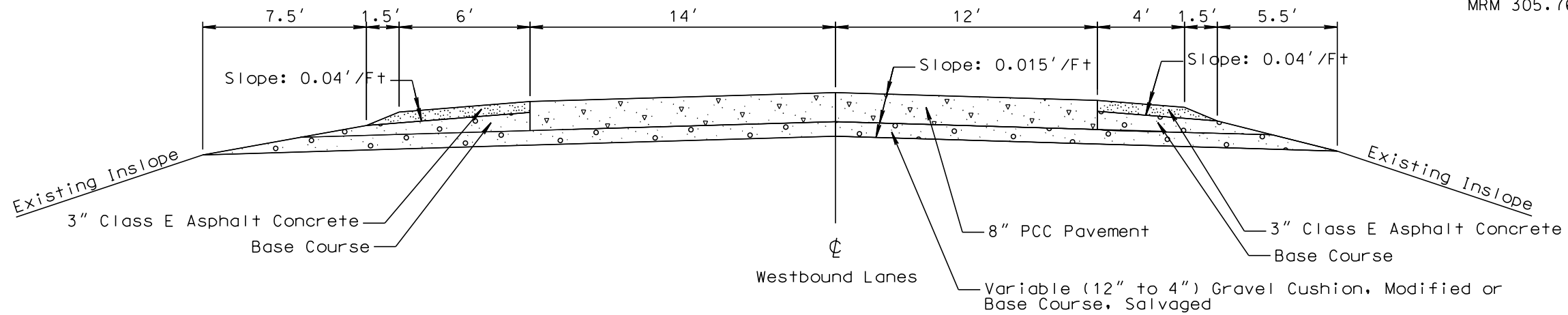
Sta. a 137+86.76 to Sta. a 141+06.76

Sta. a 143+88.55 to Sta. a 147+08.55

Sta. a 368+69.88 to Sta. a 373+48.46

Sta. a 382+21.83 to Sta. a 387+00.20

Sta. a 426+74 to Sta. a 429+94 - End of Project



Unbonded PCC Overlay with Fabric Bond Breaker

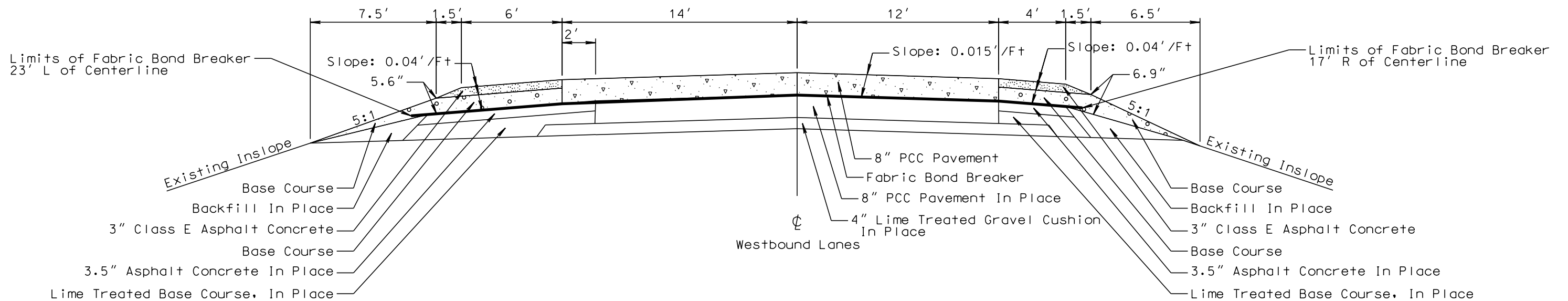
US12

Sta 383+92.00 to Sta 403+68.31

Sta a 0+00.00 to Sta a 137+86.76

Sta a 147+08.55 to Sta. a 368+69.88

Sta. a 387+00.20 to Sta. a 426+74.00



PLOT SCALE - 1:6

PLOTTED FROM - TRPR18387

PLOT NAME - 3

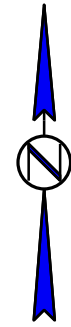
FILE - ... \PRJ\BRWN023C\023C TYPICALS.DGN

PCC PAVEMENT JOINT LAYOUT

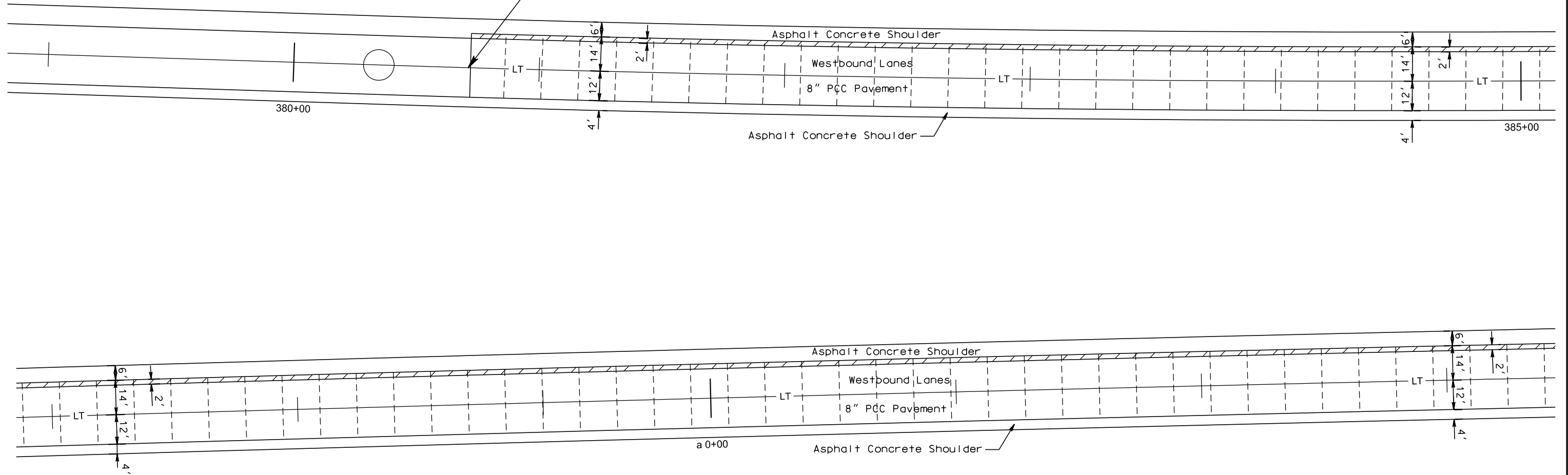
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F18	F79

Plotting Date: 02/08/2012

Scale 1 Inch = 40 Feet
Sheet 1 of 3 Sheets




Sta. 380+72.00
Beginning Of Project



LEGEND:

Longitudinal Joint With Tie Bars (Construction or Sawed) ————LT———LT———
 Transverse Contraction Joint - - - - -

 Transverse contraction joints within these areas shall not have dowel bar assemblies. All other transverse contraction joints shall have dowel bar assemblies.

PLOT SCALE - 1:40.1202

PLOTTED FROM - TRPR18387

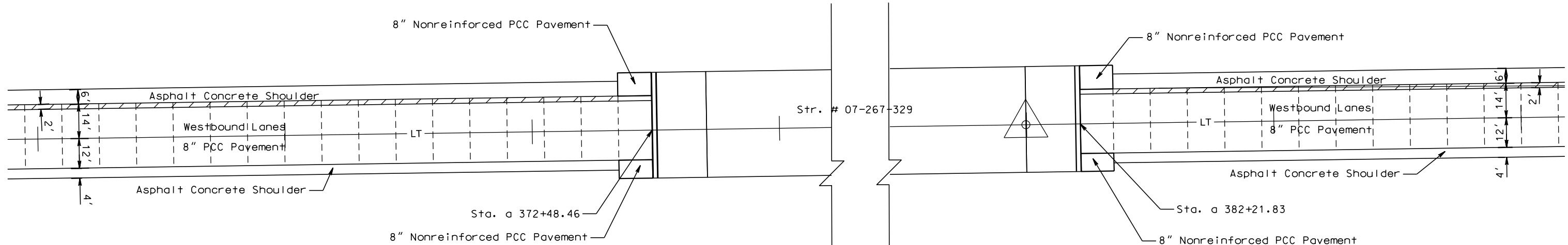
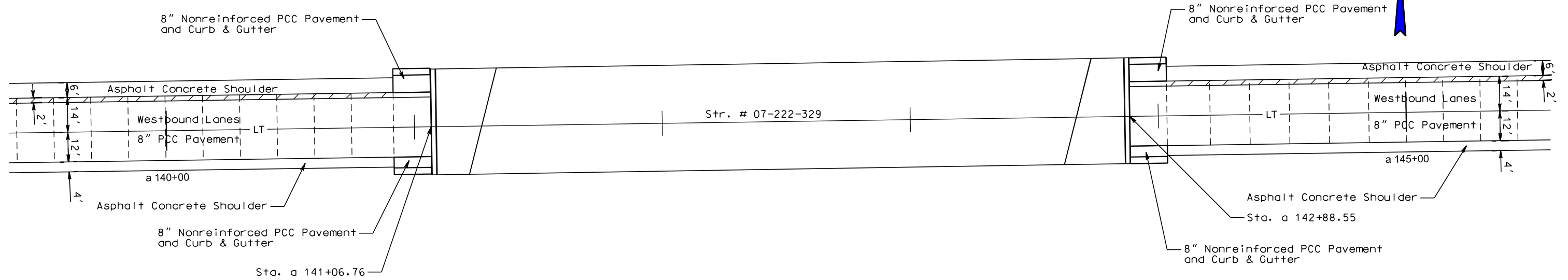
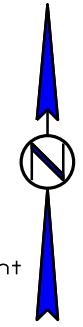
PLOT NAME - 4
FILE - ... \PRJ\BRWN023C\JOINT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F19	F79

Plotting Date: 02/08/2012

Scale 1 Inch = 40 Feet
Sheet 2 of 3 Sheets



PLOT SCALE - 1:40.1202

PLOT NAME - 5

FILE - ... \PRJ\BRWN023C\JOINT LAYOUT.DGN

PLOTTED FROM - TRPR18387

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F20	F79

Plotting Date: 02/08/2012

Scale 1 Inch = 40 Feet
Sheet 3 of 3 Sheets

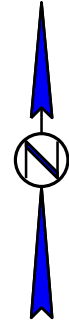
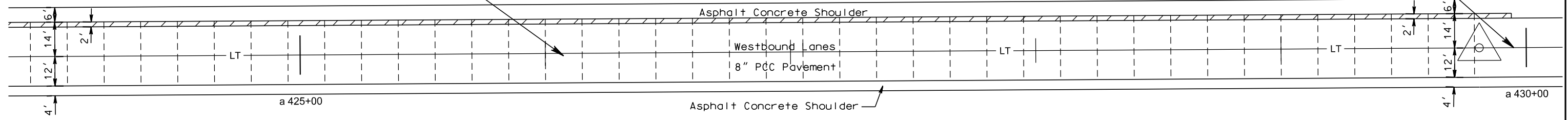
PLOT SCALE - 1:40.1202

PLOT NAME - 6

FILE - ... \PRJ\BRWN023C\JOINT LAYOUT.DGN

Sta. a 426+07.00
Remove
Weigh in Motion System

Sta. a 429+94.00
End Of Project



PLOTTED FROM - TRPR18387

TRAFFIC CONTROL CROSSOVER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(160)298	F21	F79

Plotting Date: 02/08/2012

Sheet 1 of 3 Sheets

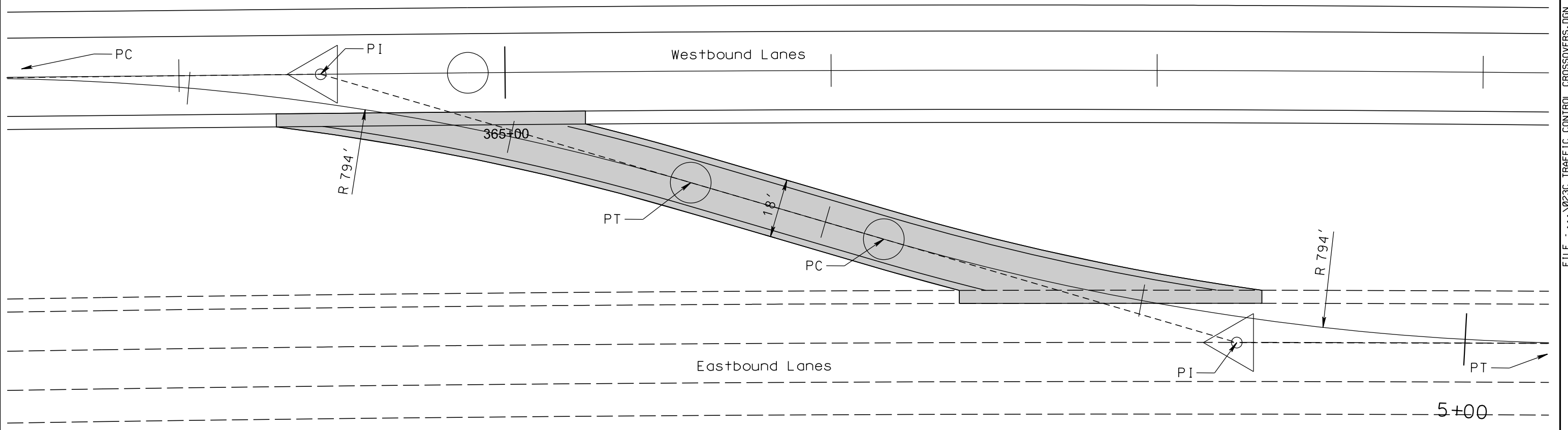
 5" Asphalt Concrete Composite
12" Base Course
and Pit Run Material (Variable Depth)

Sta. 363+03.00 WBL
Begin Median Crossover

Sta. 366+00.00 WBL

PLOT SCALE - 1:250,910

PLOT NAME - 7



Sta. 368+73.24 EBL
End Median Crossover

PLOTTED FROM - TRPR18387

FILE - ... \023C TRAFFIC CONTROL CROSSOVERS.DGN

TRAFFIC CONTROL CROSSOVER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(160)298	F22	F79

Plotting Date: 02/08/2012

Sheet 2 of 3 Sheets

5" Asphalt Concrete Composite
12" Base Course
and Pit Run Material (Variable Depth)

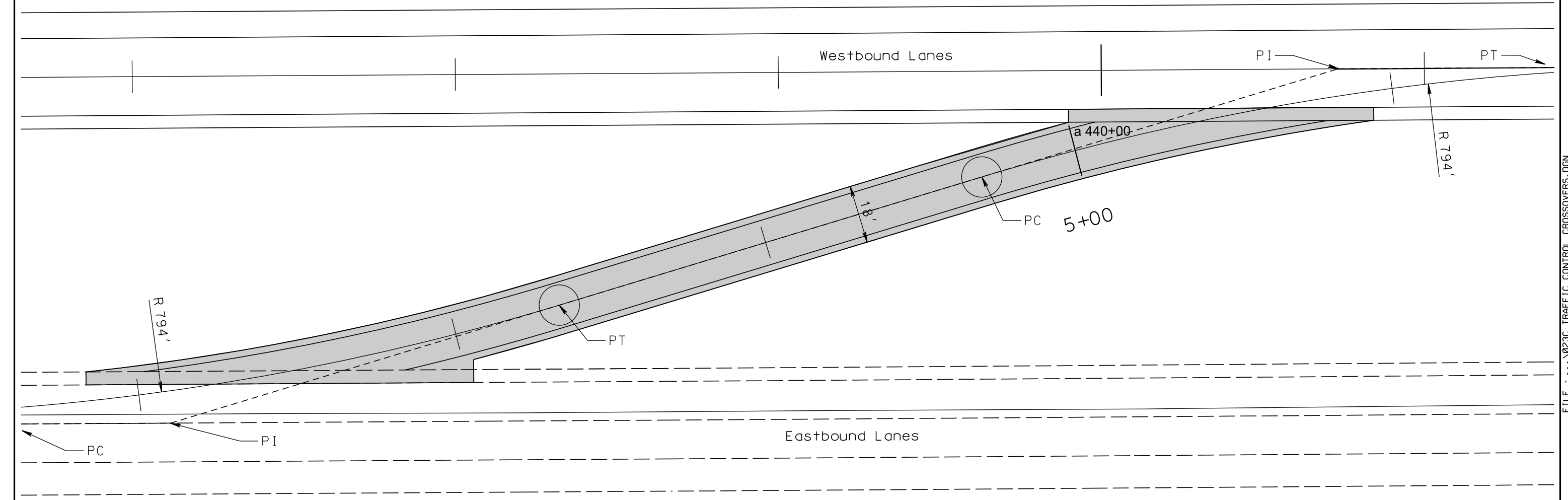
Sta. a 439+00.00

Sta. a 442+89.45 EBL
End Median Crossover

PLOT SCALE - 1:29,910

PLOT NAME - 8

FILE - ... \023C TRAFFIC CONTROL CROSSOVERS.DGN



Sta. a 435+01.64 WBL
Begin Median Crossover

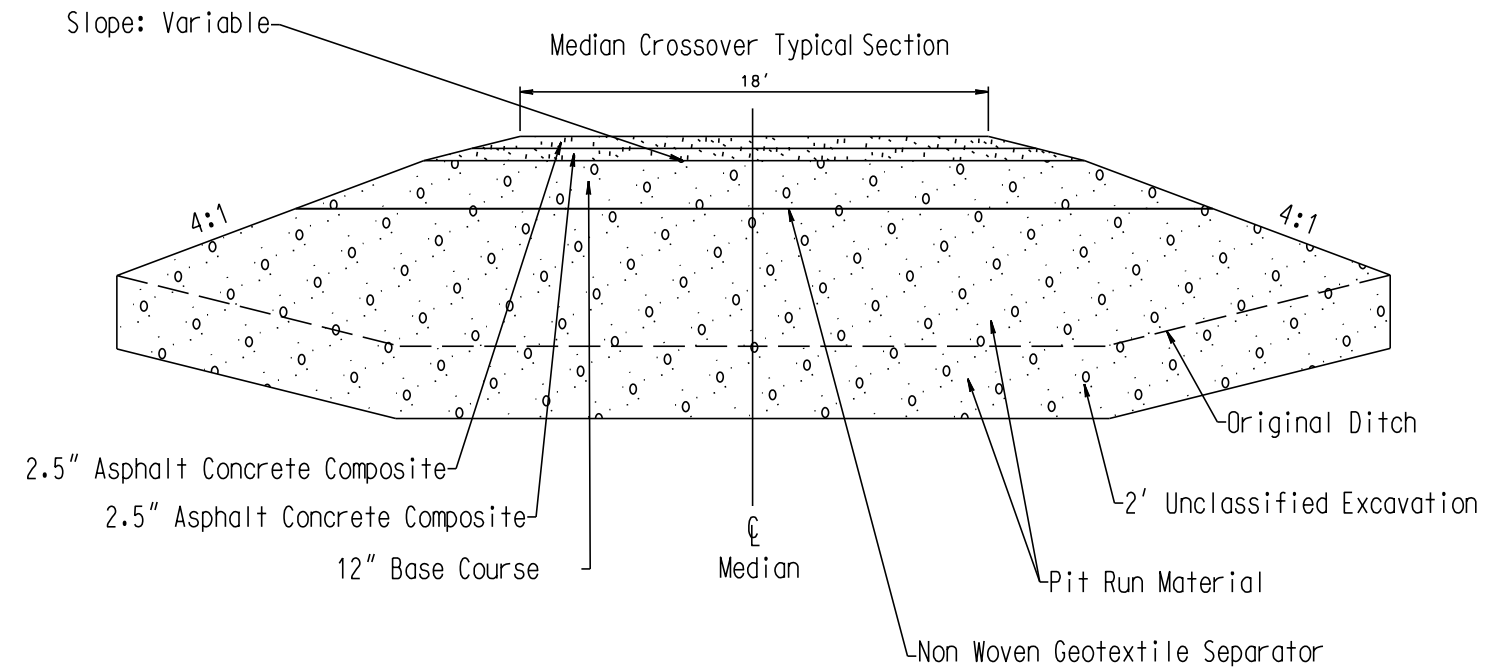
PLOTTED FROM - TRPR18387

TRAFFIC CONTROL CROSSOVER

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET F23	TOTAL SHEETS F79
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Plotting Date: 02/08/2012

Sheet 3 of 3 Sheets



PLOT SCALE - 1:5.98202

PLOTTED FROM - TRPR18387

PLOT NAME - 9

FILE - ... \023C TRAFFIC CONTROL CROSSOVERS.DGN

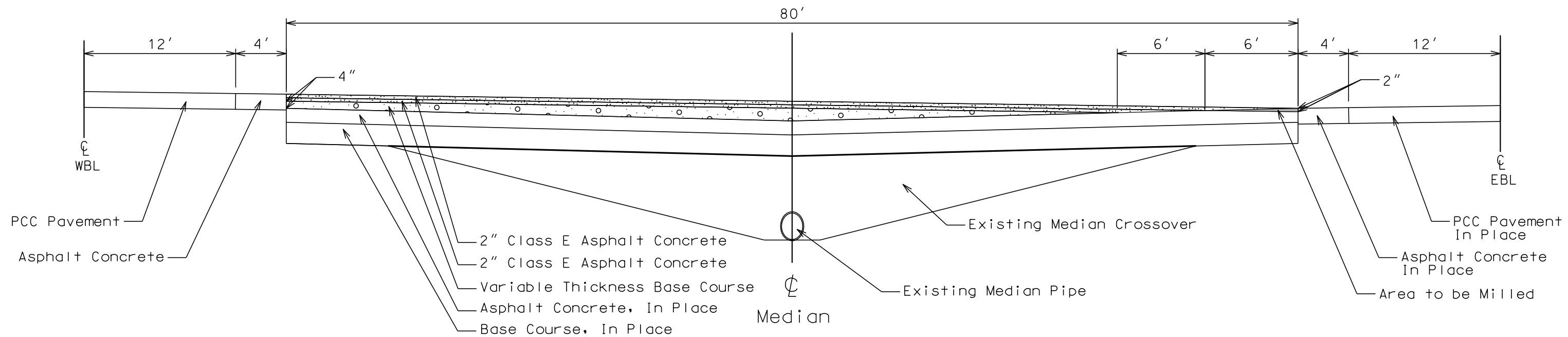
MEDIAN CROSSOVERS

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET F24	TOTAL SHEETS F79
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Plotting Date: 02/08/2012

PLOT SCALE - 1:7,80052

PLOT NAME - 10



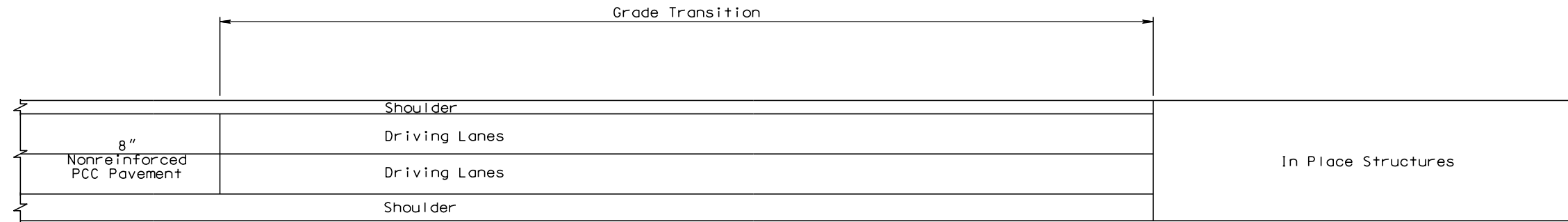
PLOTTED FROM - IRPR18387

FILE - ... \BRWN023C\023C MEDIANXOVERS.DGN

PCC PAVEMENT TRANSITION LAYOUT

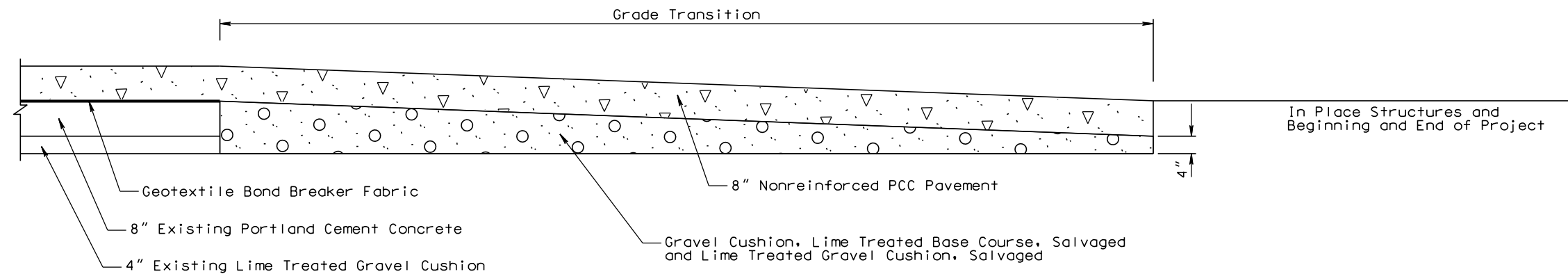
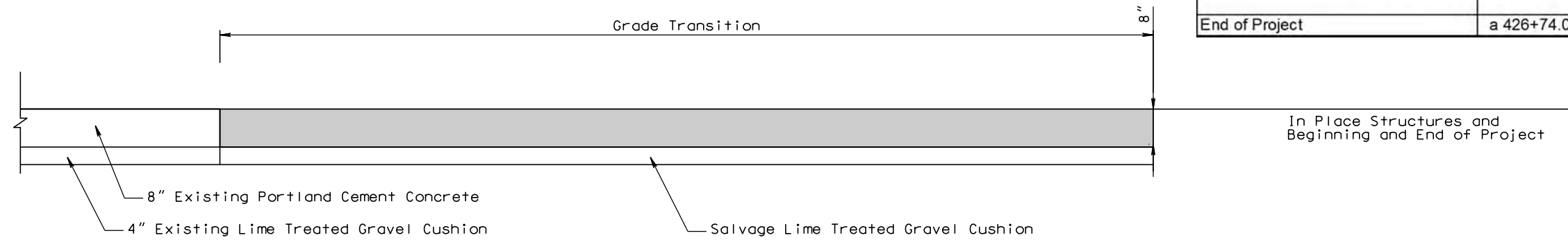
PLOT SCALE - 1:40

PLOT NAME - 11



 PCC to be Removed
(See Table)

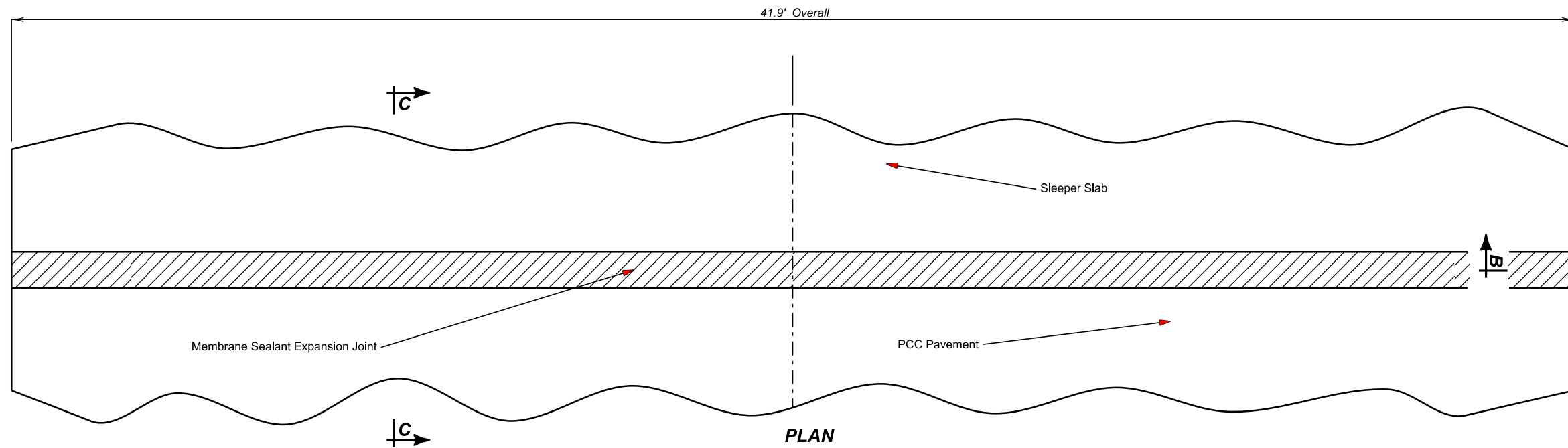
Blockout Stationing			
Beginning of Project	380+72.00	to	383+92.00
Structures			
Structure # 07-222-329 MRM 301.20			
Begin Bridge	a 137+86.76	to	a 141+06.76
End Bridge	a 143+88.55	to	a 147+08.55
Structure # 07-267-329 MRM 305.76			
Begin Bridge	a 368+69.88	to	a 373+48.46
End Bridge	a 382+21.83	to	a 387+00.20
End of Project	a 426+74.00	to	a 429+94.00



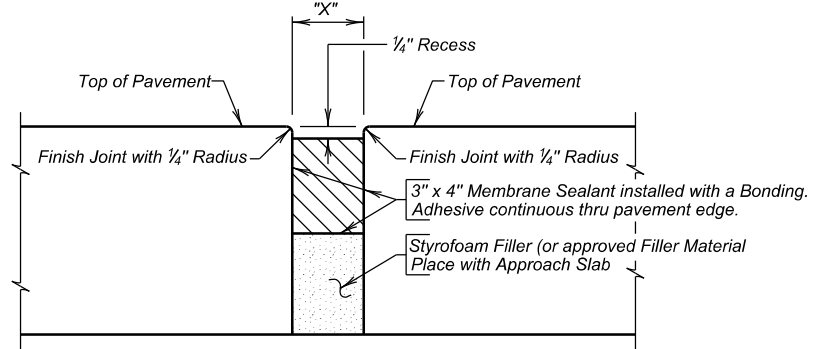
PLOTTED FROM - TRPR18387

FILE - ... \023C PAVEMENT TRANSITION.DGN

GENERAL PLAN VIEW



**Joint Detail for Both
Structure #07-222-329 &
Structure #07-267-329**

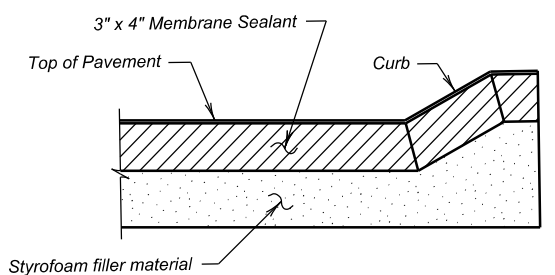


SECTION C - C

Structure Number	Membrane Sealant Joint Feet
Str. No. 007-222-329, MRM 301.20 WB	
Begin Bridge	41.9
End Bridge	41.9
Str. No. 07-267-329, MRM 305.76 WB	
Begin Bridge	41.9
End Bridge	41.9
TOTAL:	167.6

TEMP.	DIMENSION "X"
30°	3 1/8"
40°	3"
50°	2 7/8"
60°	2 3/4"
70°	2 11/16"
80°	2 9/16"
90°	2 7/16"

**Curb Detail for
Structure #07-222-329 Only**



SECTION B - B

MEMBRANE SEALANT EXPANSION JOINT

**DETAILS FOR
JOINT BETWEEN SLEEPER SLAB
AND PCC PAVEMENT**

**BROWN COUNTY
S. D. DEPT. OF TRANSPORTATION**

GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. F27	TOTAL SHEETS F79
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Plotting Date: 02/08/2012

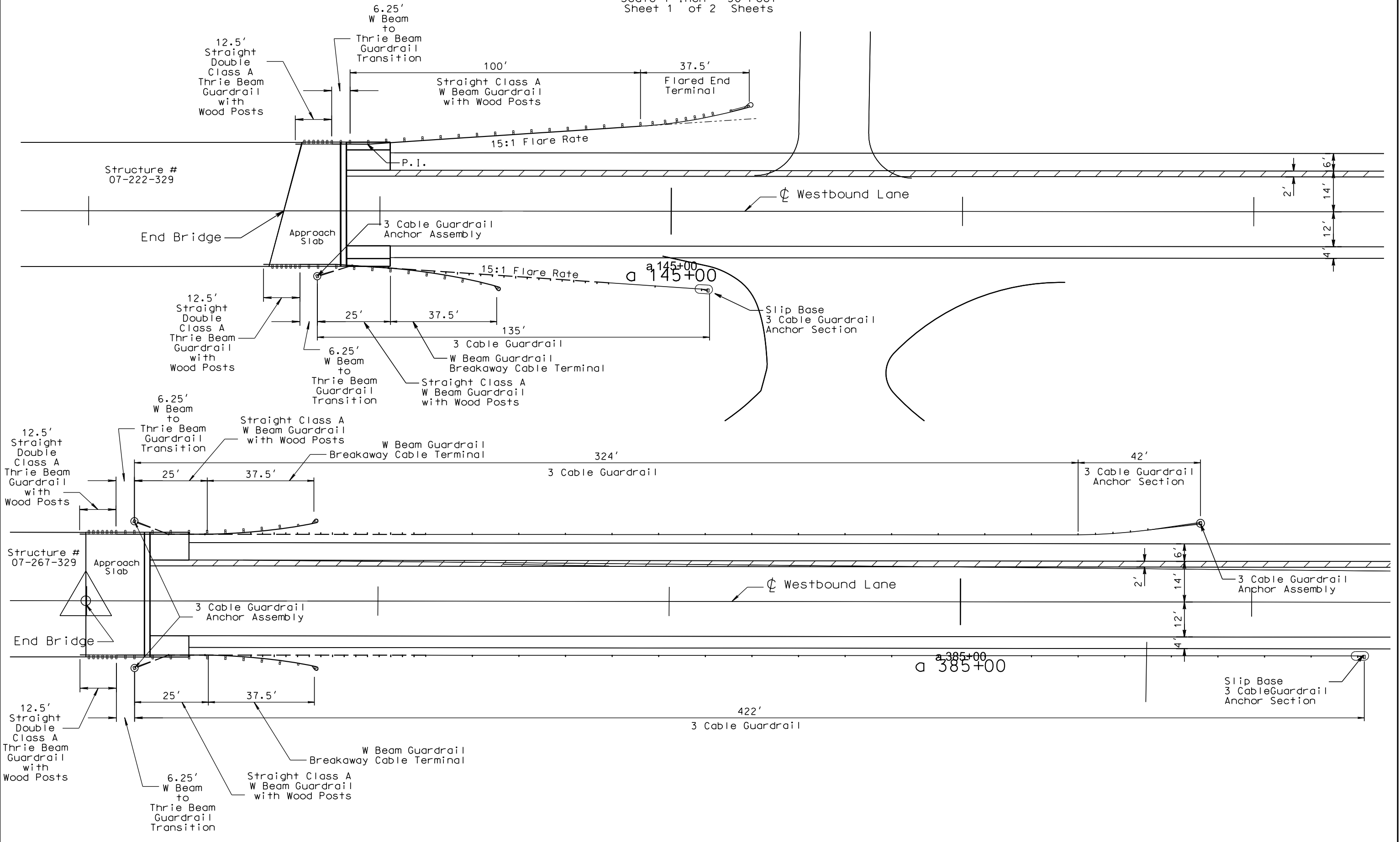
Scale 1 Inch = 30 Feet
Sheet 1 of 2 Sheets

PLOT SCALE - 1:30.0901

PLOT NAME - 13

FILE - ... \BRW023C\GUARDRAIL LAYOUT.DGN

PLOTTED FROM - TPR18387



GUARDRAIL LAYOUT

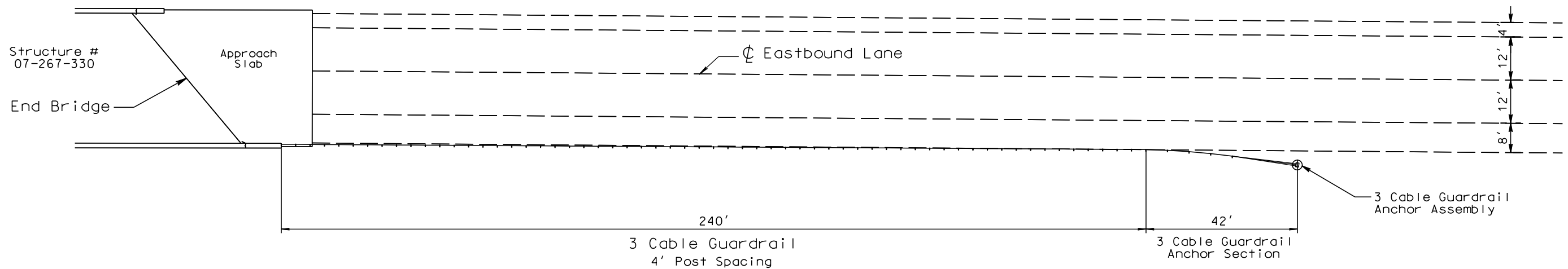
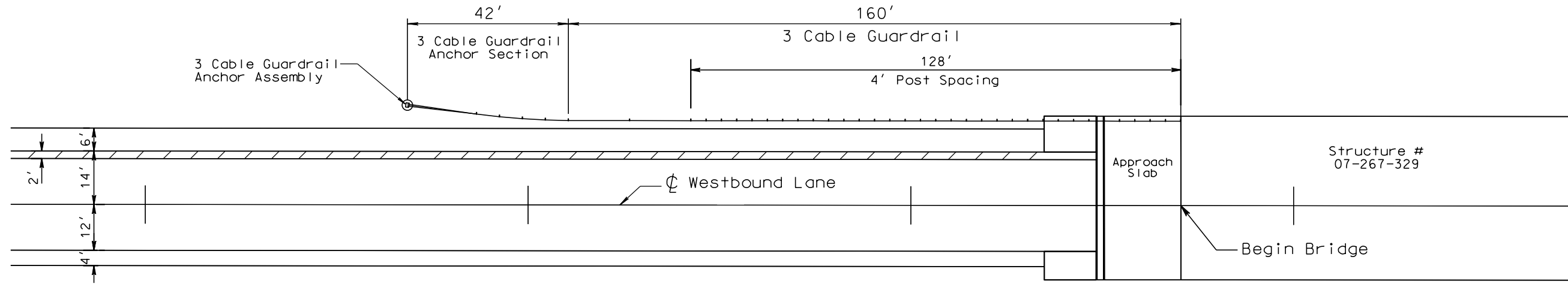
STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. F28	TOTAL SHEETS F79
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Plotting Date: 02/08/2012

Scale 1 Inch = 30 Feet
Sheet 2 of 2 Sheets

PLOT SCALE - 1:30.0901

PLOT NAME - 14



PLOTTED FROM - TRPR18387

FILE - ... \BRWN023C\GUARDRAIL LAYOUT.DGN

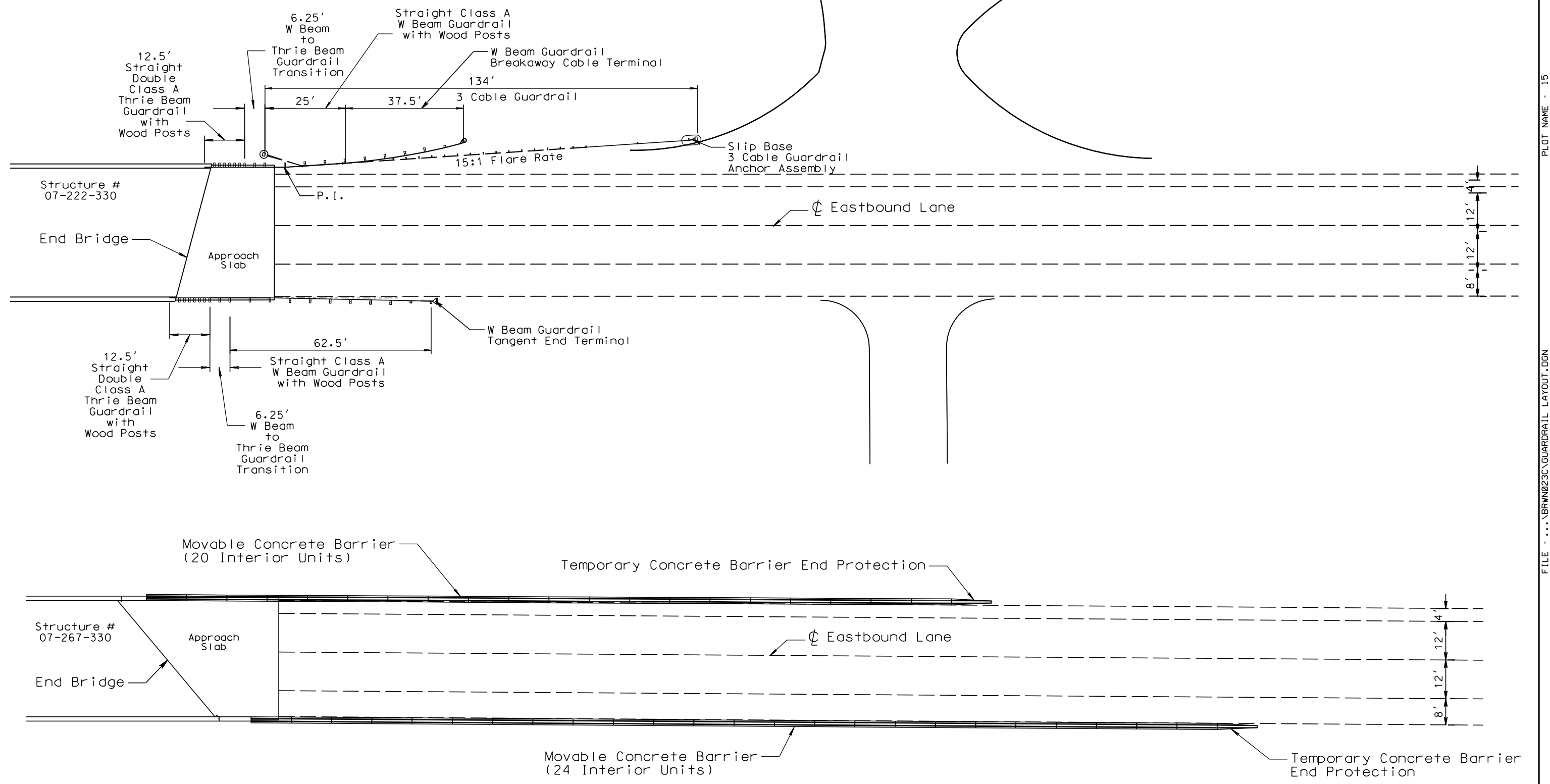
TRAFFIC CONTROL GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. F29	TOTAL SHEETS F79
Plotting Date: 02/08/2012			

Scale 1 Inch = 30 Feet
Sheet 1 of 1 Sheets

PLOT SCALE - 1:30.0901

PLOT NAME - 15



PLOTTED FROM - TRPR18387

FILE - ... \BRWN023C\GUARDRAIL LAYOUT.DGN

GUARDRAIL EMBANKMENT AND SURFACING

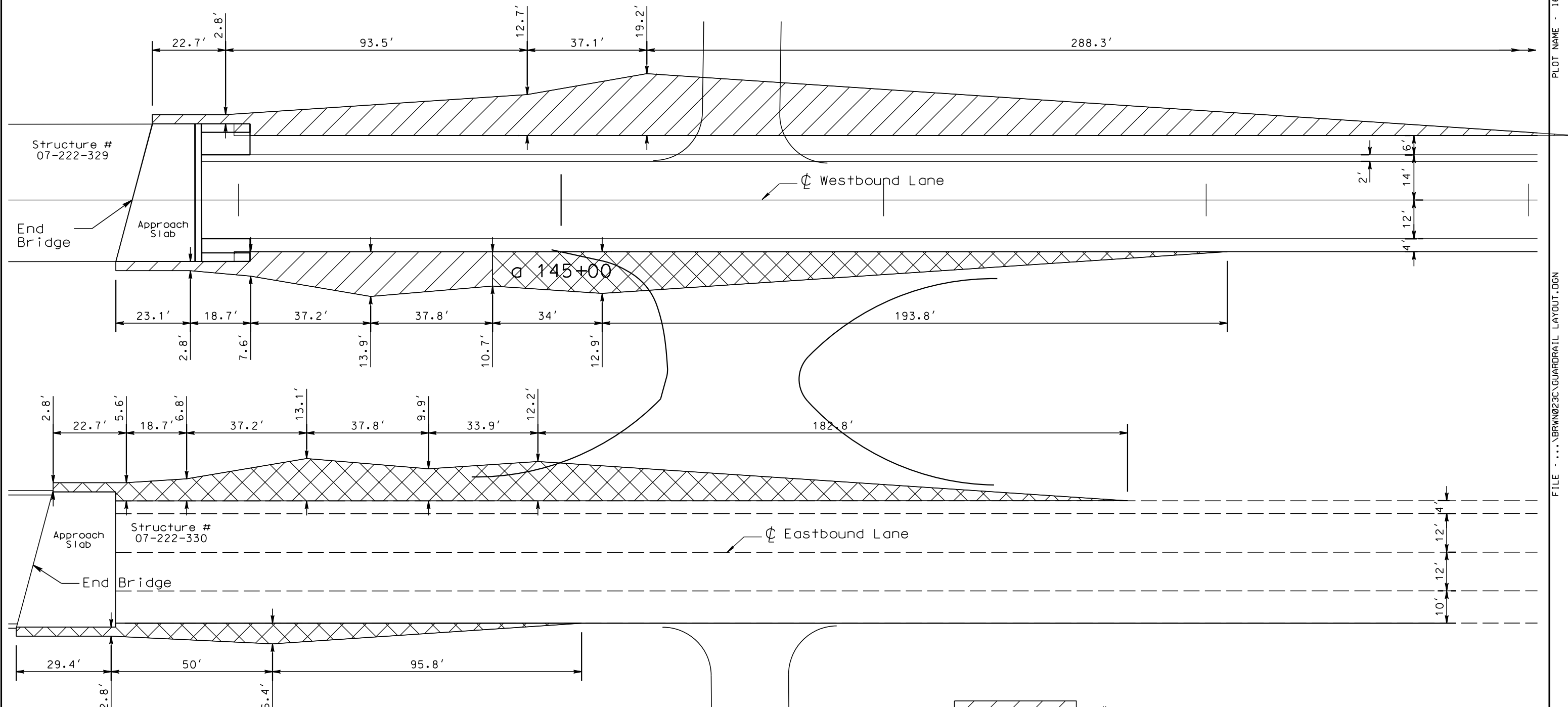
STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. F30	TOTAL SHEETS F79
-----------------------	----------------------------	------------------	---------------------

Plotting Date: 02/08/2012

Scale 1 Inch = 30 Feet
Sheet 1 of 2 Sheets

PLOT SCALE - 1:30.0901

PLOT NAME - 16



- 2" Class E Asphalt Concrete
11" Base Course
- Area to be Surfaced with
13" Base Course

PLOTTED FROM - TRPR18387

FILE - ... \BRWN023C\GUARDRAIL LAYOUT.DGN

GUARDRAIL EMBANKMENT AND SURFACING

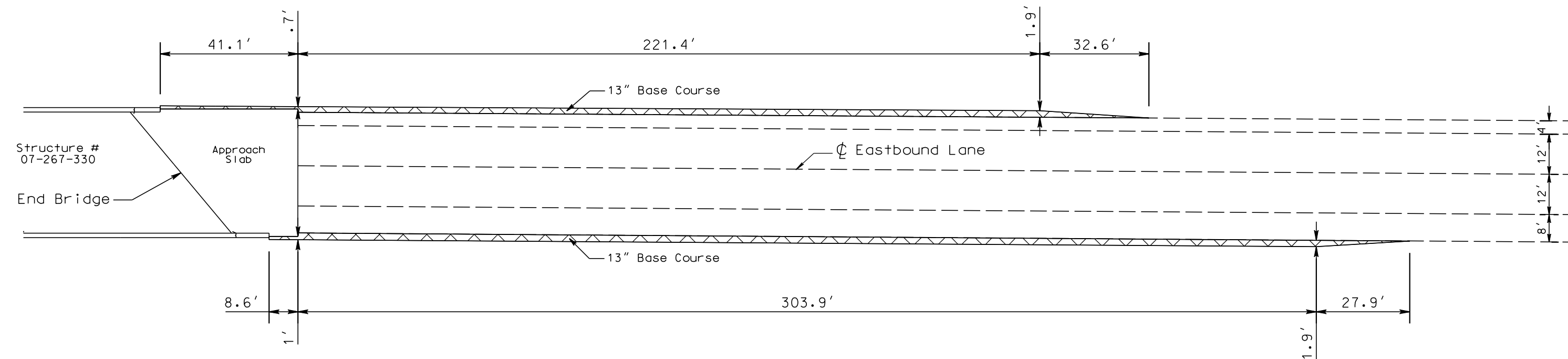
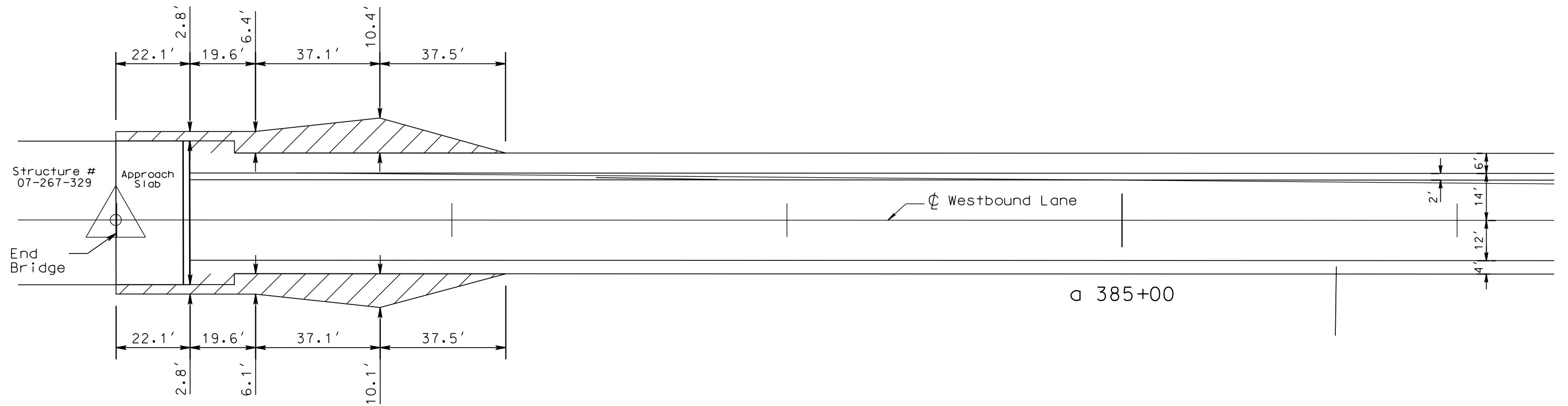
STATE OF SOUTH DAKOTA	PROJECT NH 0012(160)298	SHEET NO. F31	TOTAL SHEETS F79
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Plotting Date: 02/08/2012

Scale 1 Inch = 30 Feet
Sheet 2 of 2 Sheets

PLOT SCALE - 1:30.0901

PLOT NAME - 18



PLOTTED FROM - TRPR18387

FILE - ... \BRWN023C\GUARDRAIL LAYOUT.DGN

PCC OVERLAY CENTERLINE PROFILE

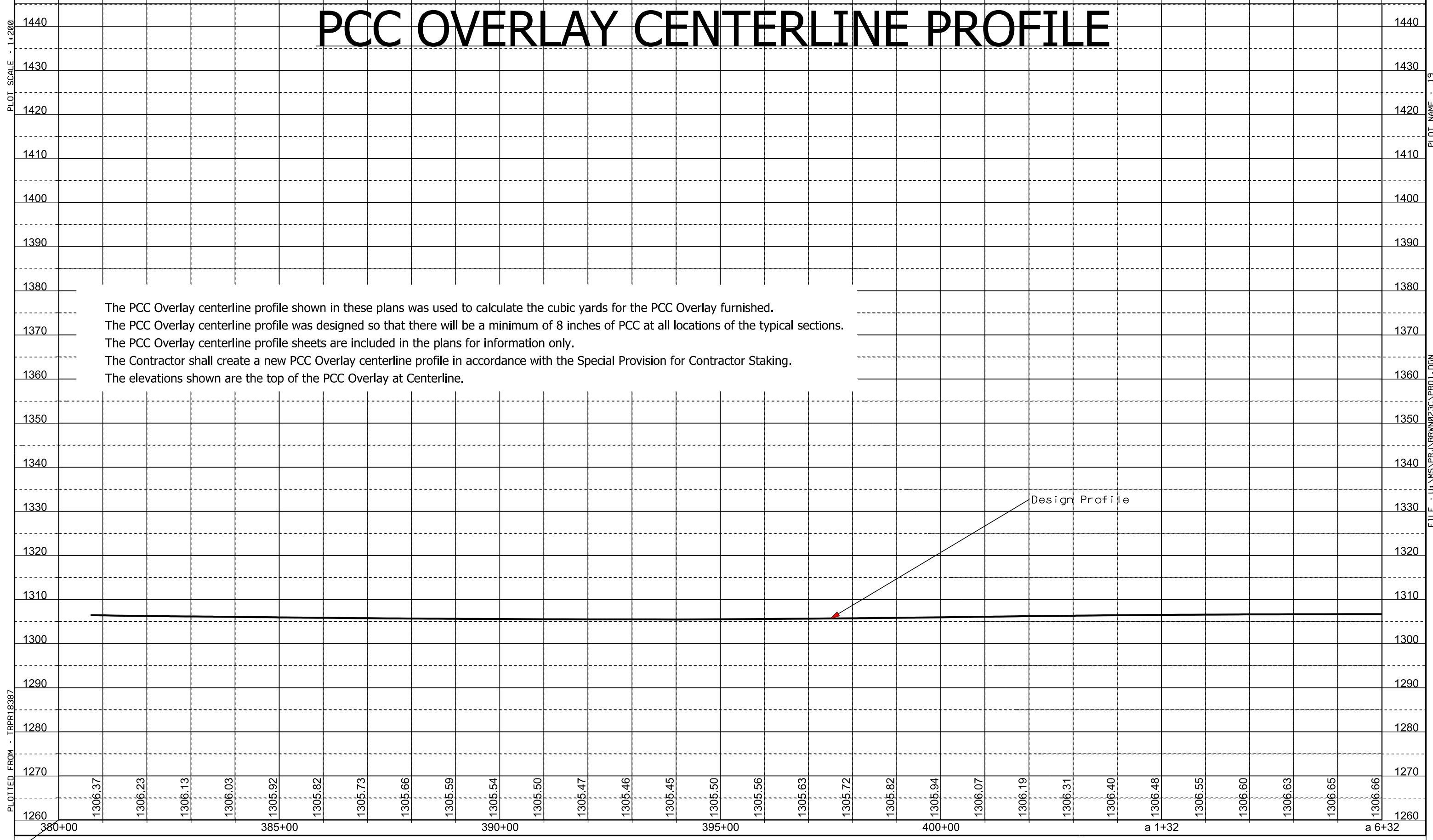
PLOT SCALE - 1:200

PLOT NAME - 19

The PCC Overlay centerline profile shown in these plans was used to calculate the cubic yards for the PCC Overlay furnished.
 The PCC Overlay centerline profile was designed so that there will be a minimum of 8 inches of PCC at all locations of the typical sections.
 The PCC Overlay centerline profile sheets are included in the plans for information only.
 The Contractor shall create a new PCC Overlay centerline profile in accordance with the Special Provision for Contractor Staking.
 The elevations shown are the top of the PCC Overlay at Centerline.

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023C\PROT.DGN



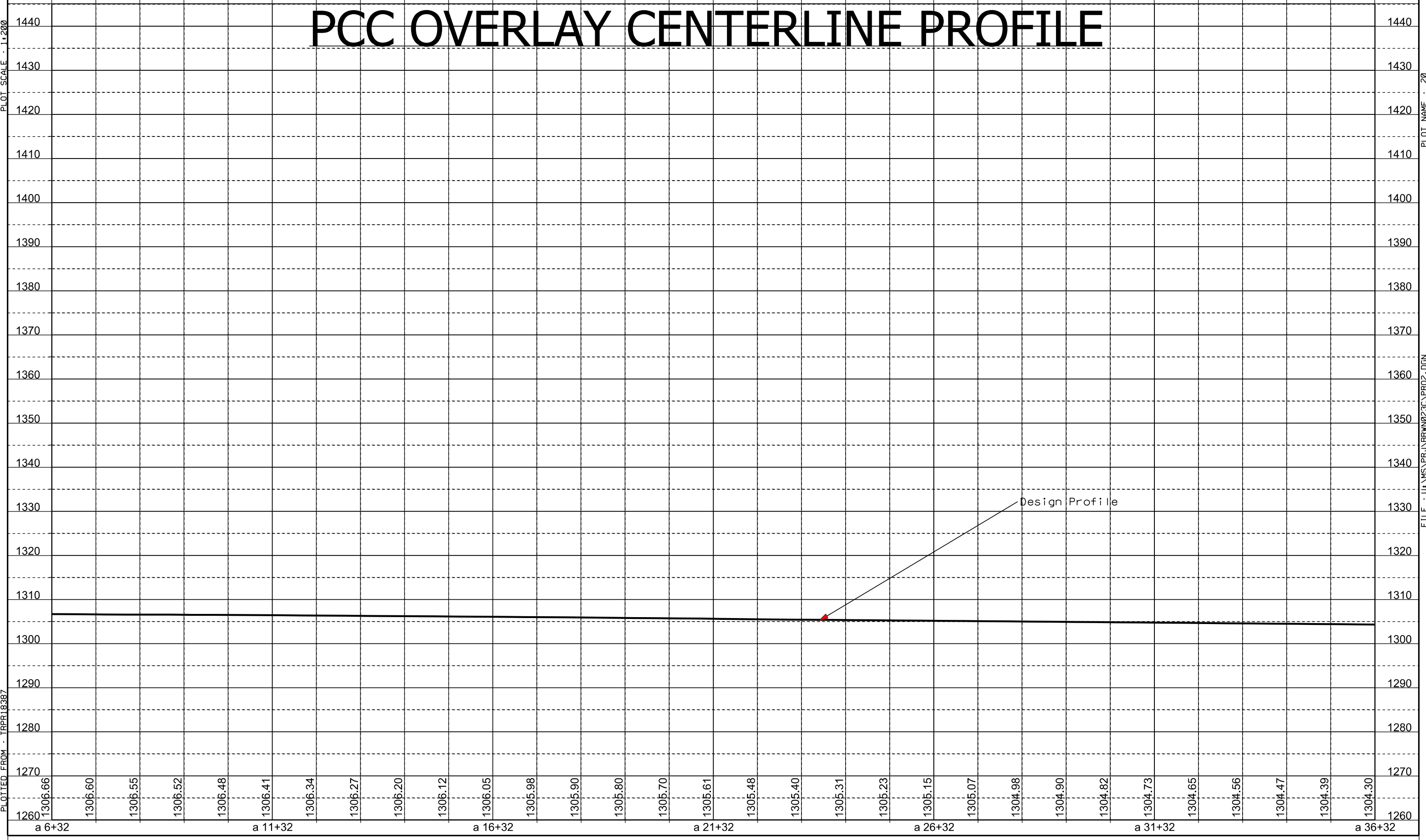
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 20

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO2.DGN



a 6+32 a 11+32 a 16+32 a 21+32 a 26+32 a 31+32 a 36+32

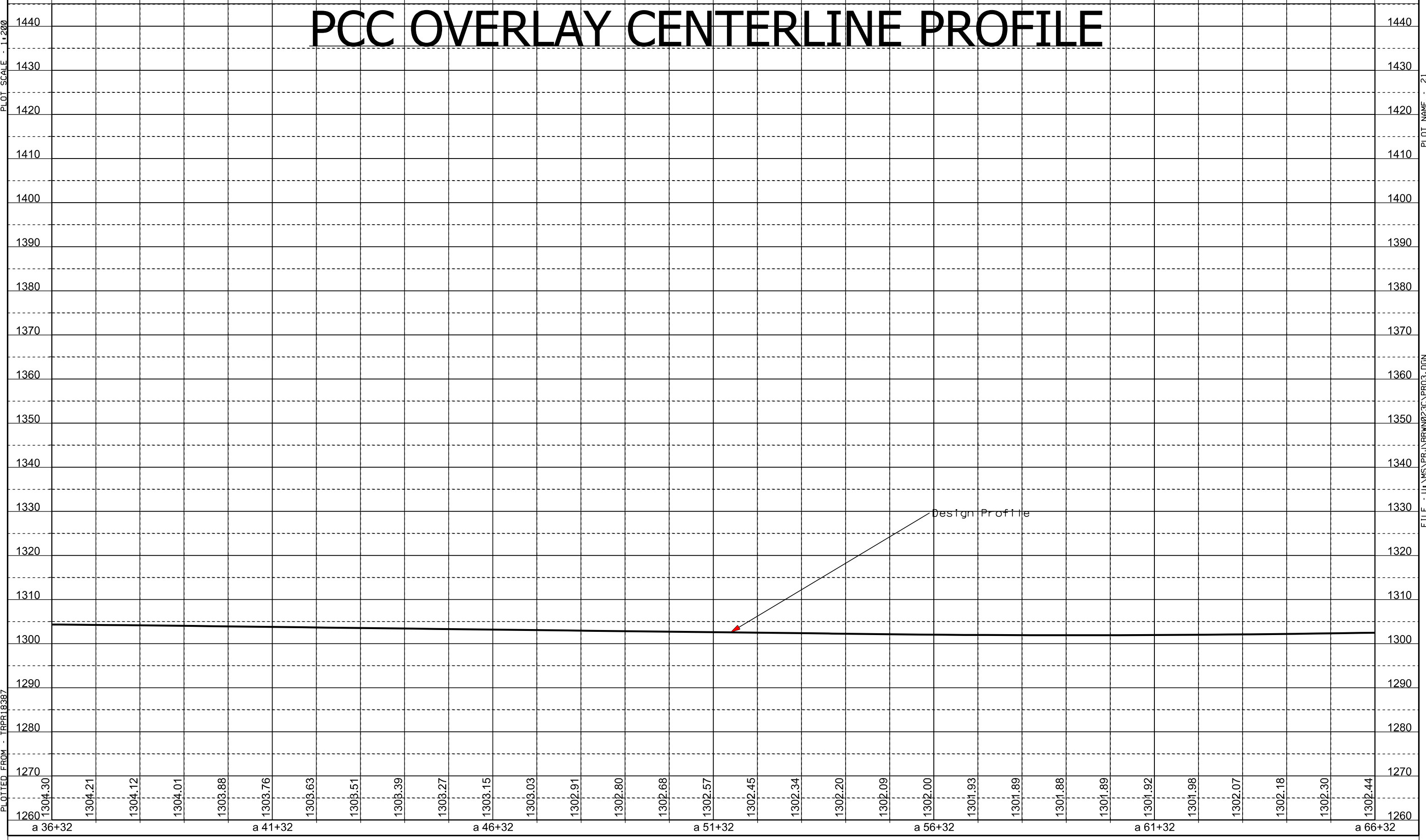
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 21

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO3.DGN



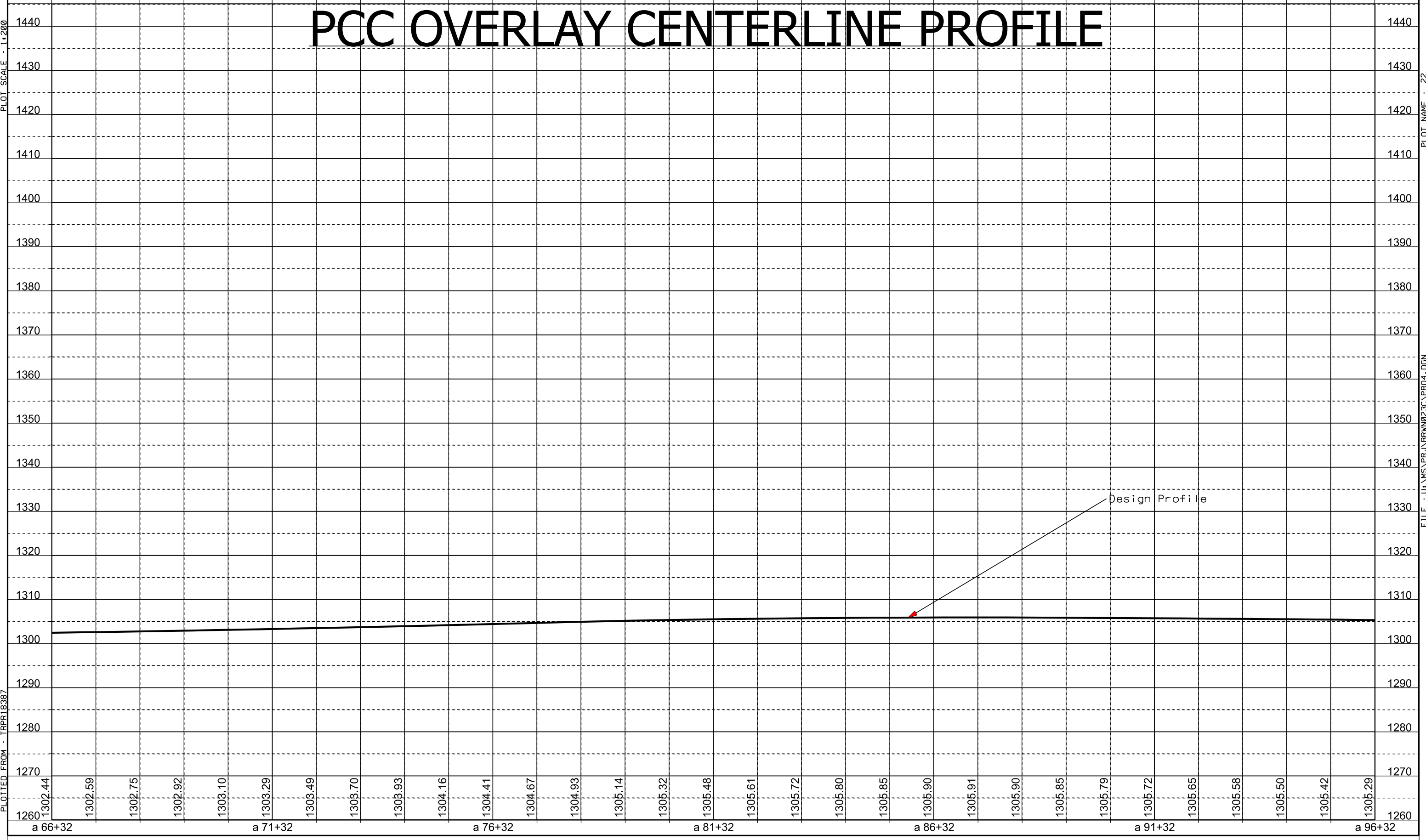
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 22

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023C\PRO4.DGN



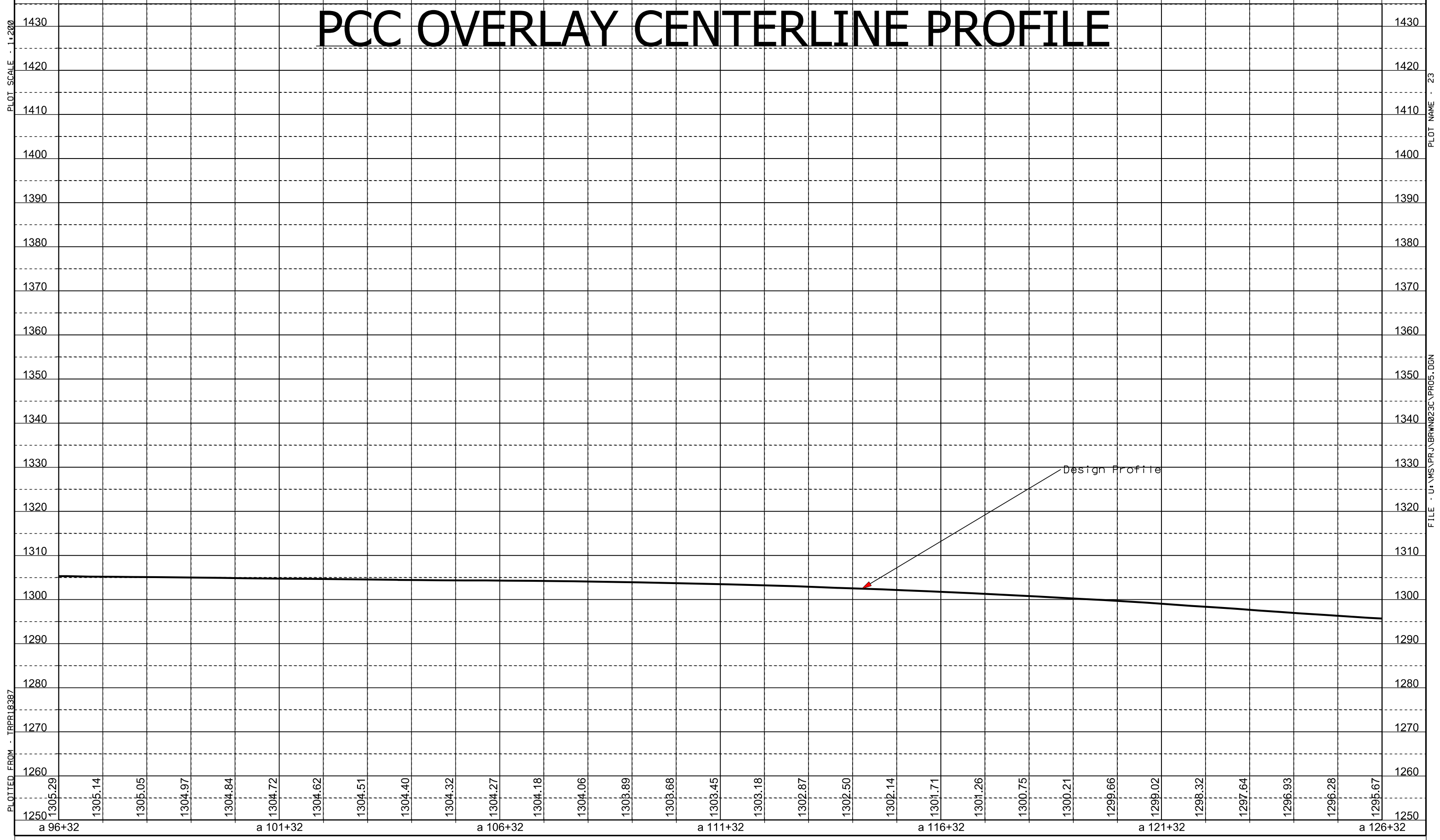
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 23

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO5.DGN



Design Profile

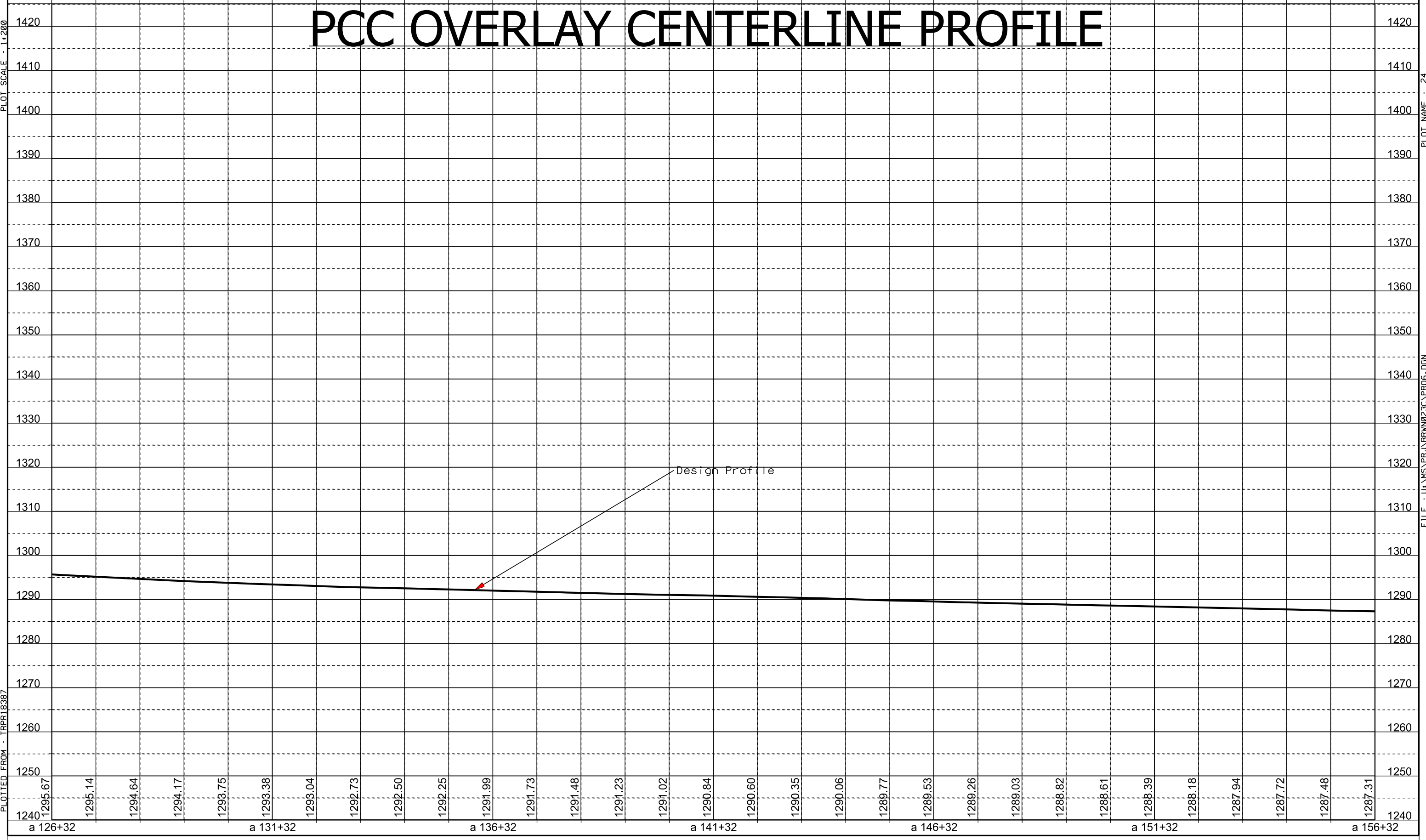
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 24

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PROG.DGN



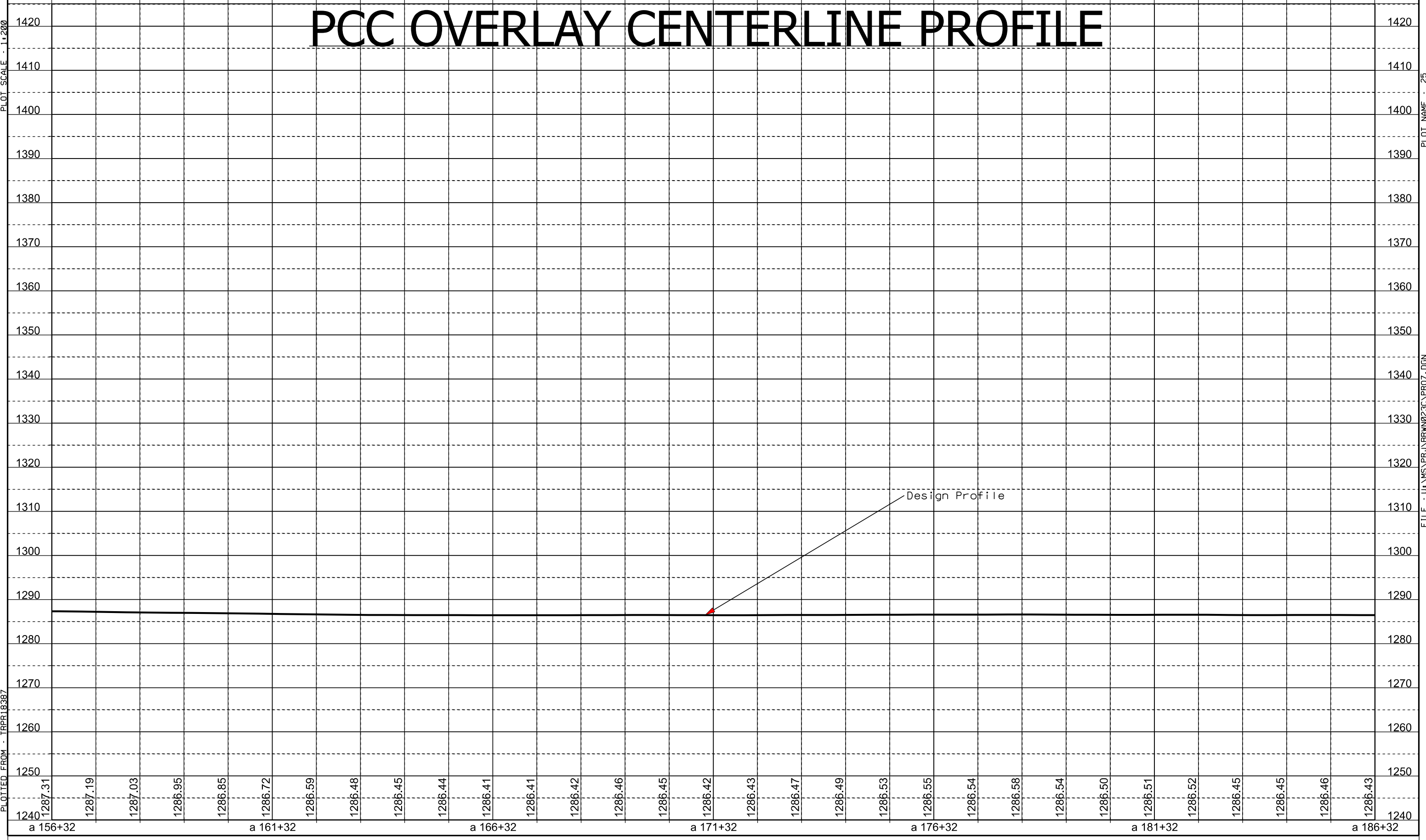
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 25

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023C\PRO7.DGN



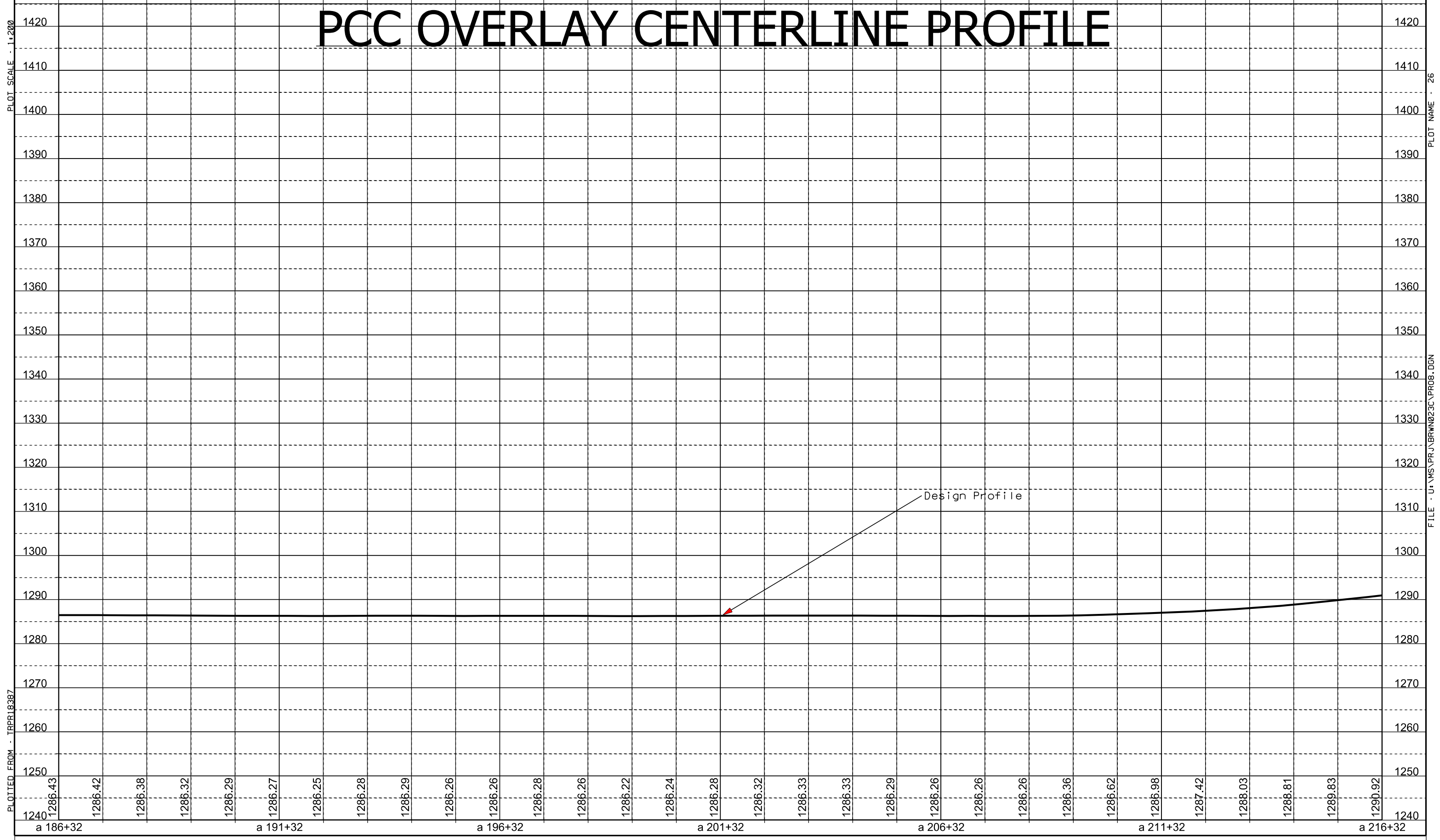
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 26

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PROB.DGN



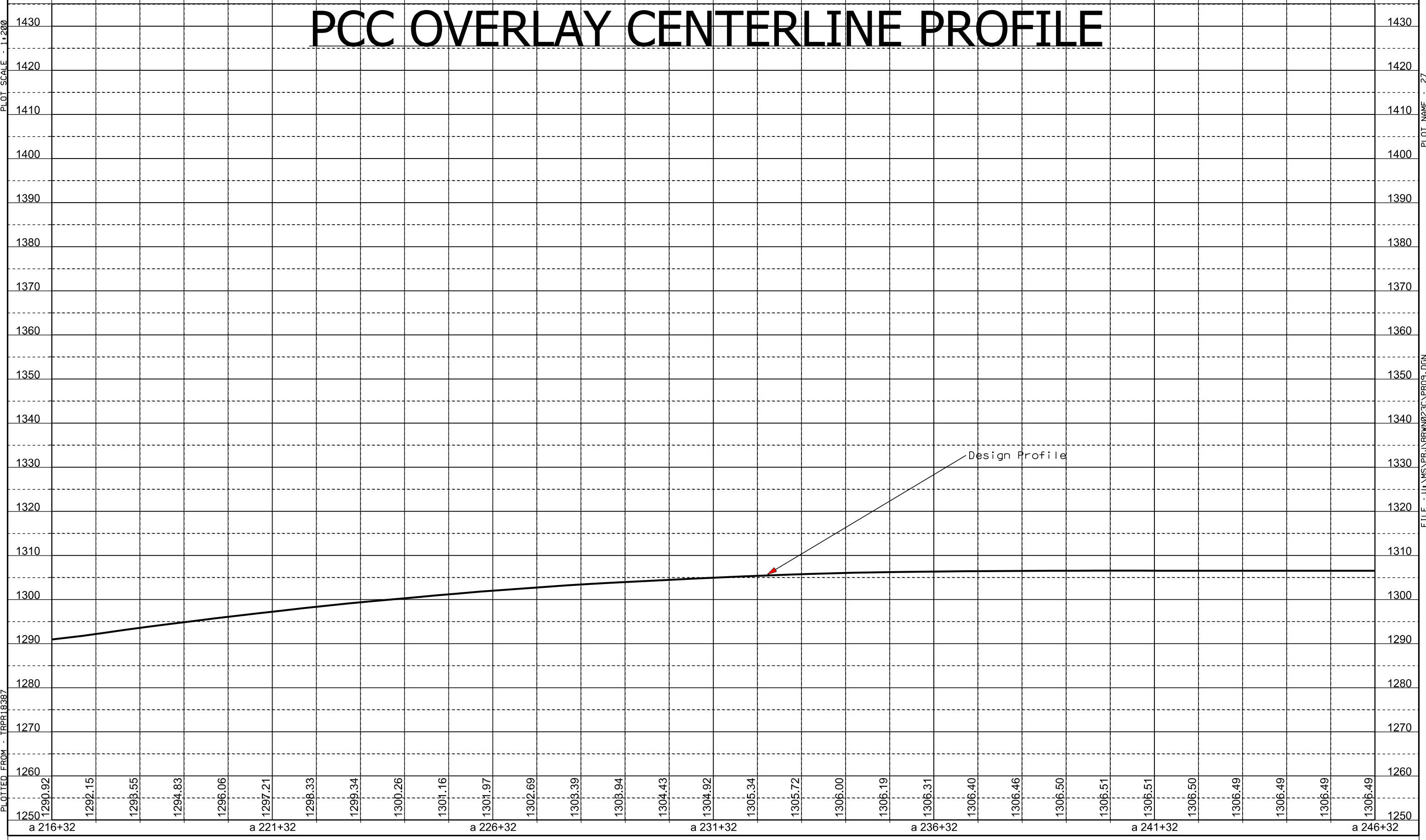
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 27

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PROP.DGN



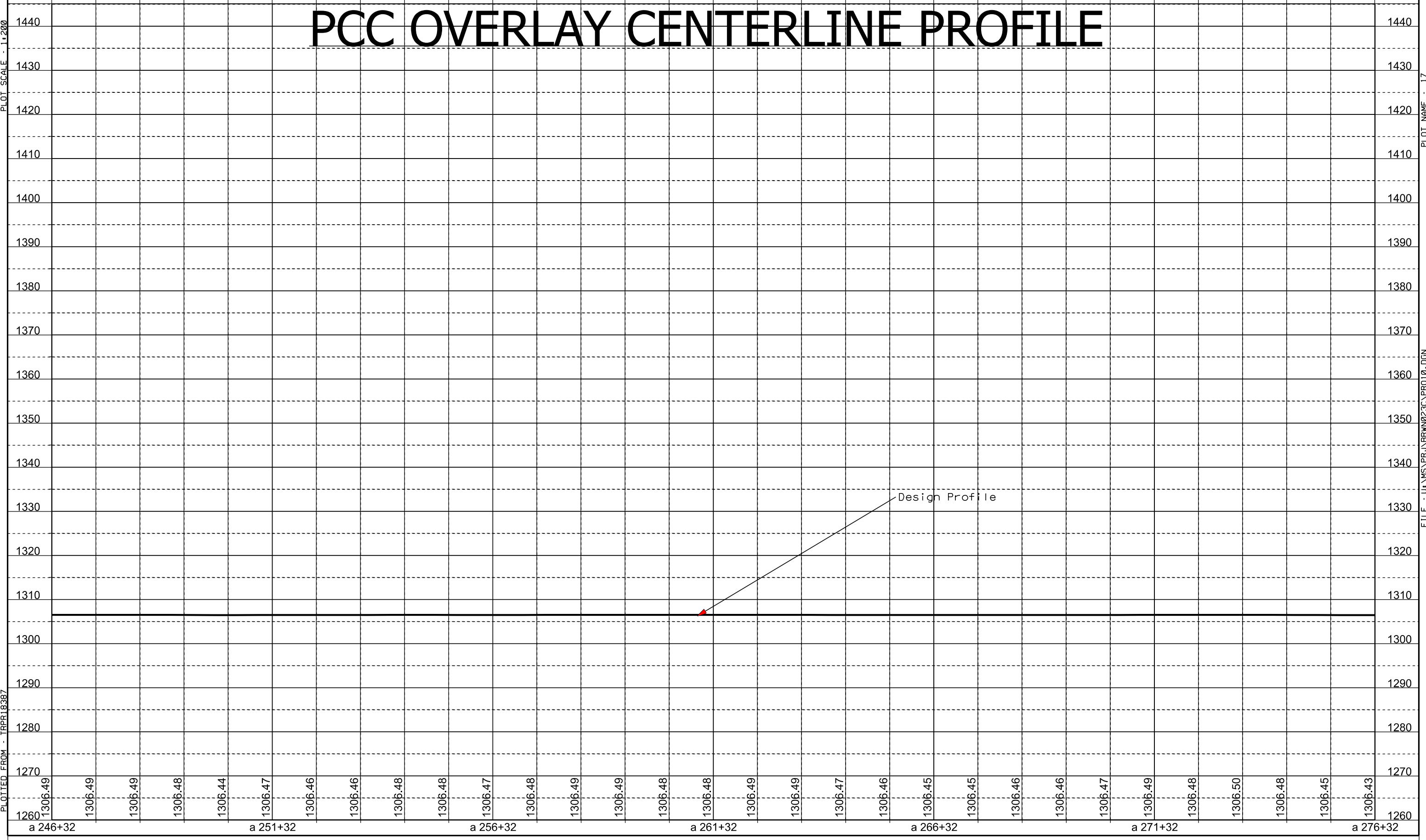
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 17

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO10.DGN



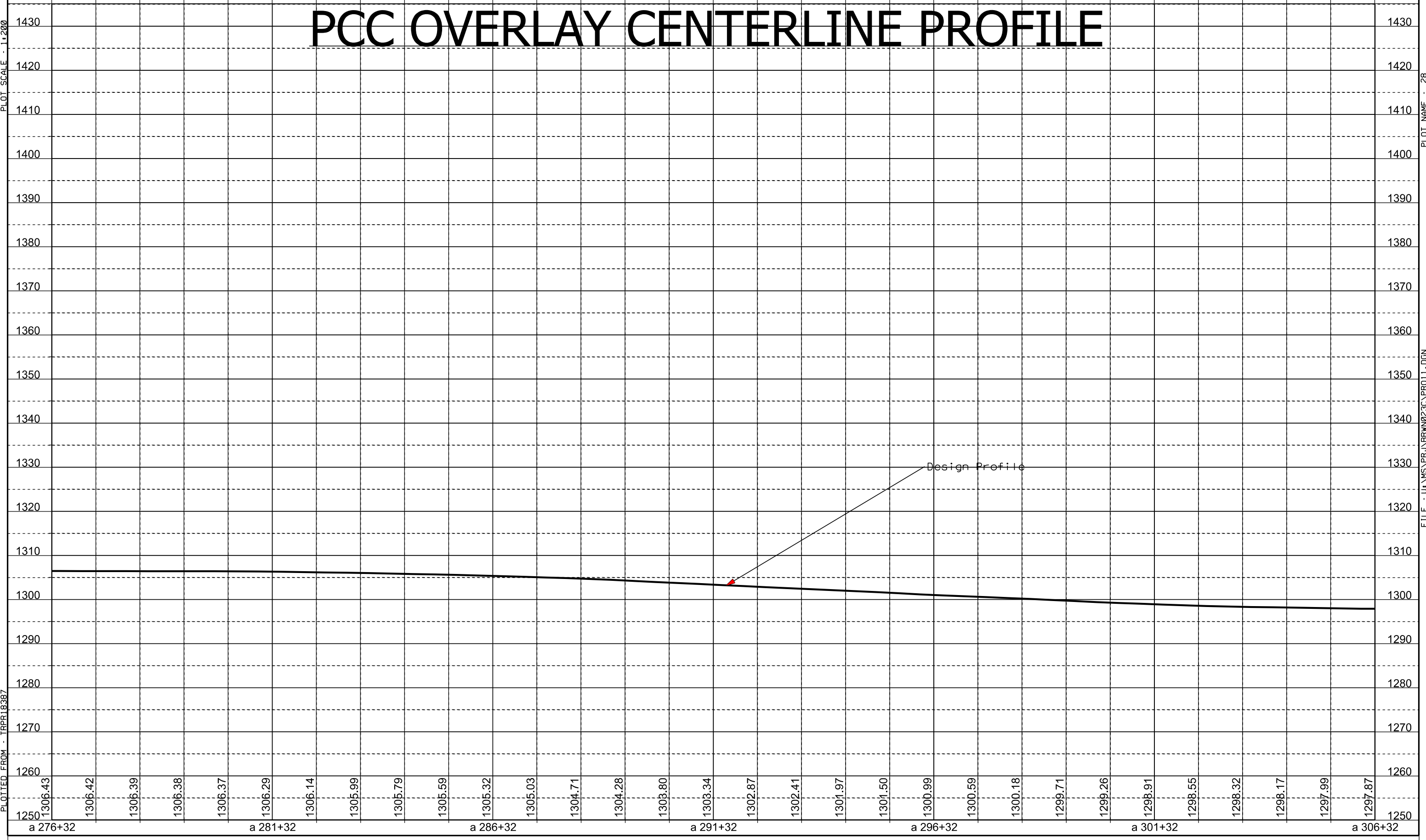
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 28

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO11.DGN



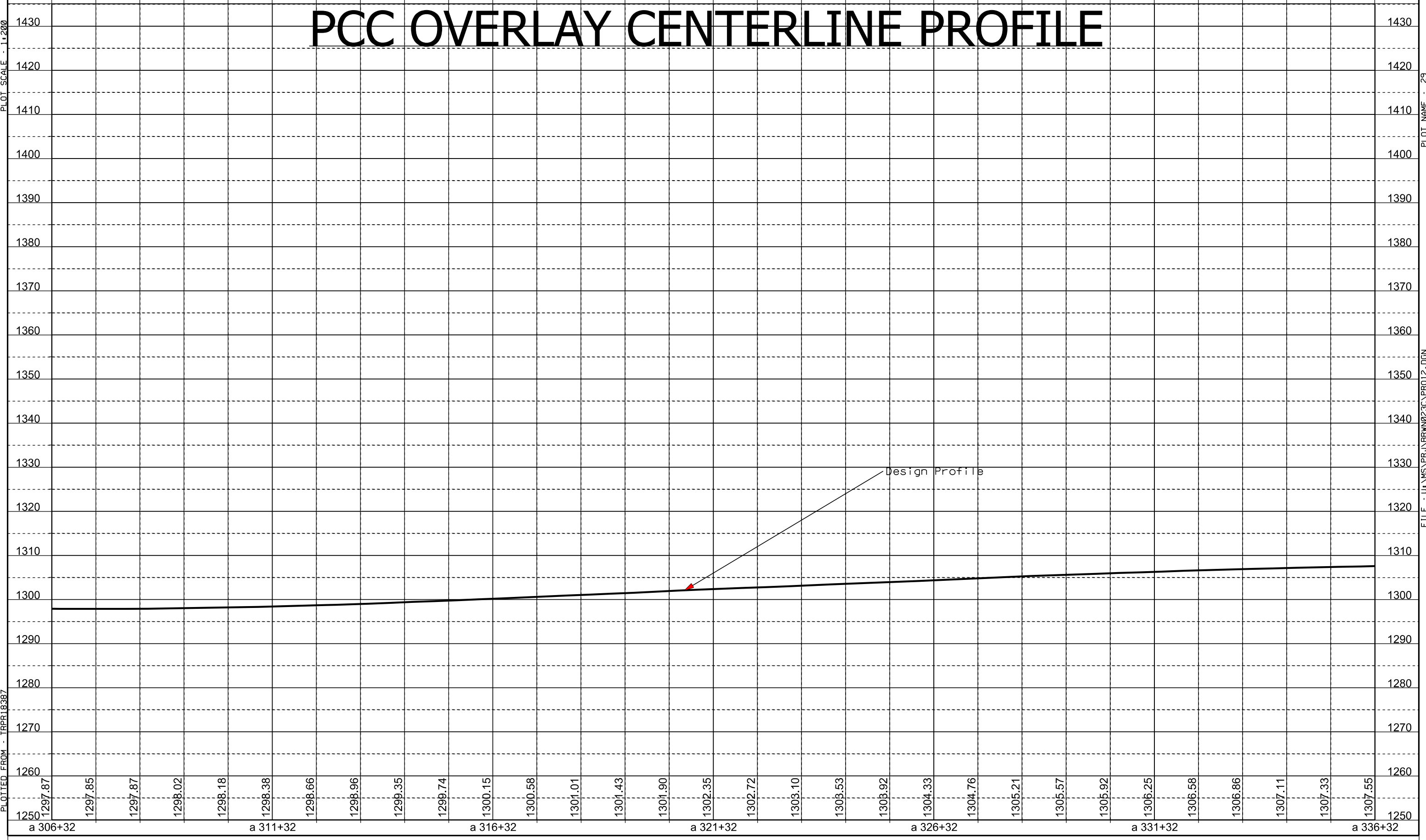
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 29

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO12.DGN



Plotting Date: 02/08/2012

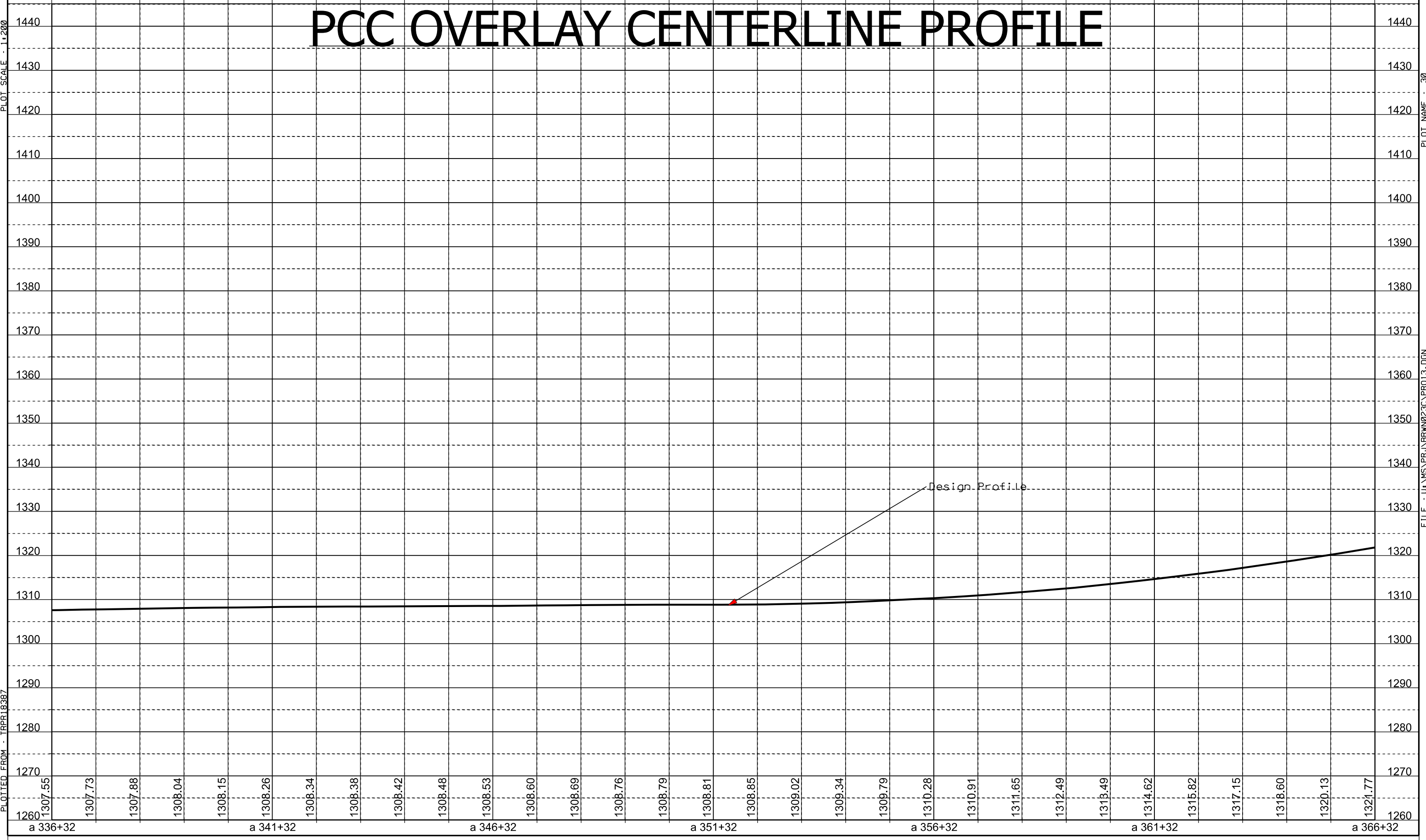
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 30

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO13.DGN



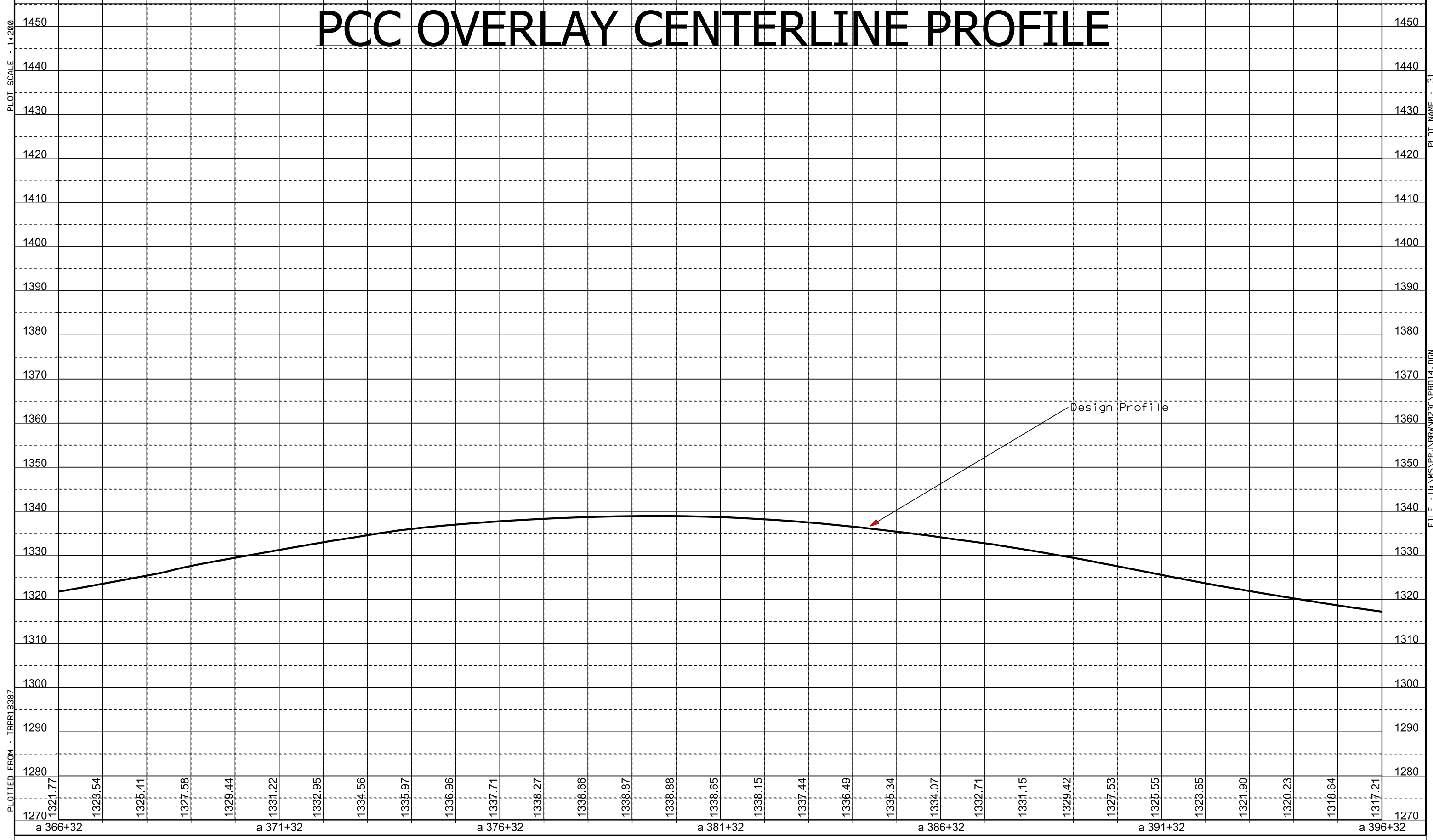
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 31

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO14.DGN



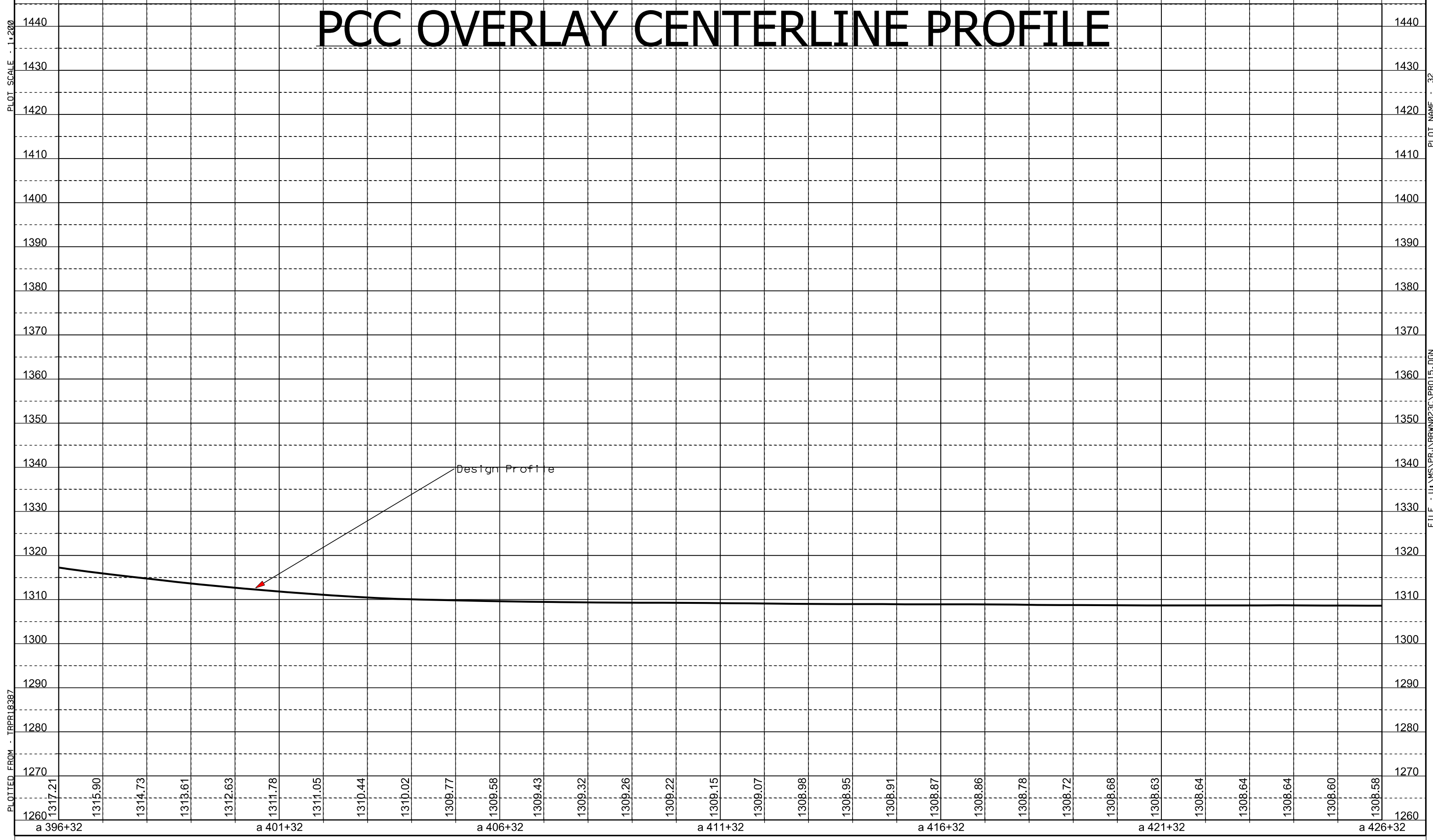
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 32

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023\PRO15.DGN



Plotting Date: 02/08/2012

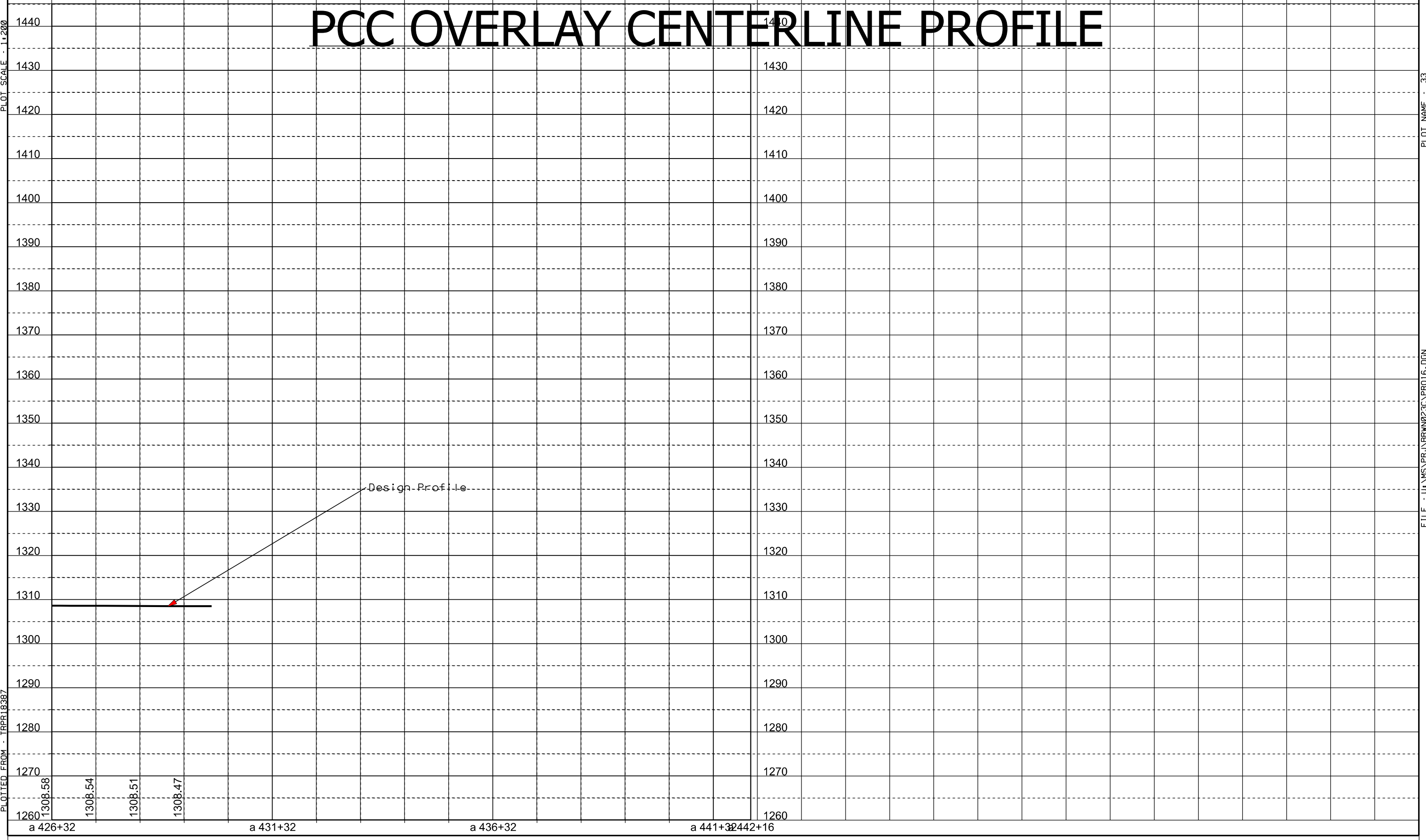
PCC OVERLAY CENTERLINE PROFILE

PLOT SCALE - 1:200

PLOT NAME - 33

PLOTTED FROM - TRPR18387

FILE - U:\MS\PR\BRW\023C\PRO16.DGN

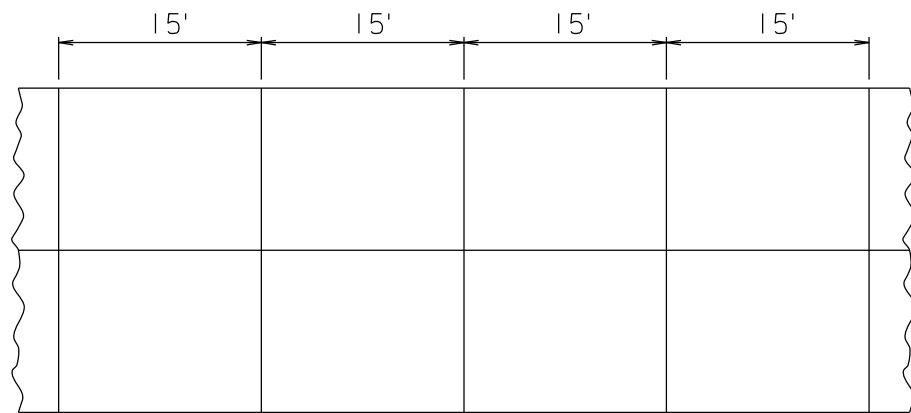


SPECIAL DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	F48	F79

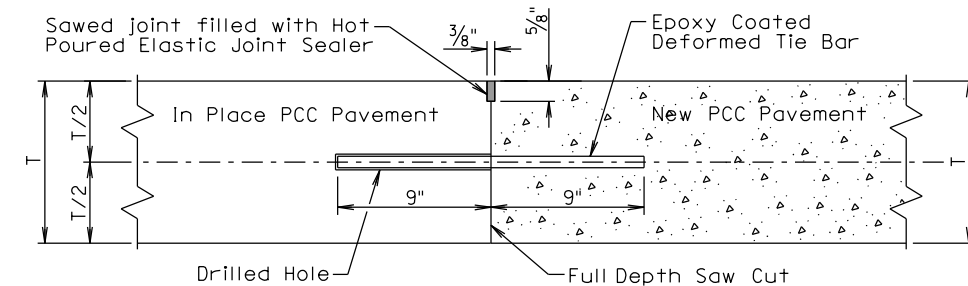
Plotting Date: 02/08/2012

PCC PAVEMENT TRANSVERSE CONTRACTION JOINT SPACING



PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS

TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

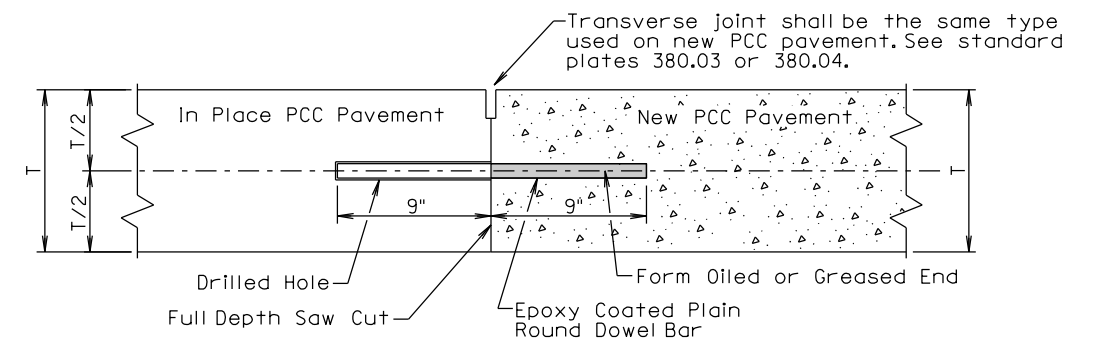
This detail shall be used when the transverse joint is less than 14' on 20' joint spacing and less than 9' on 15' joint spacing from the existing transverse contraction joint.

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars shall be used on 10 inch and less PCC Pavement and No. 11 epoxy coated deformed tie bars shall be used on 10.5 inch and greater PCC Pavement. The tie bar spacing shall be 18 inches center to center and shall be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

This detail shall be used when the transverse joint is 15 feet or greater on 20' joint spacing and 10' or greater on 15' joint spacing from the existing transverse contraction joint.

The epoxy coated plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

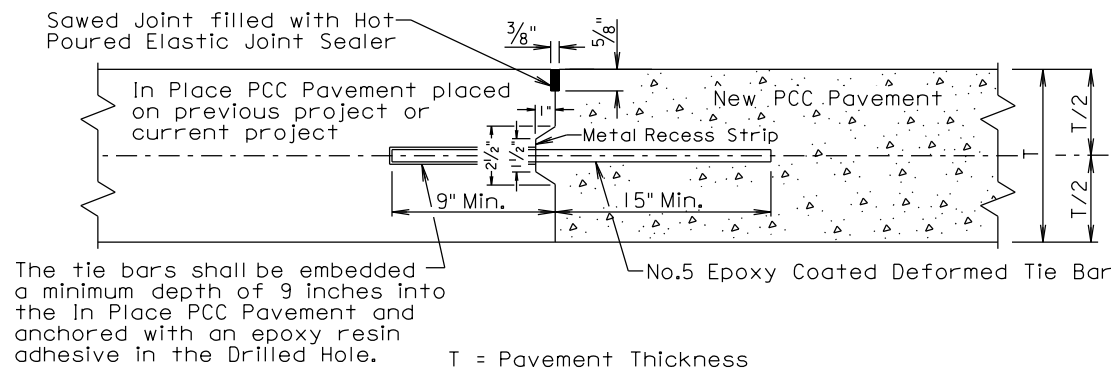
1 1/4" epoxy coated plain round dowel bars shall be used on 10 inch and less PCC Pavement and 1 1/2" epoxy coated plain round dowel bars shall be used on 10.5 inch and greater PCC Pavement. The number and spacing of the epoxy coated plain round dowel bars shall be as detailed on the standard plate for dowel bars. The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

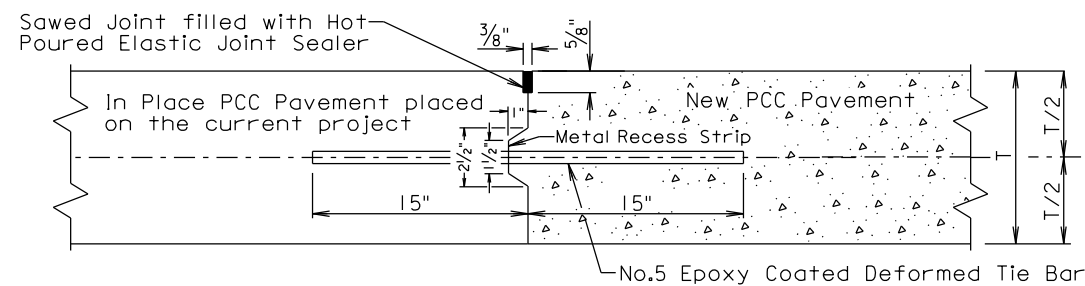
SPECIAL DETAILS

PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (DRILLED IN BARS)



LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (INSERTED OR FORMED IN BARS)



The epoxy coated deformed tie bars shall be spaced according to the following table.

Tie Bar Spacing 30"	
Joint Spacing	# of Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8
22.5' to 24.5'	9

Tie Bar Spacing 48"	
Joint Spacing	# of Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

GENERAL NOTES FOR SHEET 1:

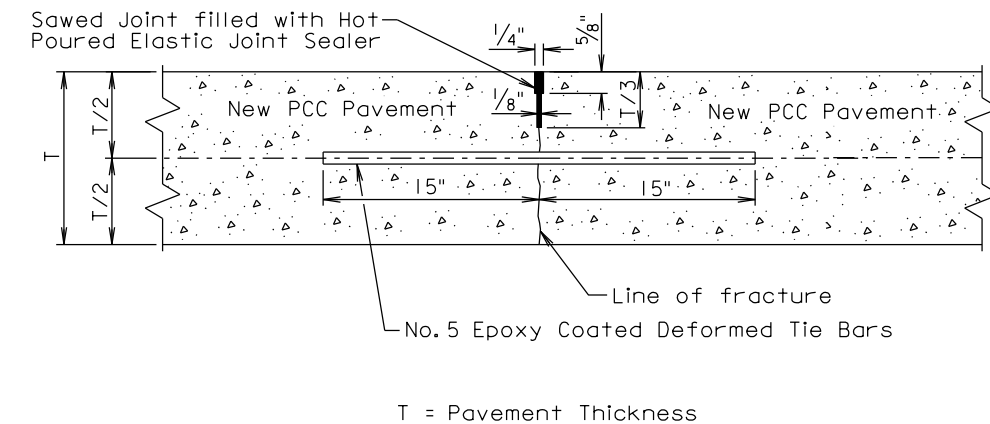
The tie bars shall be placed a minimum of 15 inches from any transverse contraction joints.

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 required number of No.5 epoxy coated deformed tie bars shall be uniformly spaced within each panel. The tie bars shall be evenly spaced a maximum of 48" center to center for a female keyway or a maximum of 30" center to center for a vertical face and male keyway. The keyway shown is a female keyway. The maximum spacing shall apply to tie bars within each panel.

PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS

SAWED LONGITUDINAL JOINT WITH TIE BARS (POURED MONOLITHICALLY)



The epoxy coated deformed tie bars shall be spaced according to the following table.

Tie Bar Spacing 48"	
Joint Spacing	# of Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

GENERAL NOTES FOR SHEET 2:

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

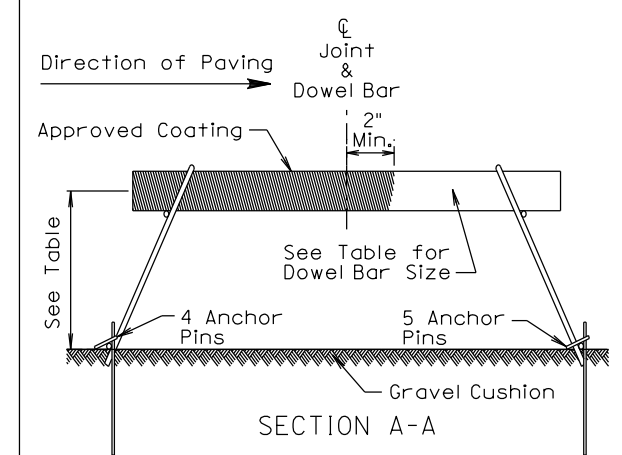
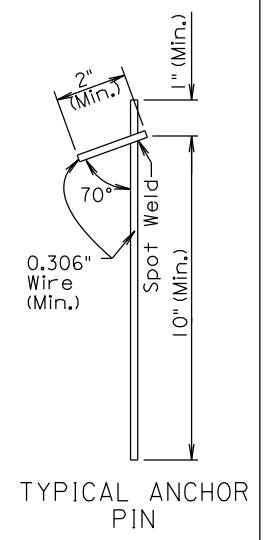
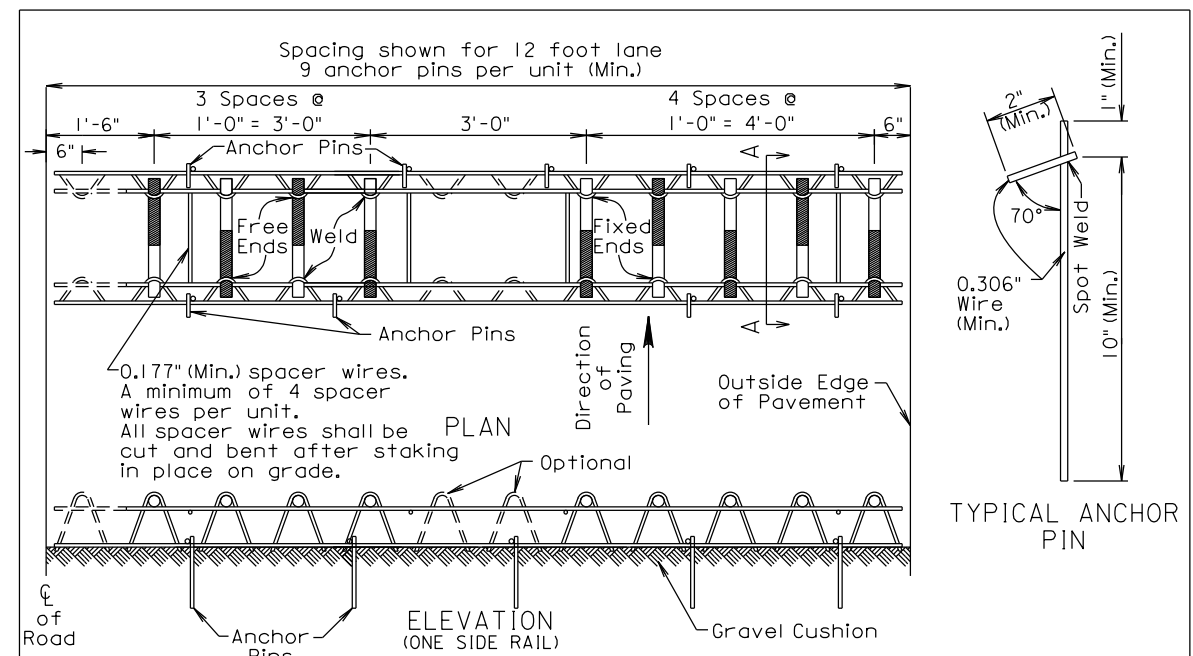
The required number of No.5 epoxy coated deformed tie bars shall be uniformly spaced within each panel. The tie bars shall be evenly spaced a maximum of 48" center to center. The maximum spacing shall apply to tie bars within each panel.

The first saw cut to control cracking shall be a minimum depth of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.

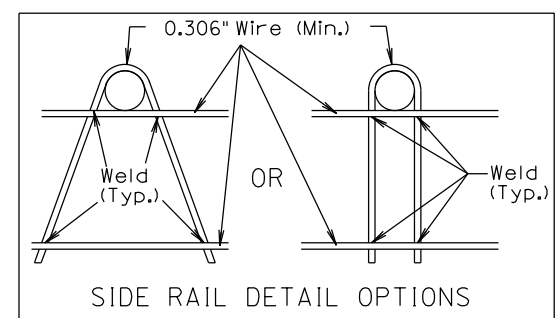
SPECIAL DETAILS

PLOT SCALE - 1:213.199

PLOT NAME - 36



Pavement Thickness	Epoxy Coated Dowel Bar Size	Height to Center
8" to 10"	1 1/4" x 18"	4.5"
10 1/2" to 12"	1 1/2" x 18"	5.5"



GENERAL NOTES:

Longitudinal construction joint tie bars shall be placed a minimum of 15 inches from the transverse contraction joint.

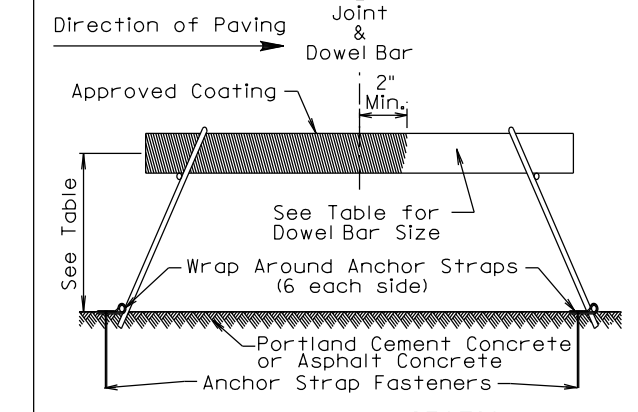
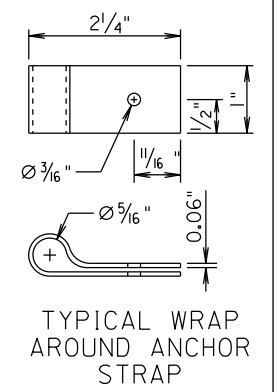
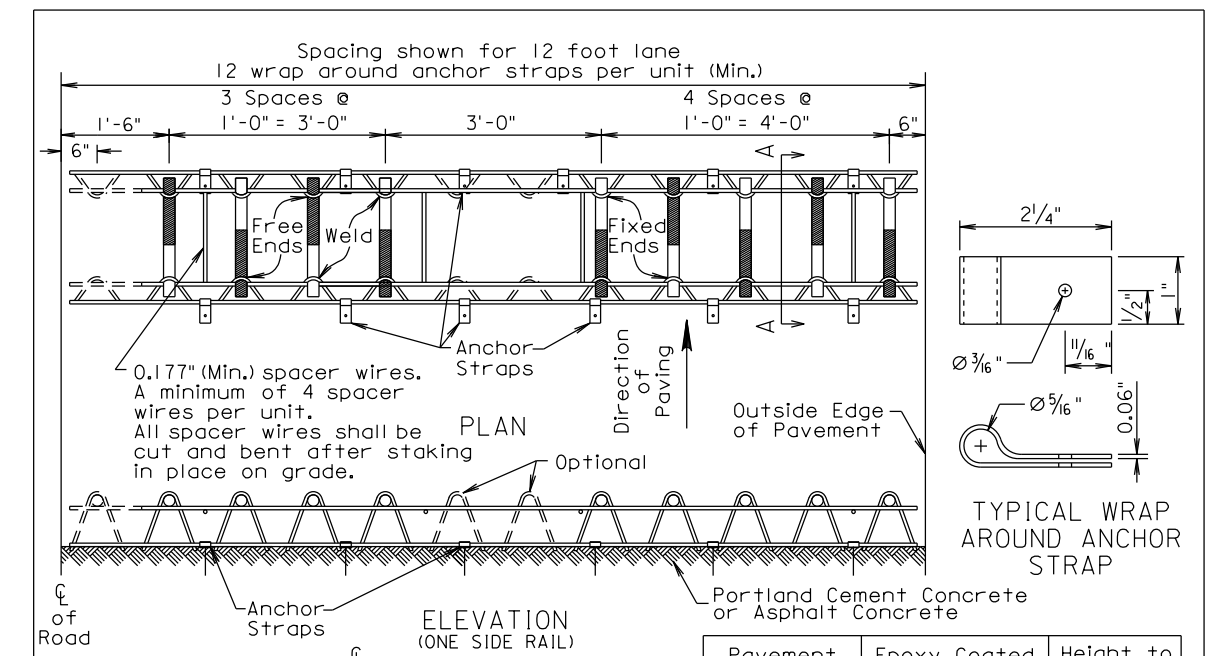
Centerline of individual dowel bars shall be parallel to top of subgrade $\pm 1/8$ inch in 18 inches and to all other dowel bars in the assembly $\pm 1/16$ inch in 18 inches.

Centerline of individual dowel bars shall be parallel to the centerline of the roadway $\pm 1/2$ inch in 18 inches.

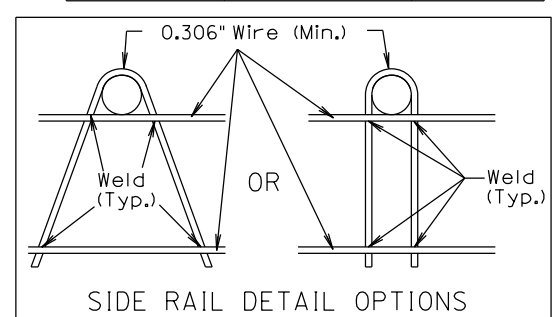
The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

Supporting devices of the type shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

**SPECIAL DETAIL FOR
PCC PAVEMENT DOWEL BAR ASSEMBLY
FOR TRANSVERSE CONTRACTION JOINTS**



Pavement Thickness	Epoxy Coated Dowel Bar Size	Height to Center
8" to 10"	1 1/4" x 18"	4.5"
10 1/2" to 12"	1 1/2" x 18"	5.5"



GENERAL NOTES:

Longitudinal construction joint tie bars shall be placed a minimum of 15 inches from the transverse contraction joint.

Centerline of individual dowel bars shall be parallel to top of subgrade $\pm 1/8$ inch in 18 inches and to all other dowel bars in the assembly $\pm 1/16$ inch in 18 inches.

Centerline of individual dowel bars shall be parallel to the centerline of the roadway $\pm 1/2$ inch in 18 inches.

The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

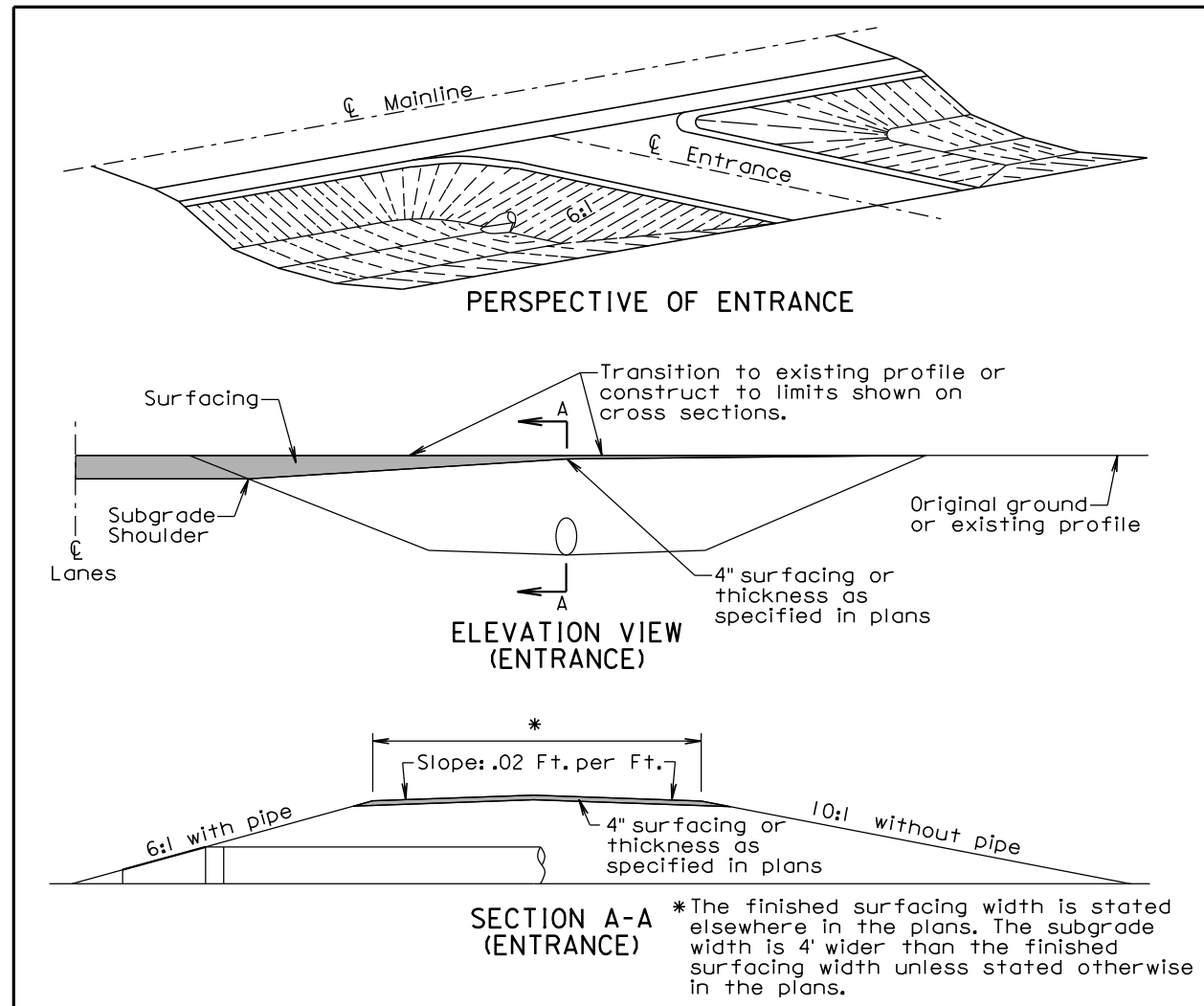
Supporting devices of the type shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

Appropriate strap fasteners shall be used to prevent movement of the dowel bar assemblies during the paving operation.

**SPECIAL DETAIL FOR
PCC PAVEMENT DOWEL BAR ASSEMBLY
FOR TRANSVERSE CONTRACTION JOINTS**

PLOTTED FROM - TRPR18387

FILE - ... \BRWN023C\SPECIAL DETAILS.DGN



GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.

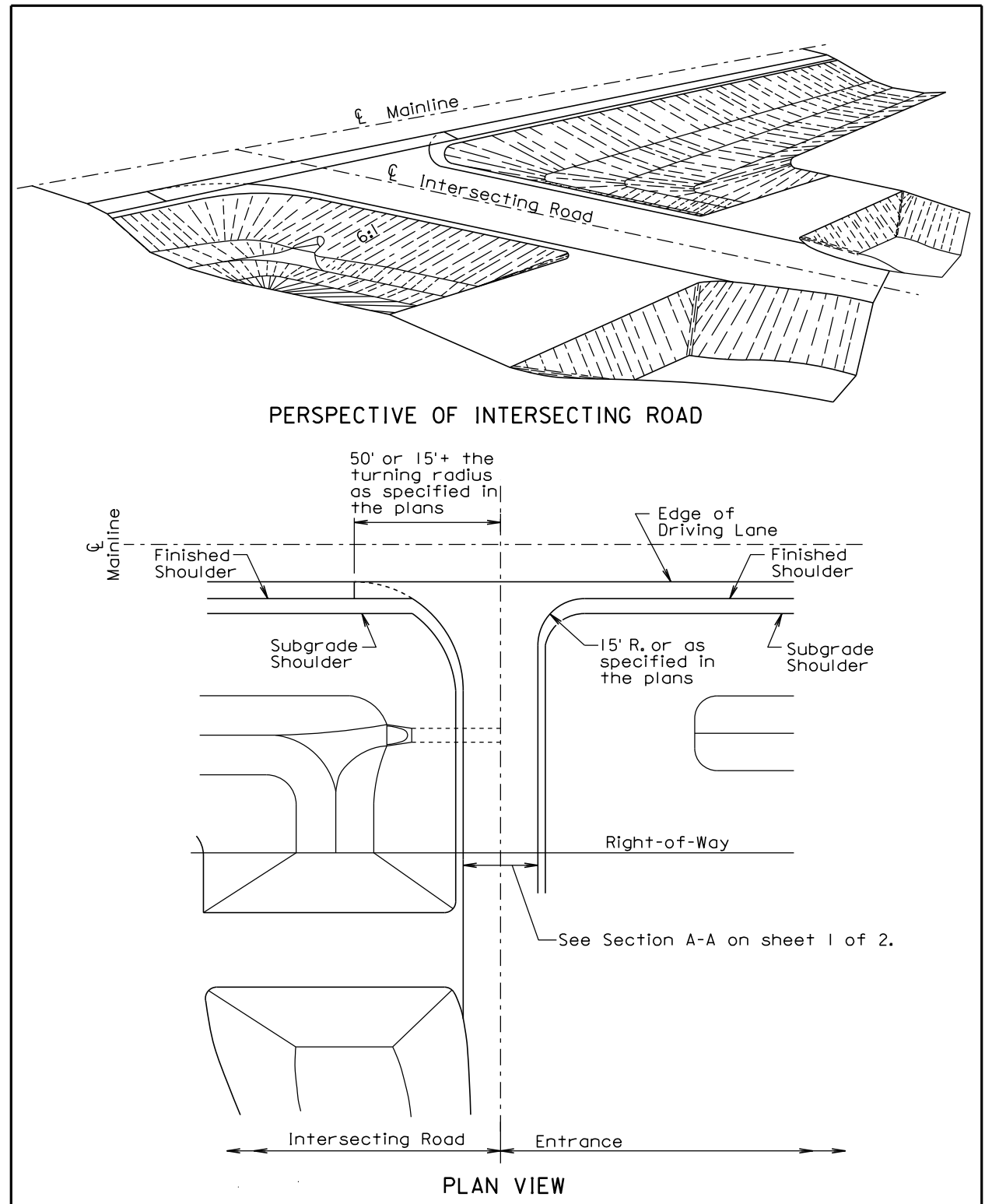
A 6:1 inslope shall be constructed for an entrance when a pipe is required. A 10:1 inslope shall be constructed when a pipe is not required.

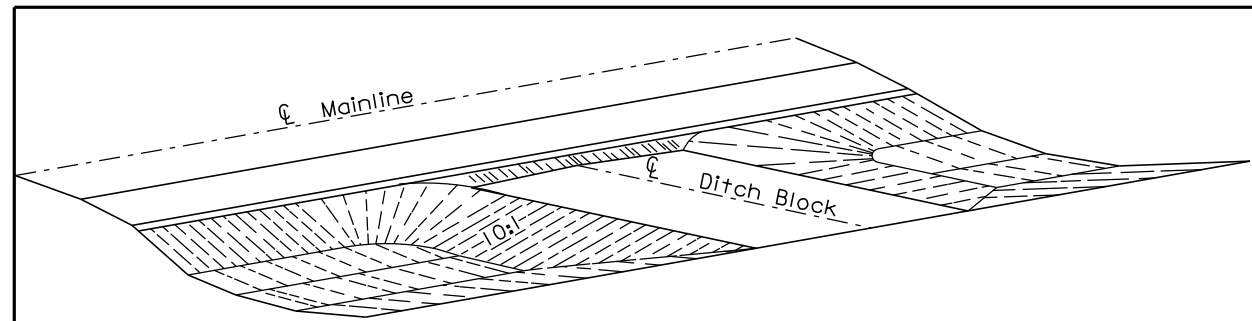
Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

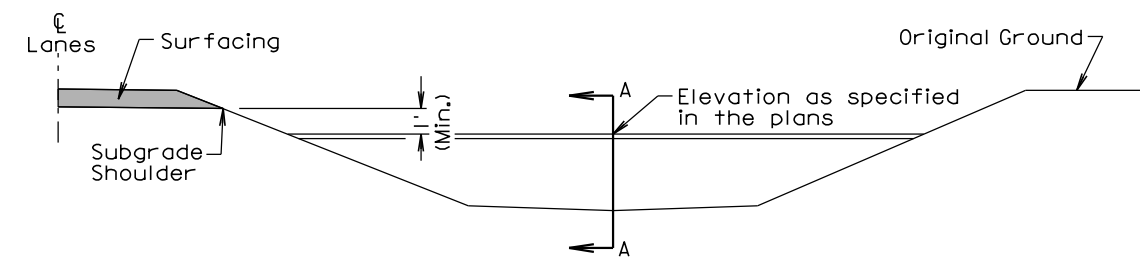
For entrances other than intersecting roads, the radii shall be 15' unless stated otherwise in the plans.

The turning radii shall be 35' for intersecting roads unless stated otherwise in the plans.

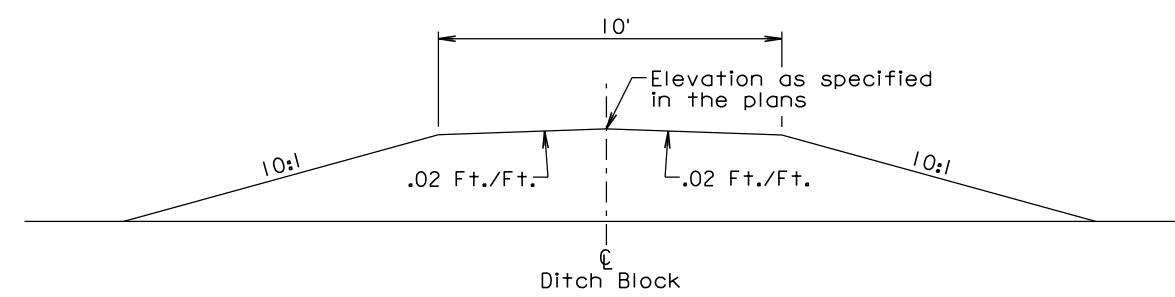




PERSPECTIVE OF DITCH BLOCK



ELEVATION VIEW



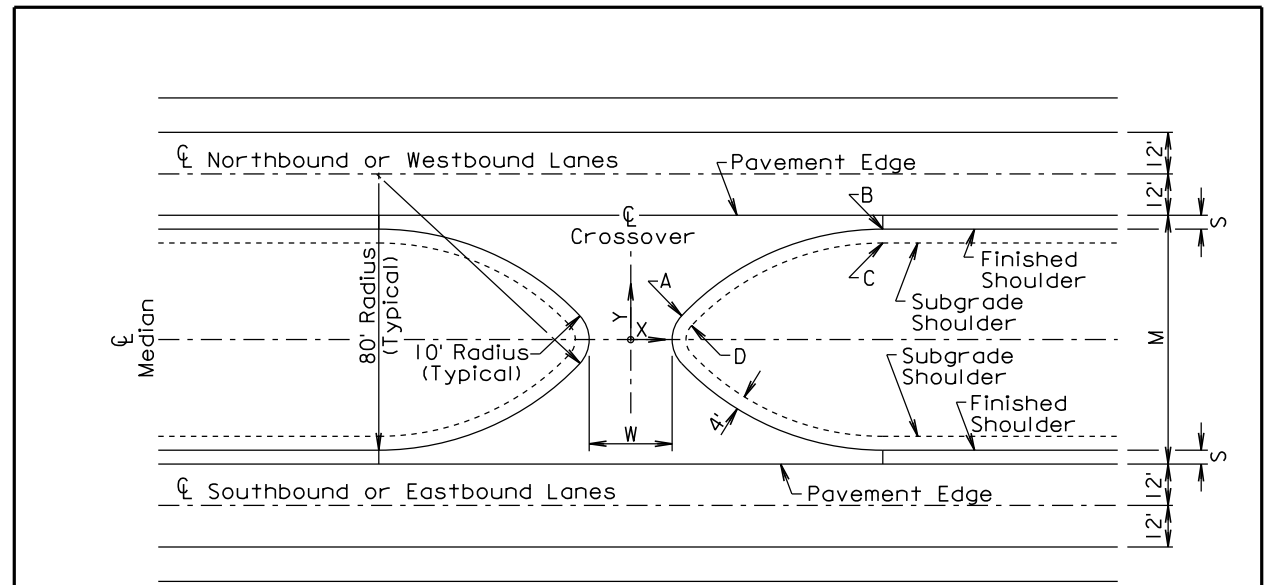
SECTION A-A

GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.
 The inslopes of the ditch block shall be 10:1 or as specified in the plans.
 The transition area between the mainline inslope and the ditch block inslope shall be rounded to eliminate an abrupt transition.

February 14, 2011

Published Date: 1st Qtr. 2012	S D D O T	DITCH BLOCK	PLATE NUMBER 120.02
			Sheet 1 of 1



PLAN VIEW

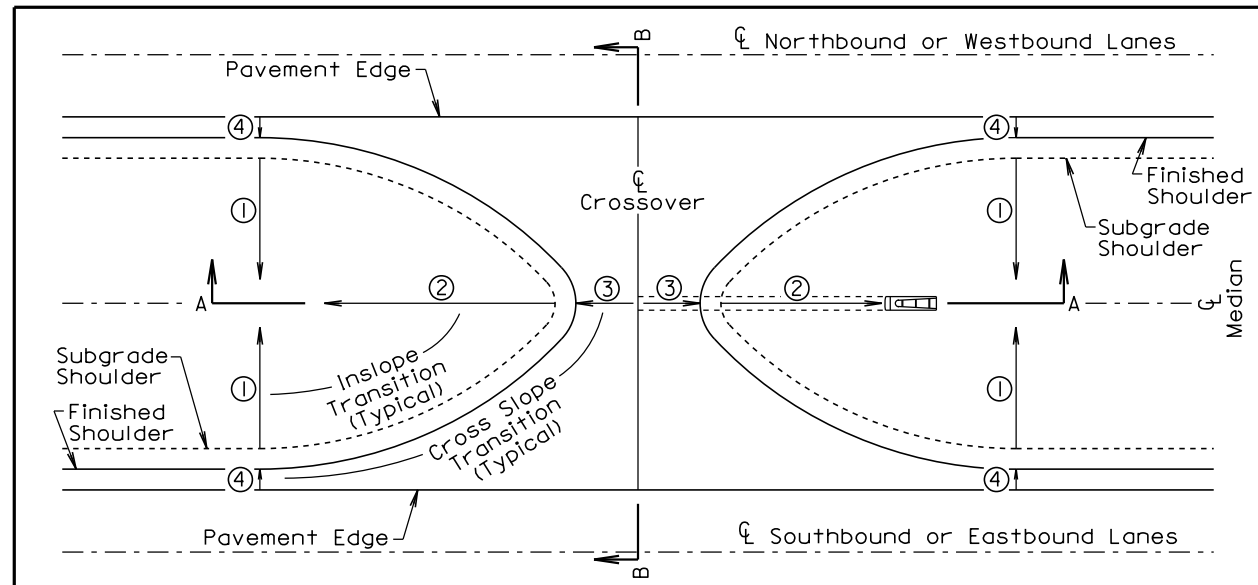
S = Finished Shoulder Width
 M = Median Width
 W = Finished Median Crossover Width

PUBLIC ACCESS MEDIAN CROSSOVER LAYOUT INFORMATION										
M (Ft)	S (Ft)	W (Ft)	Point A		Point B		Point C		Point D	
			X (Ft)	Y (Ft)	X (Ft)	Y (Ft)	X (Ft)	Y (Ft)	X (Ft)	Y (Ft)
60	4	24	15.7	7.7	66.5	26.0	66.5	22.0	18.2	4.7
60	4	40	23.7	7.7	74.5	26.0	74.5	22.0	26.2	4.7
60	6	24	16.0	8.0	64.0	24.0	64.0	20.0	18.4	4.8
60	6	40	24.0	8.0	72.0	24.0	72.0	20.0	26.4	4.8
66	4	24	15.2	7.3	70.0	29.0	70.0	25.0	17.9	4.4
66	4	40	23.2	7.3	78.0	29.0	78.0	25.0	25.9	4.4
66	6	24	15.5	7.6	67.7	27.0	67.7	23.0	18.1	4.6
66	6	40	23.5	7.6	75.7	27.0	75.7	23.0	26.1	4.6
72	4	24	14.8	6.9	73.0	32.0	73.0	28.0	17.6	4.1
72	4	40	22.8	6.9	81.0	32.0	81.0	28.0	25.6	4.1
72	6	24	15.0	7.1	71.0	30.0	71.0	26.0	17.8	4.3
72	6	40	23.0	7.1	79.0	30.0	79.0	26.0	25.8	4.3
80	4	24	14.2	6.3	76.4	36.0	76.4	32.0	17.3	3.8
80	4	40	22.2	6.3	84.4	36.0	84.4	32.0	25.3	3.8
80	6	24	14.5	6.6	74.8	34.0	74.8	30.0	17.5	4.0
80	6	40	22.5	6.6	82.8	34.0	82.8	30.0	25.5	4.0

The dimensions provided for "X" and "Y" begin from the intersection of the median centerline and the crossover centerline.

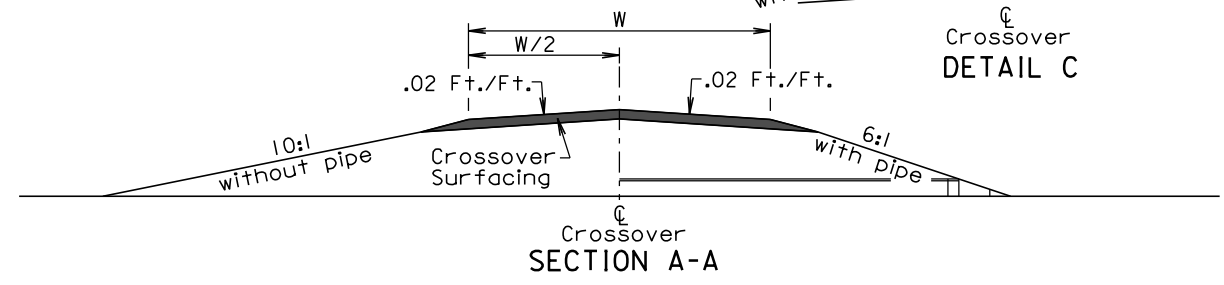
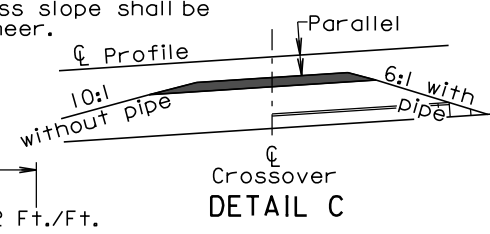
March 28, 2001

Published Date: 1st Qtr. 2012	S D D O T	PUBLIC ACCESS MEDIAN CROSSOVER	PLATE NUMBER 120.03
			Sheet 1 of 2

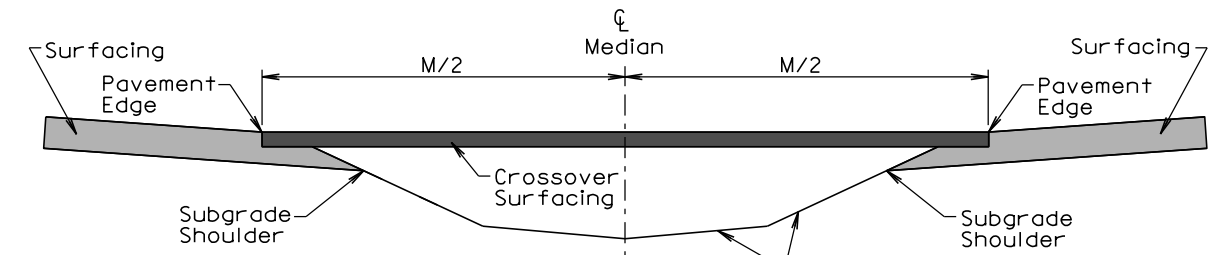


PLAN VIEW

- ① Inslope as specified on the typical sections or cross sections
- ② 10:1 Inslope without pipe, 6:1 with pipe
- ③ Cross slope shall be .02 Ft./Ft. when centerline profiles of adjacent lanes are at less than 2% grade. When the centerline profiles of the adjacent lanes are 2% and greater the cross slope shall be parallel to the profile or as approved by the Engineer. (See Detail C)
- ④ Cross slope as specified on the typical sections



SECTION A-A

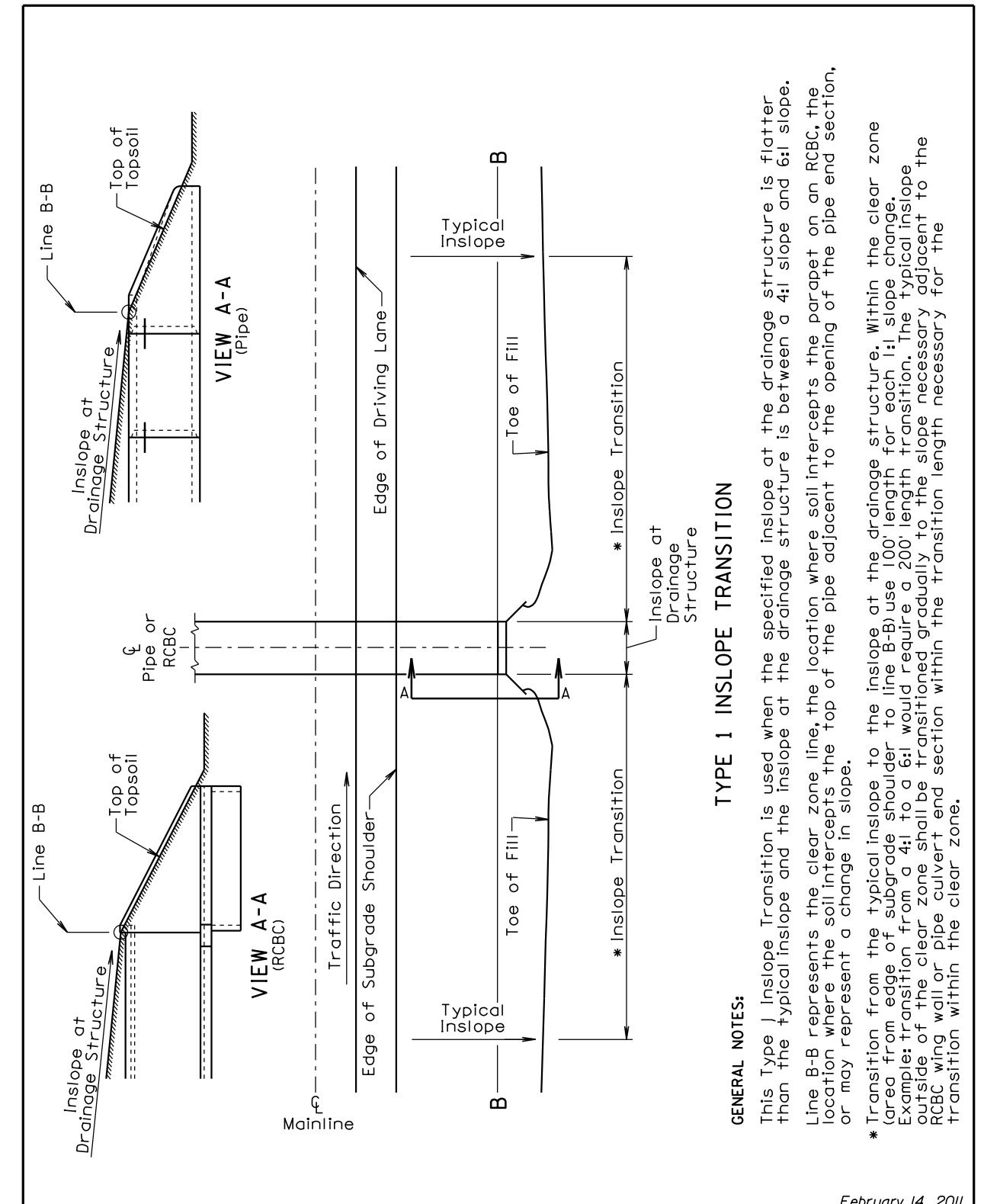


SECTION B-B

GENERAL NOTE:
The quantities of materials necessary for construction of the public access median crossover are as provided in the plans and shall be paid for at their respective contract unit prices for the various materials used.

March 28, 2001

Published Date: 1st Qtr. 2012	S D D O T	PUBLIC ACCESS MEDIAN CROSSOVER	PLATE NUMBER 120.03
			Sheet 2 of 2



TYPE 1 INSLOPE TRANSITION

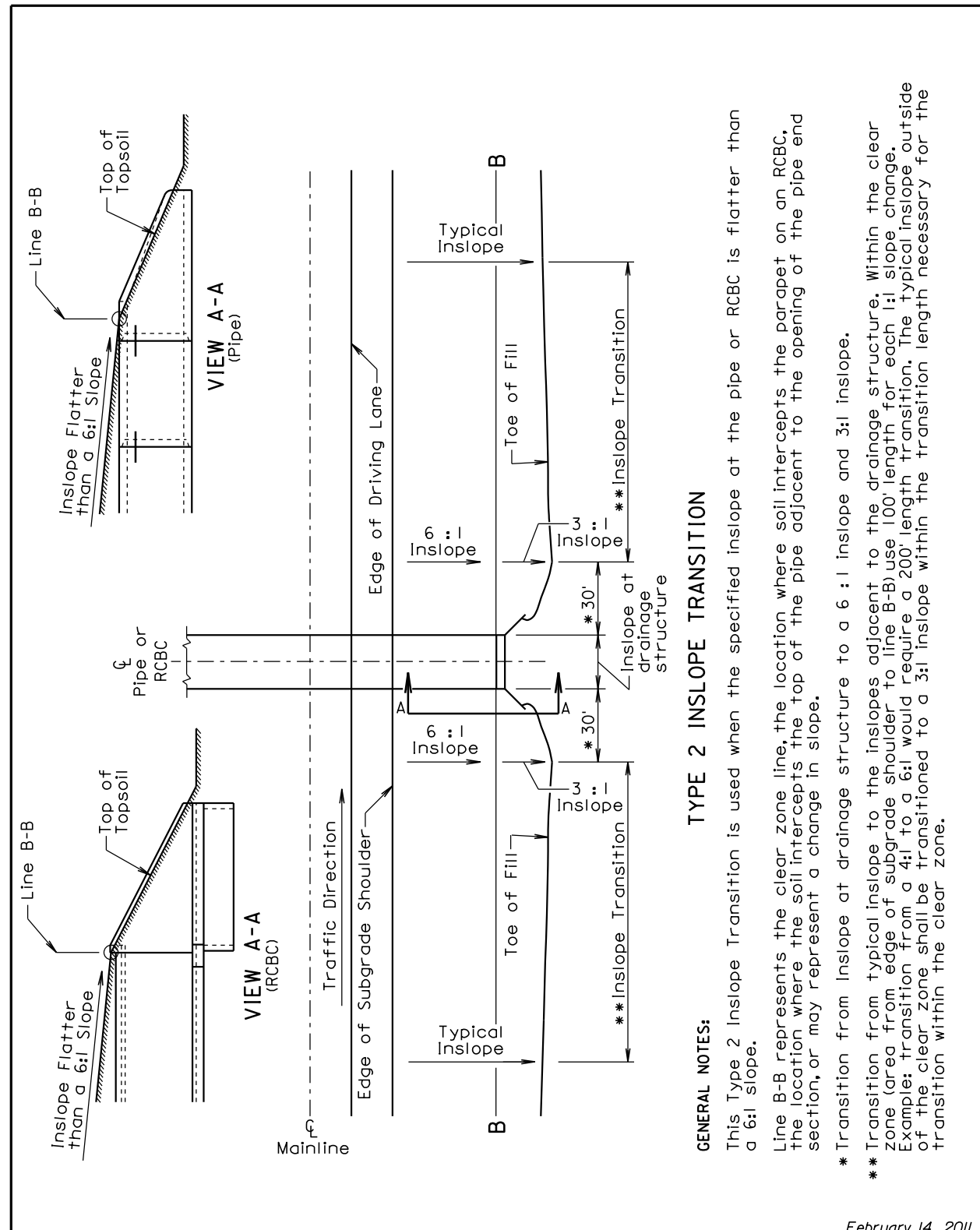
GENERAL NOTES:

This Type J Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope. Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone shall be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

February 14, 2011

Published Date: 1st Qtr. 2012	S D D O T	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 1 of 2

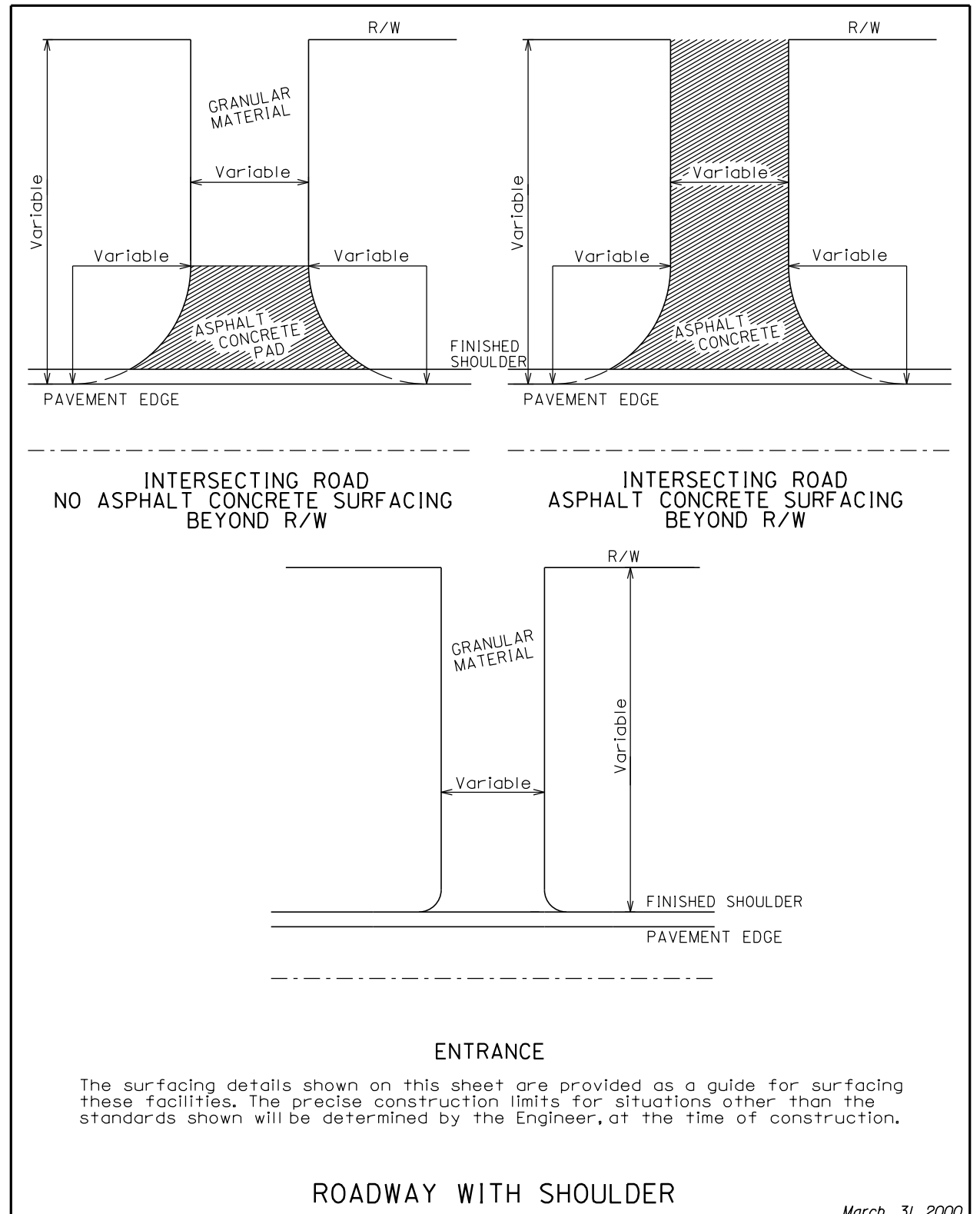


TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:
 This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.
 Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.
 * Transition from inslope at drainage structure to a 6:1 inslope and 3:1 inslope.
 ** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone shall be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

February 14, 2011

Published Date: 1st Qtr. 2012	S D D O T	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 2 of 2

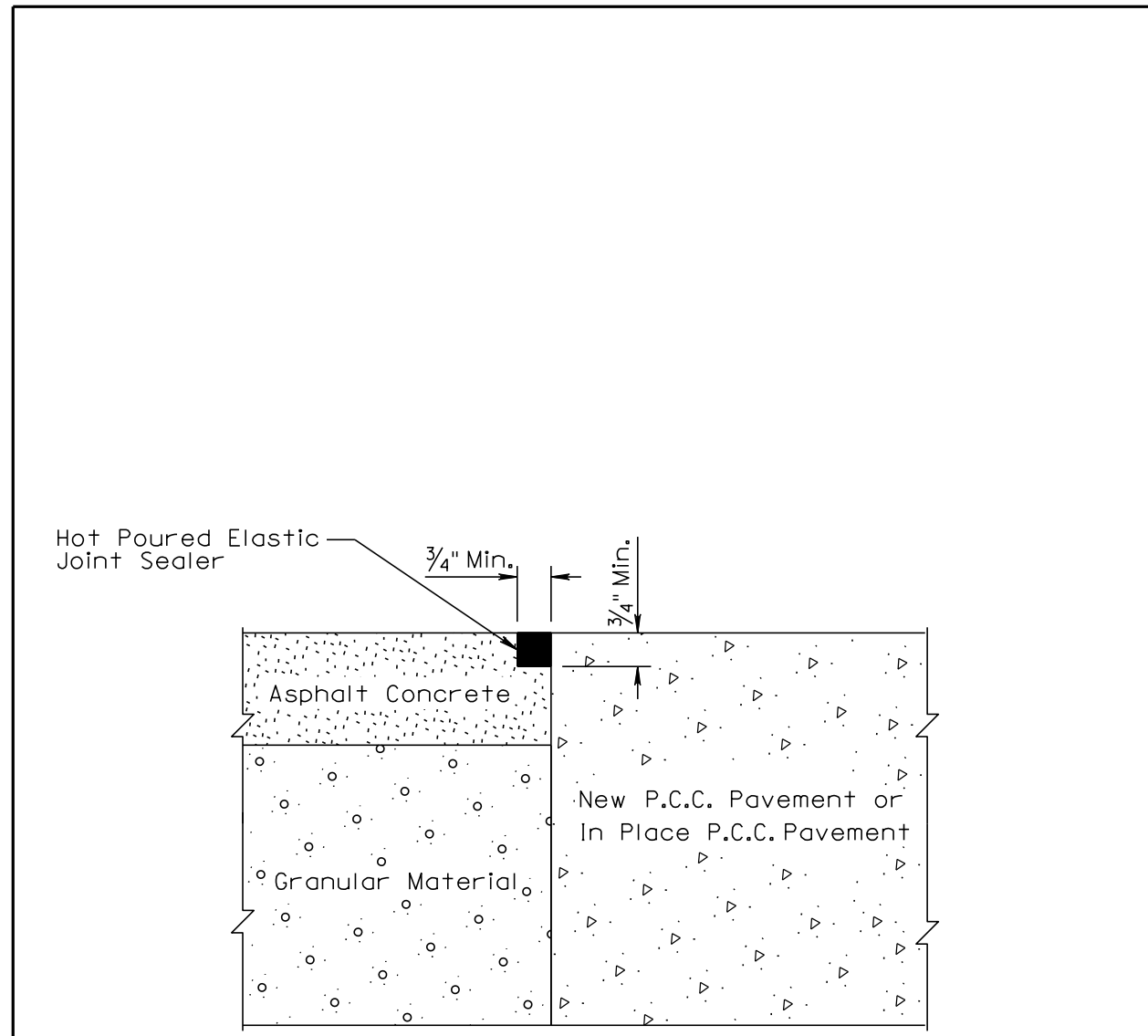


The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

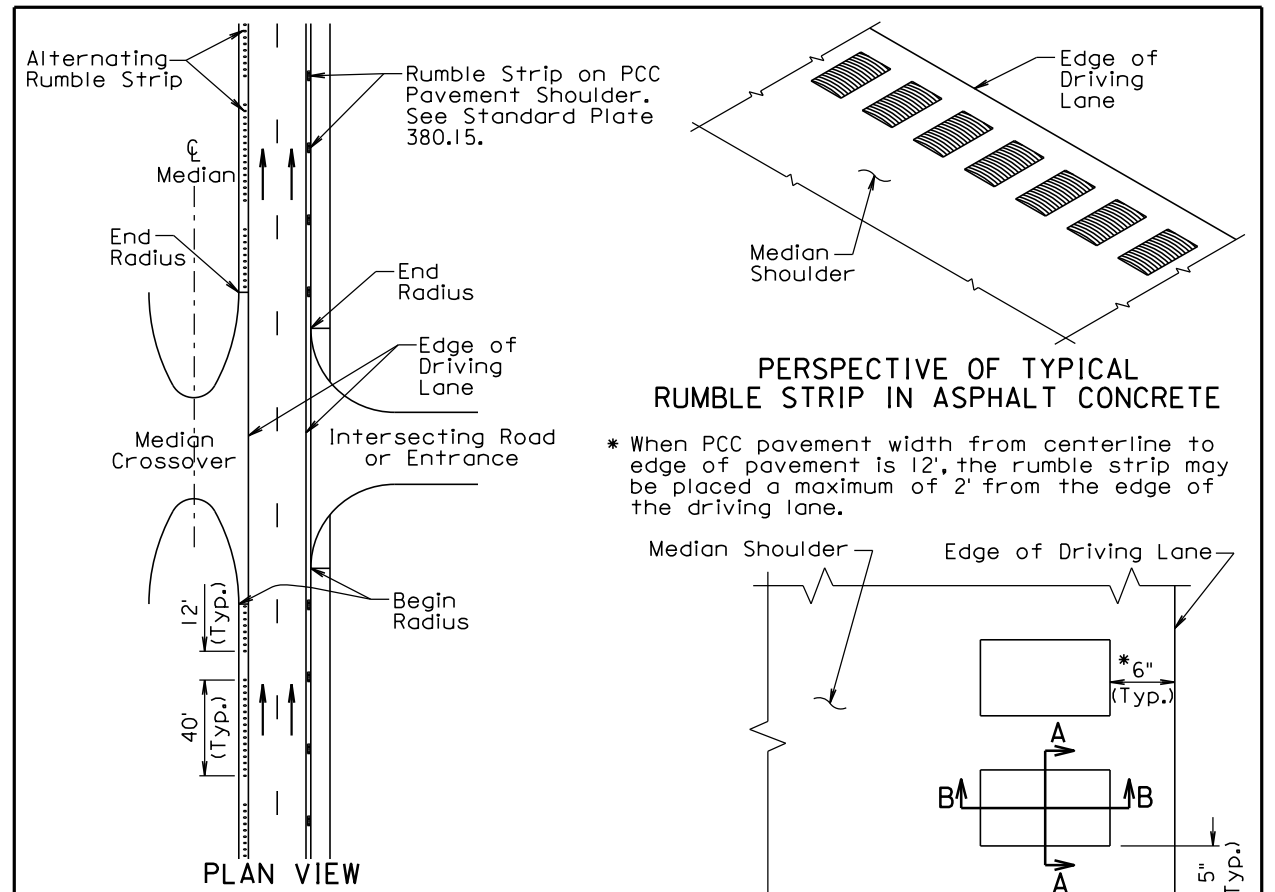
March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1



March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT	PLATE NUMBER 320.15
			Sheet 1 of 1



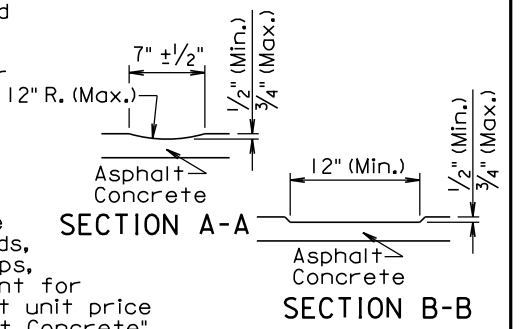
GENERAL NOTES:

A rumble strip shall be constructed on all of the asphalt concrete median shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble strip shall receive a flush seal with the shoulder flush sealing or asphalt surface treatment.

A rumble strip shall not be constructed through intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas shall be adjusted as approved by the Engineer.

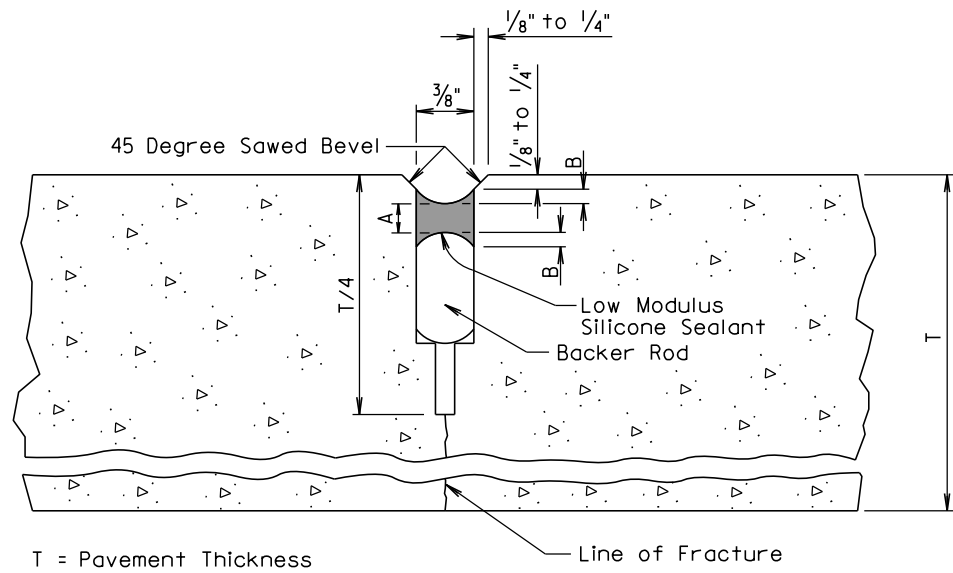
Prior to constructing the rumble strip the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

Measurement of the rumble strip in asphalt concrete shall be to the nearest 0.1 of a mile for each median shoulder. Measurement and payment of the rumble strip shall include the 12' long segments without rumble strips and the segments adjacent to intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas without rumble strips. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".



June 26, 2011

Published Date: 1st Qtr. 2012	S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON DIVIDED HIGHWAY MEDIAN SHOULDER	PLATE NUMBER 320.26
			Sheet 1 of 1



T = Pavement Thickness

Line of Fracture

LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES			
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)
3/16	5/16	1/8	1/4

GENERAL NOTES:

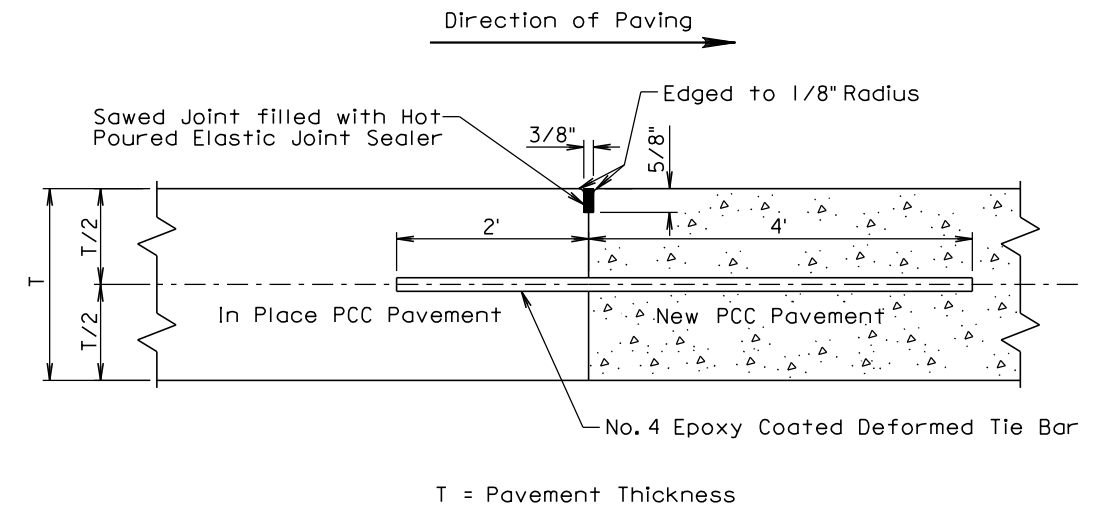
The first saw cut to control cracking shall be a minimum of 1/4 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the low modulus silicone joint sealant will be necessary.

The backer rod shall be a nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

December 23, 2007

S D D O T	PCC PAVEMENT BEVELED TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.04
		Sheet 1 of 1

Published Date: 1st Qtr. 2012



T = Pavement Thickness

GENERAL NOTES:

No. 4 epoxy coated deformed tie bars shall be spaced 12 inches center to center and shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint shall be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

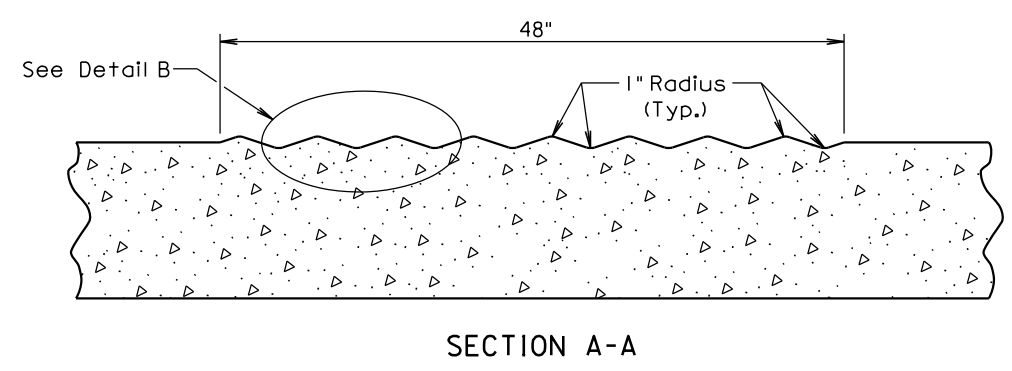
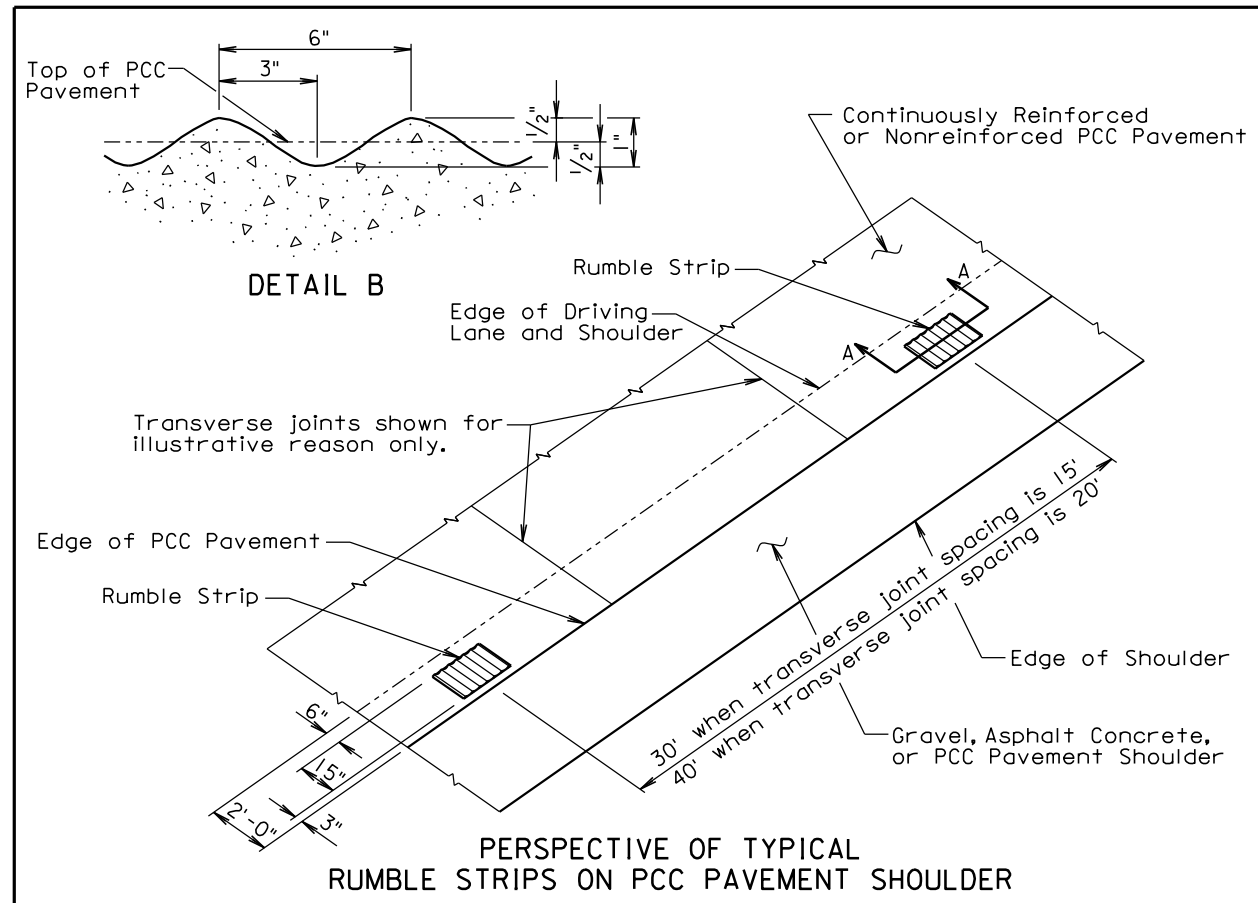
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on the current project.

September 14, 2001

S D D O T	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.05
		Sheet 1 of 1

Published Date: 1st Qtr. 2012



GENERAL NOTES:

The rumble strips shall be evenly spaced and shall not coincide with any transverse contraction joints.

The rumble strips shall NOT be placed along areas adjacent to entrance ramps, exit ramps, and gore areas.

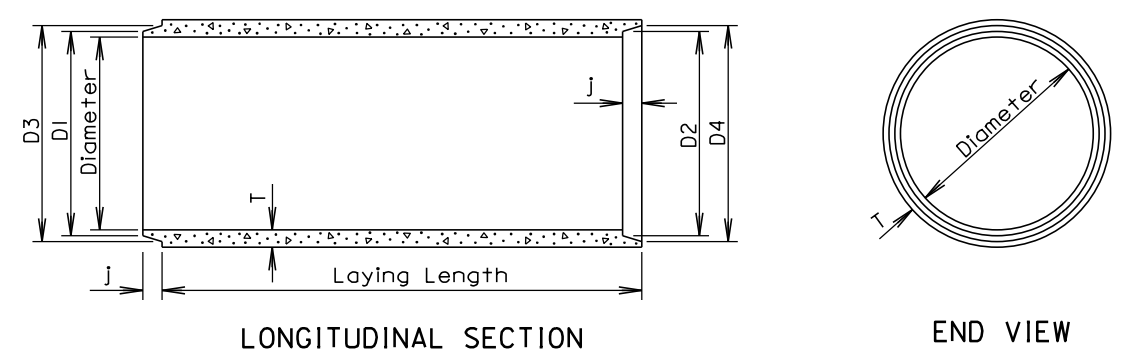
Payment for constructing the PCC Pavement Rumble Strips shall be incidental to the contract unit price per square yard for the corresponding PCC Pavement bid item.

September 6, 2009

Published Date: 1st Qtr. 2012	S D D O T	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.15
			Sheet 1 of 1

TOLERANCES IN DIMENSIONS

Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $3/8"$ whichever is more for 27" Dia. or greater.
 Diameters at Joints: $\pm 3/16"$ for 30" Dia. or less and $\pm 1/4"$ for 36" or greater.
 Length of joint (J): $\pm 1/4"$.
 Wall thickness (T): not less than design T by more than 5% or $3/16"$, whichever is greater.
 Laying length: shall not underrun by more than $1/2"$.



GENERAL NOTES:

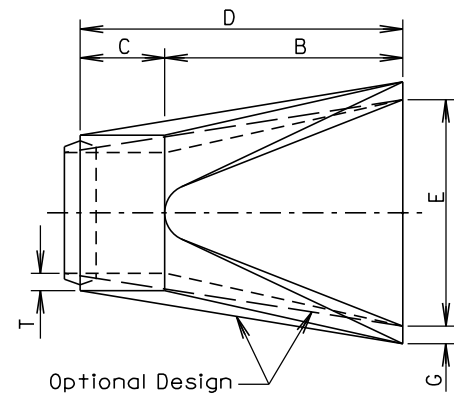
Construction of R. C. P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

Not more than 2 four foot sections shall be permitted near the ends of any culvert. Four foot lengths shall be used only to secure the required length of culvert.

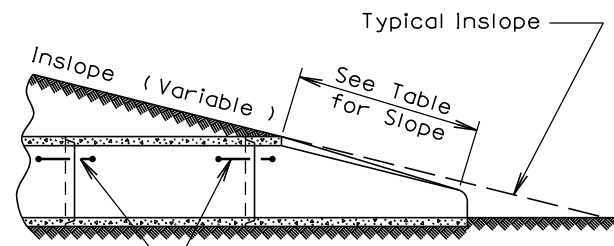
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 3/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



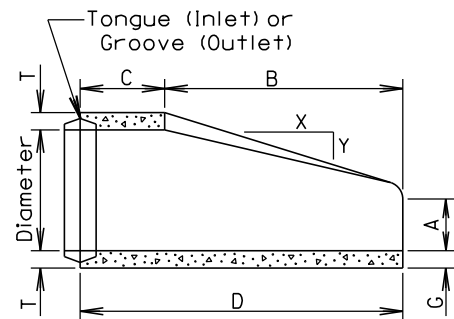
TOP VIEW



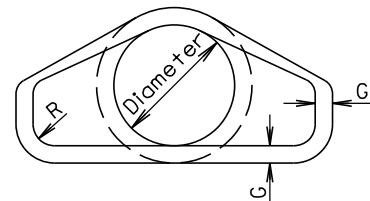
SLOPE DETAIL

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 Standard Specifications for Roads and Bridges.



LONGITUDINAL SECTION



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

March 31, 2000

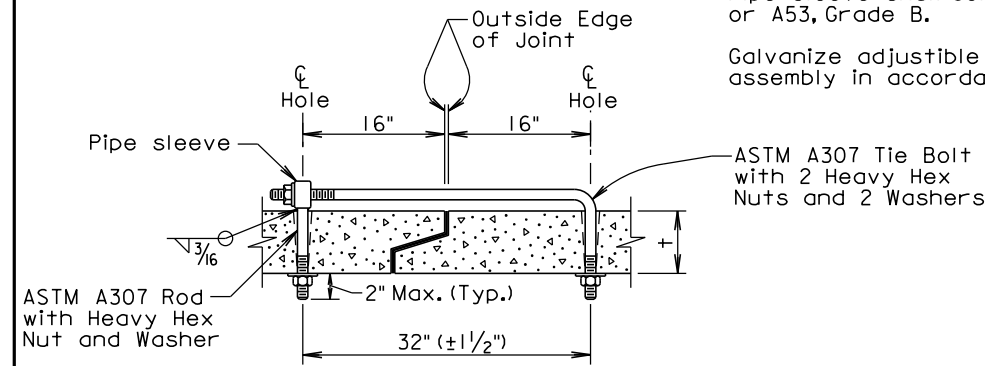
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
< 3/4	5/8	3/4
3 1/2 - 6 1/2	3/4	1
> 7	1	1 1/4

GENERAL NOTES:

Tie bolts shall conform to ASTM A307, Grade C. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

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

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



ADJUSTABLE EYE BOLT TIE

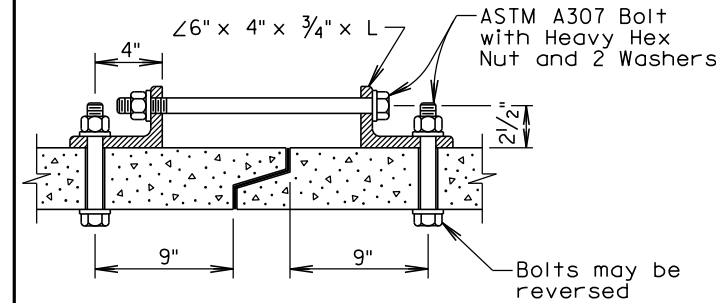
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
< 48	4	3/4
> 48	6	1

GENERAL NOTES:

Angles shall conform to ASTM A36.

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

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



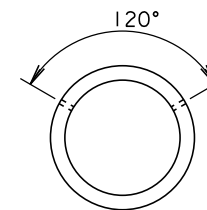
ANGLE AND BOLT TIE

GENERAL NOTES:

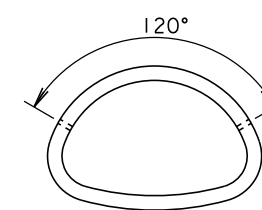
In lieu of tie bolts detailed above, tecktonius fasteners or other type tie bolt connections may be installed if approved by the Engineer.

The first three sections (both inlet and outlet) of R.C.P. and R.C.P. Arch up to and including the 78" diameter or equivalent pipe shall be tied with tie bolts. Pipe sizes larger than 78" diameter or equivalent diameter shall have all sections tied. Each end section is considered as one section.

There will be no separate measurement or payment for tie bolts. The cost of the tie bolts shall 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"

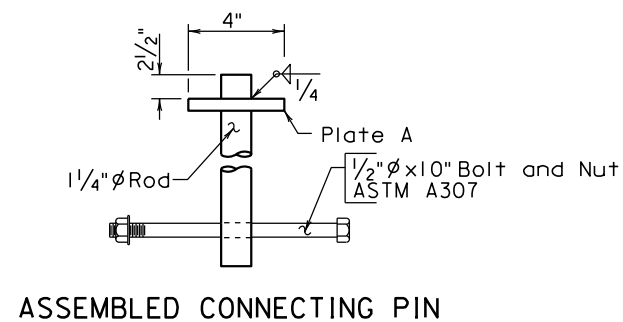
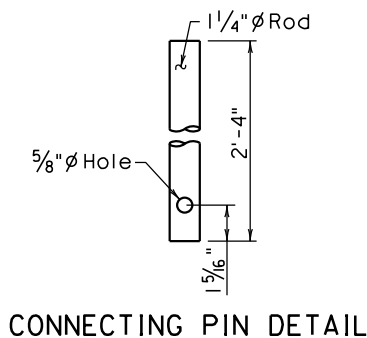
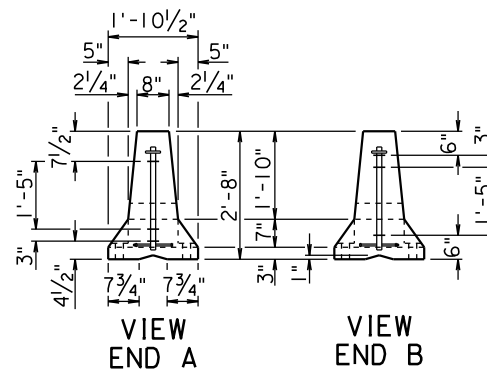
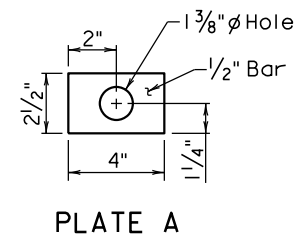
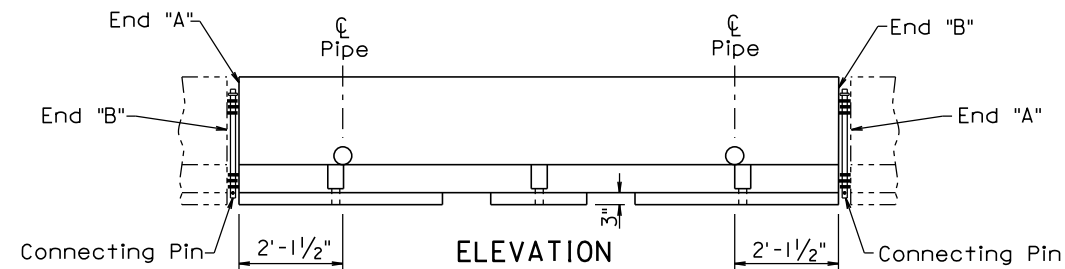
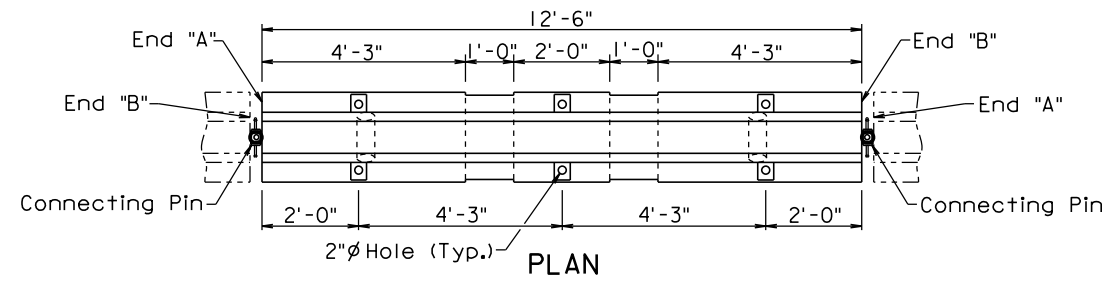


END VIEW "ARCH"

September 14, 2011

Published Date: 1st Qtr. 2012	S D D O T	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1

Published Date: 1st Qtr. 2012	S D D O T	TIE BOLTS FOR R.C.P. END SECTIONS	PLATE NUMBER 450.18
			Sheet 1 of 1



June 26, 2009

June 26, 2009

Published Date: 1st Qtr. 2012	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 1 of 2

Published Date: 1st Qtr. 2012	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 2 of 2

GENERAL NOTES:

The detailed drawings are for illustrative purpose and depicts the current version of the F shape concrete barrier. If new movable concrete barriers are requested on a project, they shall be constructed according to the F shape movable concrete barrier details on standard plate 628.10.

Each movable concrete barrier section weighs 5030 \pm pounds.

Each movable concrete barrier section is detailed to provide end "A" to end "B" connection by insertion of a pin through steel loops.

The Jersey shape or any version of the F shape traffic control movable concrete barriers may be used on a project, however, only the same type or version shall be used for each run of barriers.

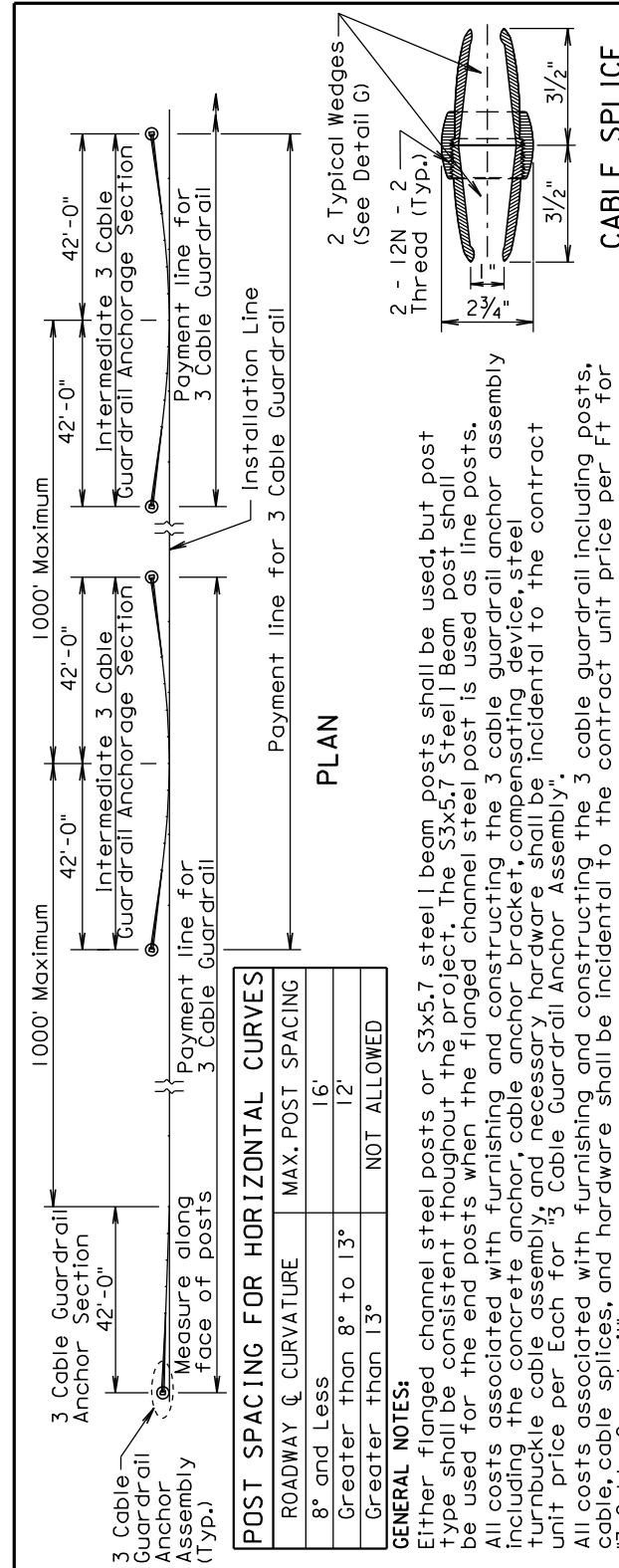
Movable concrete barrier sections shall be placed to provide uniform bearing of the sections with the paved surface as approved by the Engineer.

Movable concrete barrier sections shall never be moved or lifted using the end loops.

Movable concrete barrier sections that have been damaged shall not be used. Barrier sections are considered damaged if the loops are end welded onto existing damaged loops, loops are fractured, or there is exposed rebar from fractured concrete.

All cost for transporting the barriers from the specified location to the project site, installing, and returning the barriers to the specified location shall be incidental to the contract unit price per each for "Traffic Control Movable Concrete Barrier".

If the concrete barriers need to be moved and reset on the project, requiring the barriers to be transported by truck, all cost for removing, transporting, and resetting the barriers shall be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". All cost for small shifts in alignment of the barriers, not requiring the barriers to be transported by truck, shall be incidental to various contract items.



POST SPACING FOR HORIZONTAL CURVES

ROADWAY CURVATURE	MAX. POST SPACING
8° and Less	16'
Greater than 8° to 13°	12'
Greater than 13°	NOT ALLOWED

GENERAL NOTES:
 Either flanged channel steel posts or 3x5.7 steel I beam posts shall be used, but post type shall be consistent throughout the project. The 3x5.7 Steel I Beam post shall be used for the end posts when the flanged channel steel post is used as line posts. All costs associated with furnishing and constructing the 3 cable guardrail anchor assembly including the concrete anchor, cable anchor bracket, compensating device, steel turnbuckle cable assembly, and necessary hardware shall be incidental to the contract unit price per Each for "3 Cable Guardrail Anchor Assembly".
 All costs associated with furnishing and constructing the 3 cable guardrail including posts, cable, cable splices, and hardware shall be incidental to the contract unit price per Ft for "3 Cable Guardrail".

The following table and criteria shall apply to the arrangement of the Spring Cable End Assemblies (Compensation Devices) and Turnbuckle Cable End Assemblies:

LENGTH OF CABLE RUN	CRITERIA FOR ARRANGEMENT OF THE SPRING CABLE END ASSEMBLIES (COMPENSATION DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES
To 500'	Use turnbuckle on the approaching traffic end and compensating device on the other end of each individual cable, except in the W Beam to 3 Cable Transition where all compensating devices shall be provided at the bridge ends.
Greater than 500' to 1000'	Use compensating device on each end of each individual cable.
Greater than 1000'	Start new run by interlacing at last parallel post as shown above.

All Compensating Devices shall be attached to the cable anchor bracket when one end of the run is attached to a bridge.
 Compensating Devices must have a spring rate of 450 ± 50 Lbs. per inch and shall have a total available travel of 6" minimum.

The cable shall be retensioned after the initial 2 week pretension period in accordance with the following table:

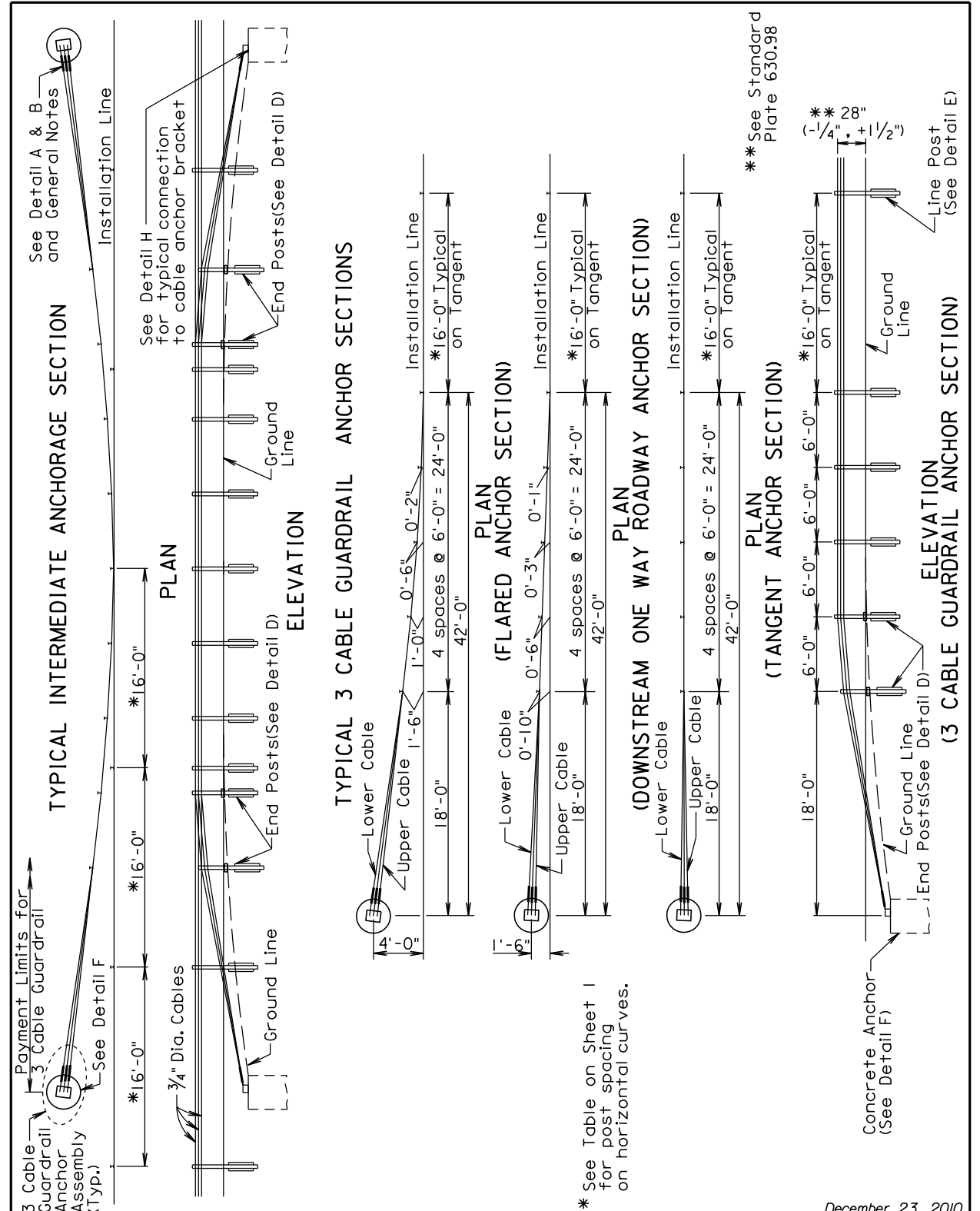
Temperature Range (Deg.)	120 to 110	109 to 100	99 to 90	79 to 70	69 to 60	59 to 50	49 to 40	39 to 30	29 to 20	19 to 10	9 to 0	-11 to -20
Spring Compression (In.)	1	1 1/4	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4

December 23, 2010
PLATE NUMBER
 629.01
 Sheet 1 of 6

Published Date: 1st Qtr. 2012

TODDS

3 CABLE GUARDRAIL



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

** See Standard Plate 630.98

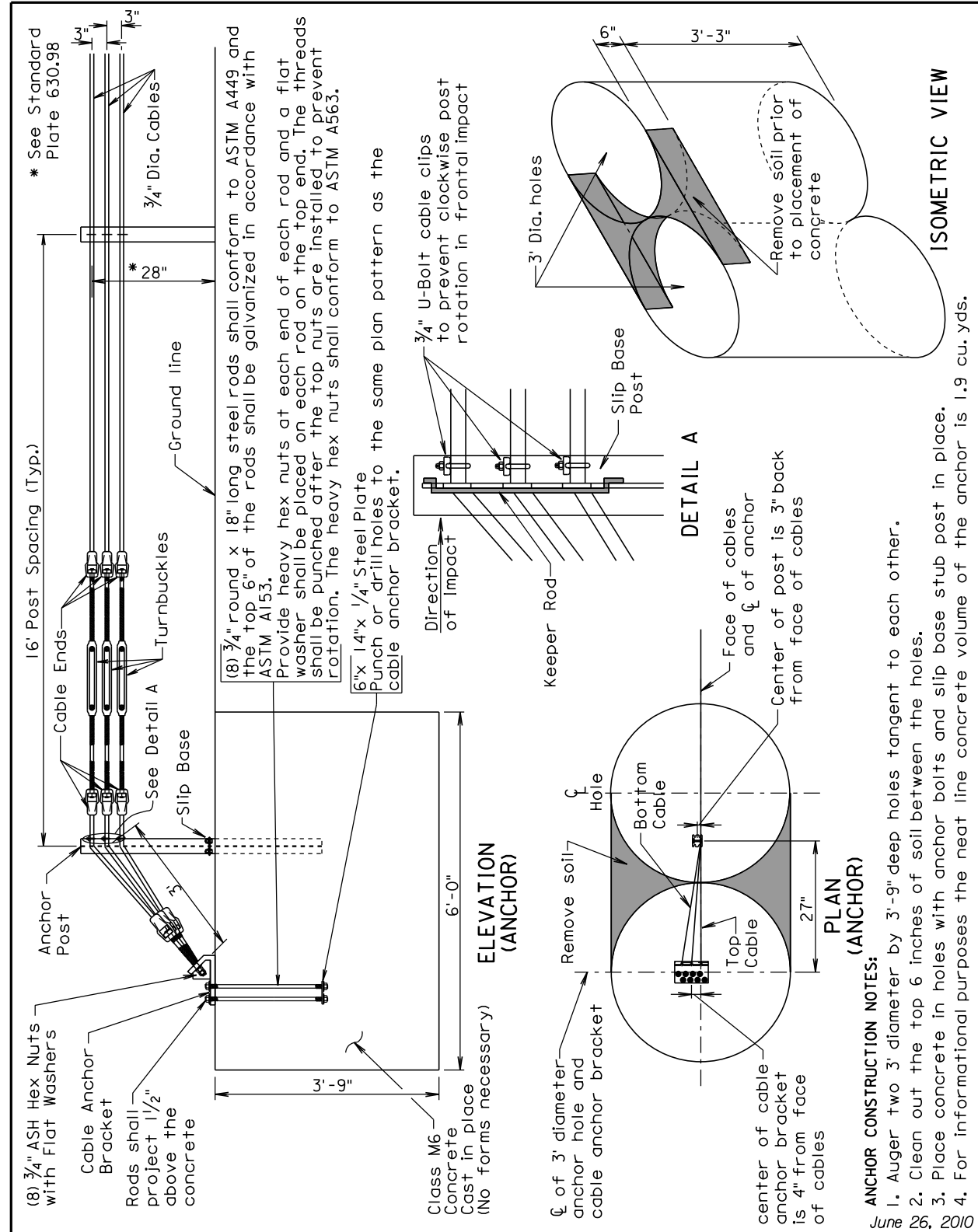
Published Date: 1st Qtr. 2012

TODDS

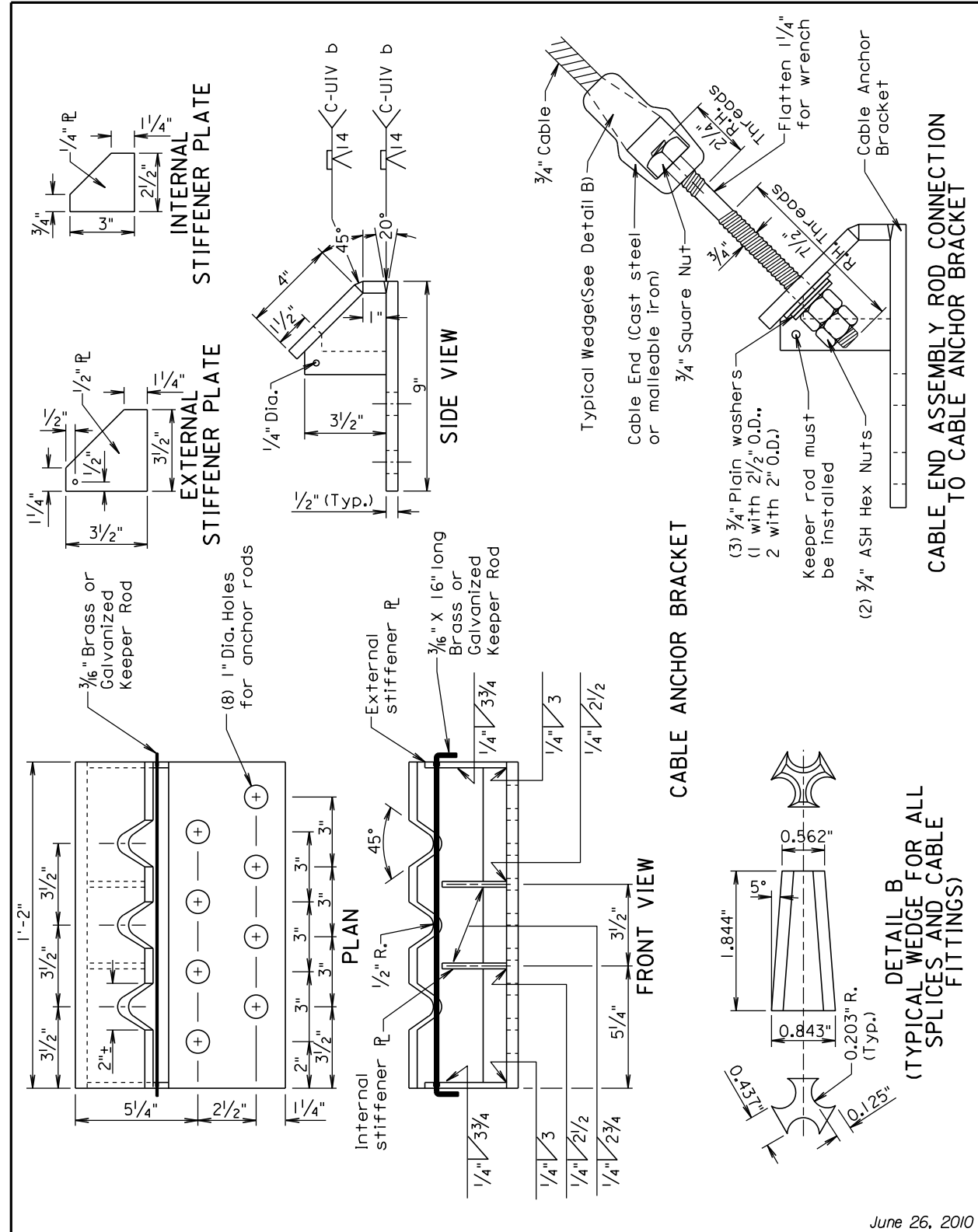
3 CABLE GUARDRAIL

December 23, 2010
PLATE NUMBER
 629.01
 Sheet 2 of 6

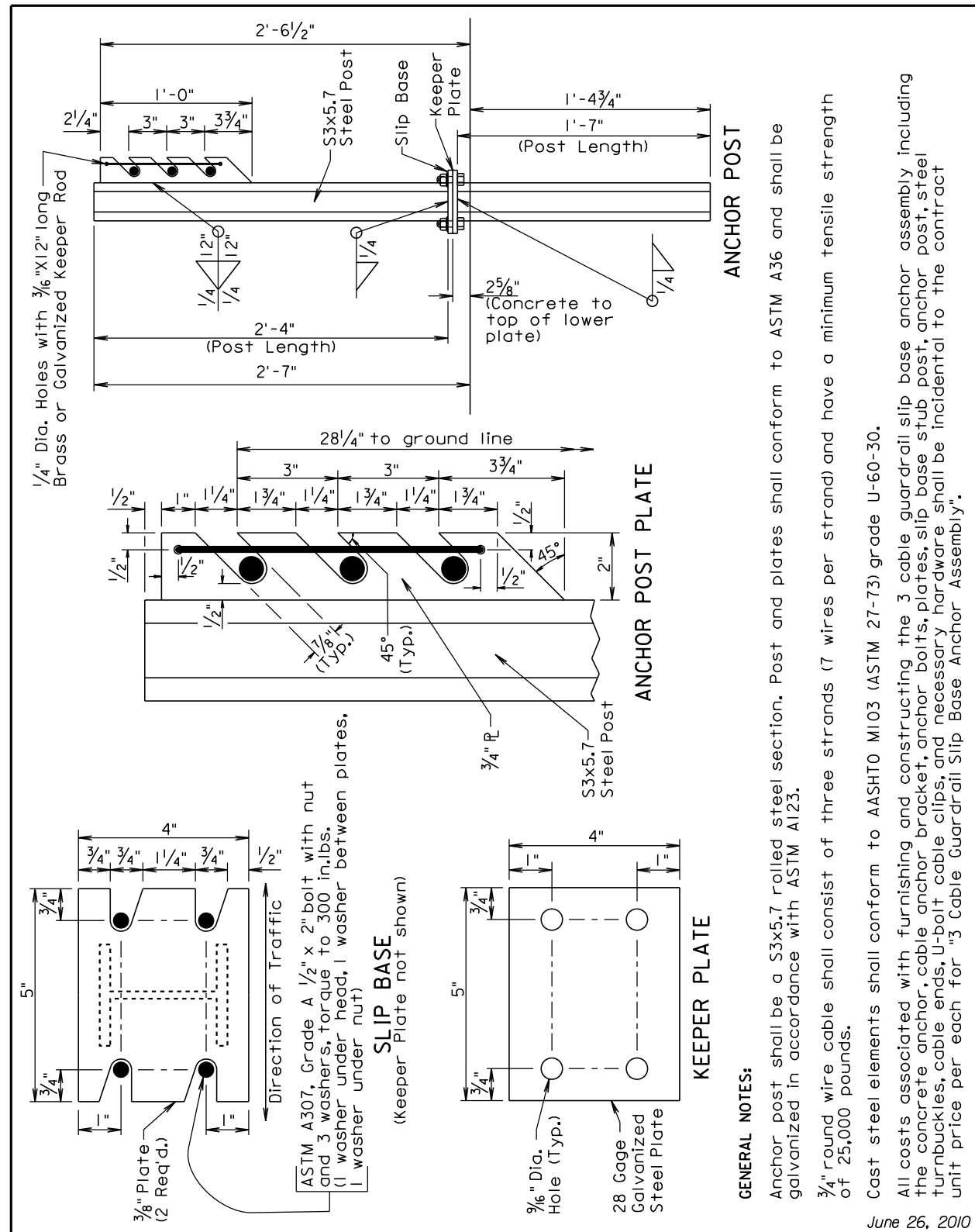
Published Date: 1st Qtr. 2012



Published Date: 1st Qtr. 2012	TODD S	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	PLATE NUMBER 629.10
			Sheet 1 of 3



Published Date: 1st Qtr. 2012	TODD S	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	PLATE NUMBER 629.10
			Sheet 2 of 3



GENERAL NOTES:

Anchor post shall be a S3x5.7 rolled steel section. Post and plates shall conform to ASTM A36 and shall be galvanized in accordance with ASTM A123.

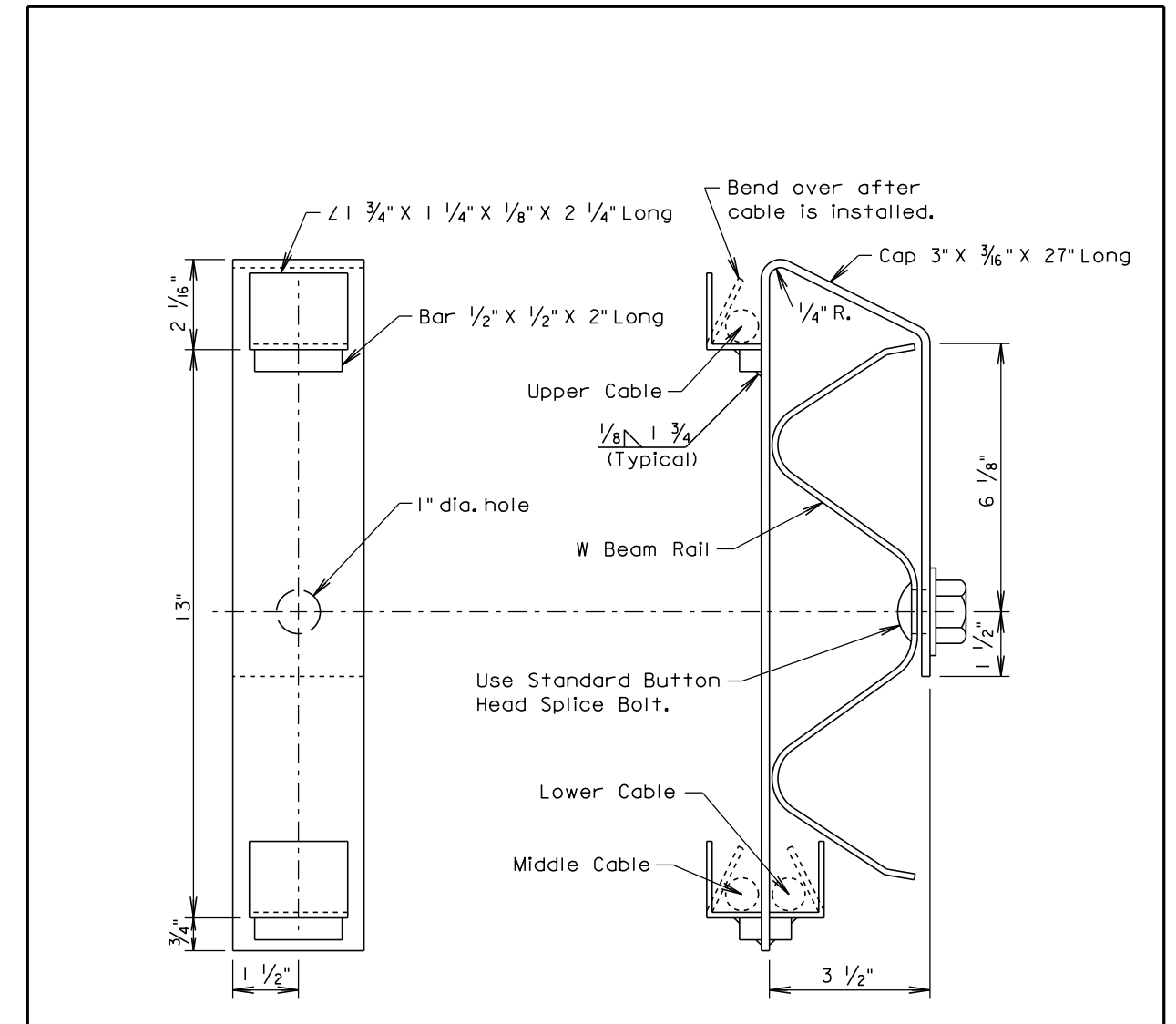
3/4" round wire cable shall consist of three strands (7 wires per strand) and have a minimum tensile strength of 25,000 pounds.

Cast steel elements shall conform to AASHTO M103 (ASTM 27-73) grade U-60-30.

All costs associated with furnishing and constructing the 3 cable guardrail slip base anchor assembly including the concrete anchor, cable anchor bracket, anchor bolts, plates, slip base stub post, anchor post, steel turnbuckles, cable ends, U-bolt cable clips, and necessary hardware shall be incidental to the contract unit price per each for "3 Cable Guardrail Slip Base Anchor Assembly".

June 26, 2010

Published Date: 1st Qtr. 2012	S D D O T	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	PLATE NUMBER 629.10
			Sheet 3 of 3



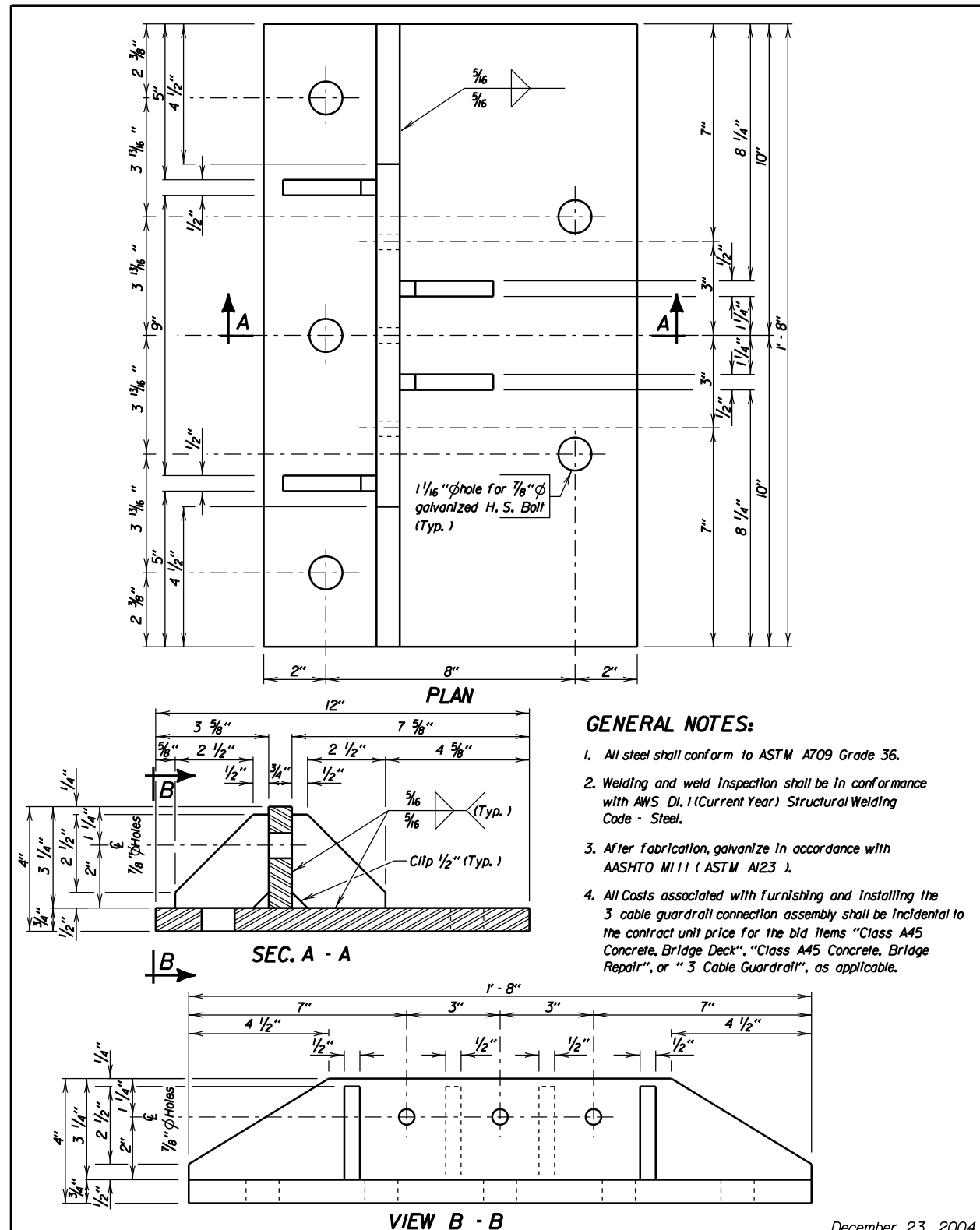
ELEVATION (TRANSITION BRACKET)
END VIEW (W BEAM RAIL AND TRANSITION BRACKET)

GENERAL NOTES:

Steel used in the fabrication of the bracket shall conform to ASTM A36 and the bracket shall be galvanized after fabrication in accordance with ASTM A123.

March 31, 2000

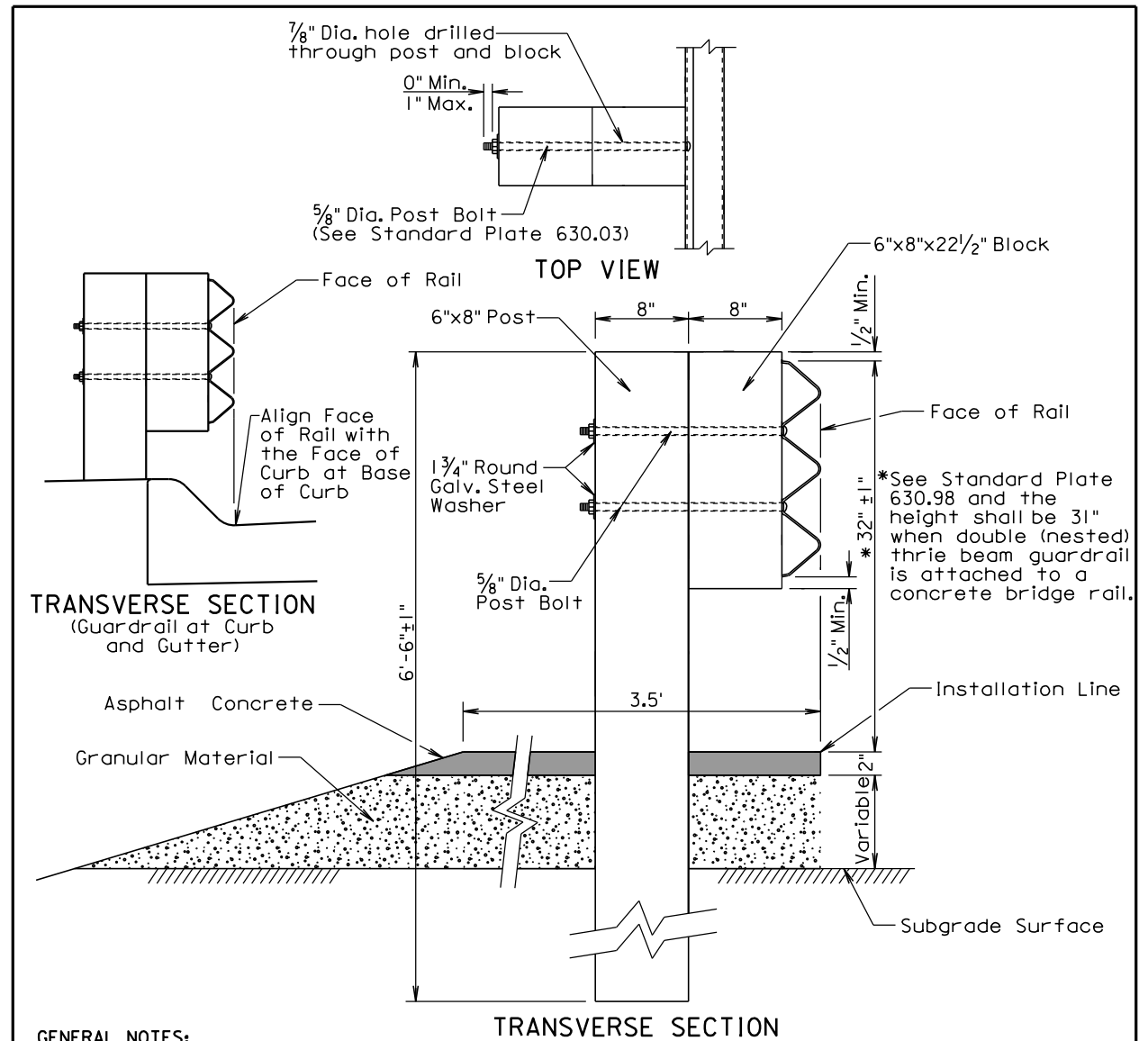
Published Date: 1st Qtr. 2012	S D D O T	W BEAM TO 3 CABLE TRANSITION BRACKET	PLATE NUMBER 629.15
			Sheet 1 of 1



- GENERAL NOTES:**
1. All steel shall conform to ASTM A709 Grade 36.
 2. Welding and weld inspection shall be in conformance with AWS D1.1 (Current Year) Structural Welding Code - Steel.
 3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
 4. All costs associated with furnishing and installing the 3 cable guardrail connection assembly shall be incidental to the contract unit price for the bid items "Class A45 Concrete, Bridge Deck", "Class A45 Concrete, Bridge Repair", or "3 Cable Guardrail", as applicable.

December 23, 2004

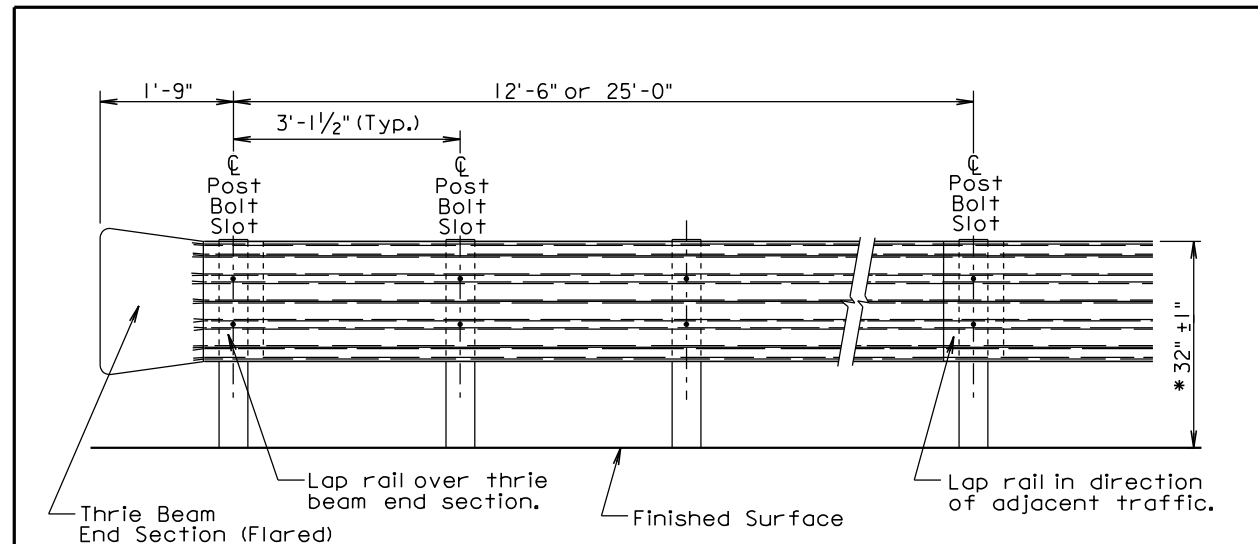
SD DOT Published Date: 1st Qtr. 2012	3 CABLE GUARDRAIL CONNECTION ASSEMBLY	PLATE NUMBER 629.30
		Sheet 1 of 1



- GENERAL NOTES:**
- Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.
- Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.
- Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "Thrie Beam Guardrail" bid item.
- The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).
- The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

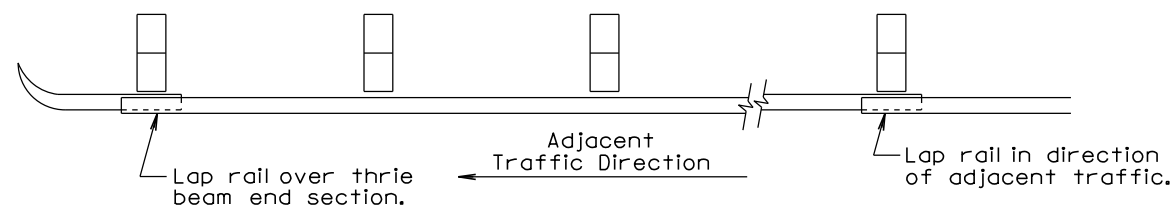
December 23, 2010

SD DOT Published Date: 1st Qtr. 2012	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
		Sheet 1 of 1



ELEVATION

* See Standard Plate 630.98 and the height shall be 31" when double (nested) thrie beam guardrail is attached to a concrete bridge rail.



PLAN

THRIE BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	2'-6"
3'-1 1/2"	1'-9"

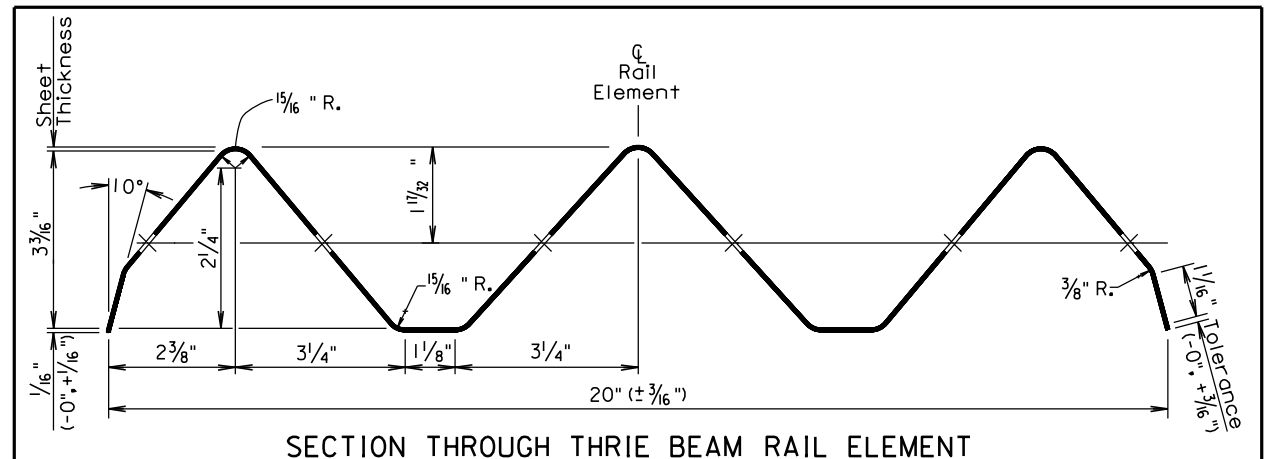
For Informational Purposes Only

GENERAL NOTES:

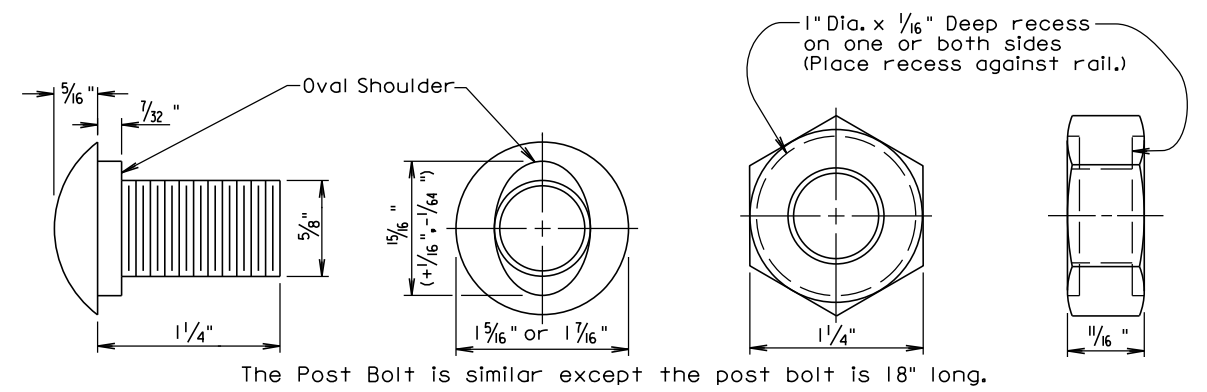
- All thrie beam rail shall be Type 1.
- There will be no separate payment for furnishing and installing Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors. All costs for the Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.
- Thrie beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.
- Thrie Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.
- All costs for constructing thrie beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.
- Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "Thrie Beam Guardrail" bid item.

December 23, 2010

Published Date: 1st Qtr. 2012	S D D O T	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
			Sheet 1 of 1

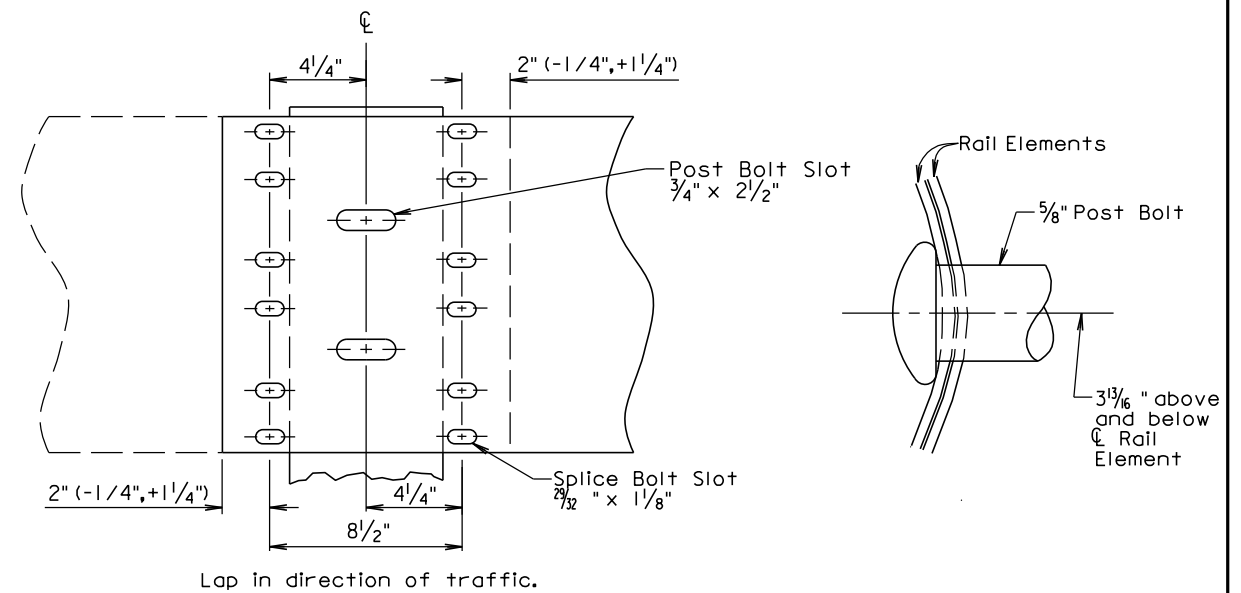


SECTION THROUGH THRIE BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

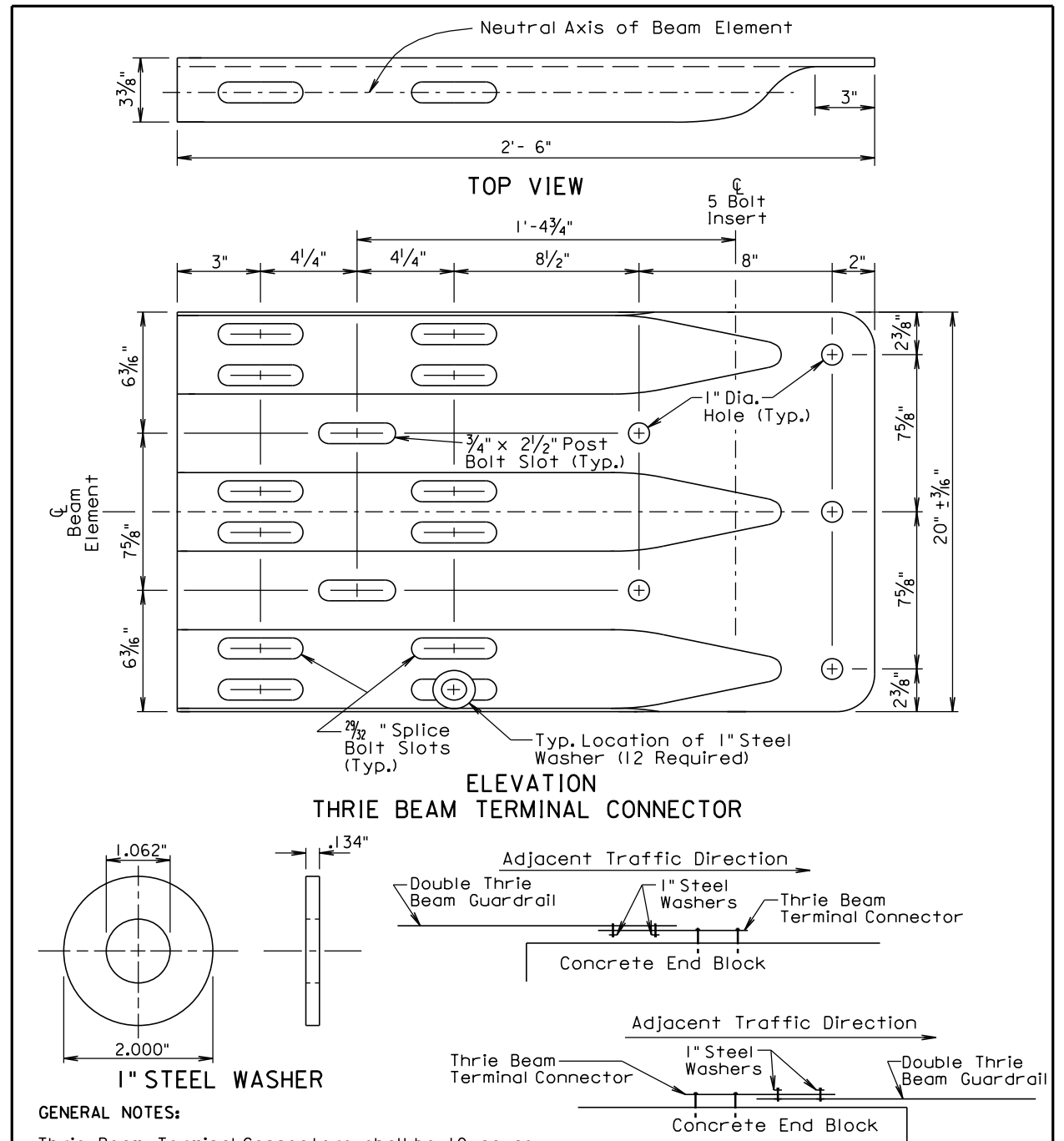
SPLICE BOLT (5/8" BUTTON HEAD BOLT AND RECESS NUT)



RAIL SPLICE

March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.03
			Sheet 1 of 1



THRIE BEAM TERMINAL CONNECTOR

GENERAL NOTES:

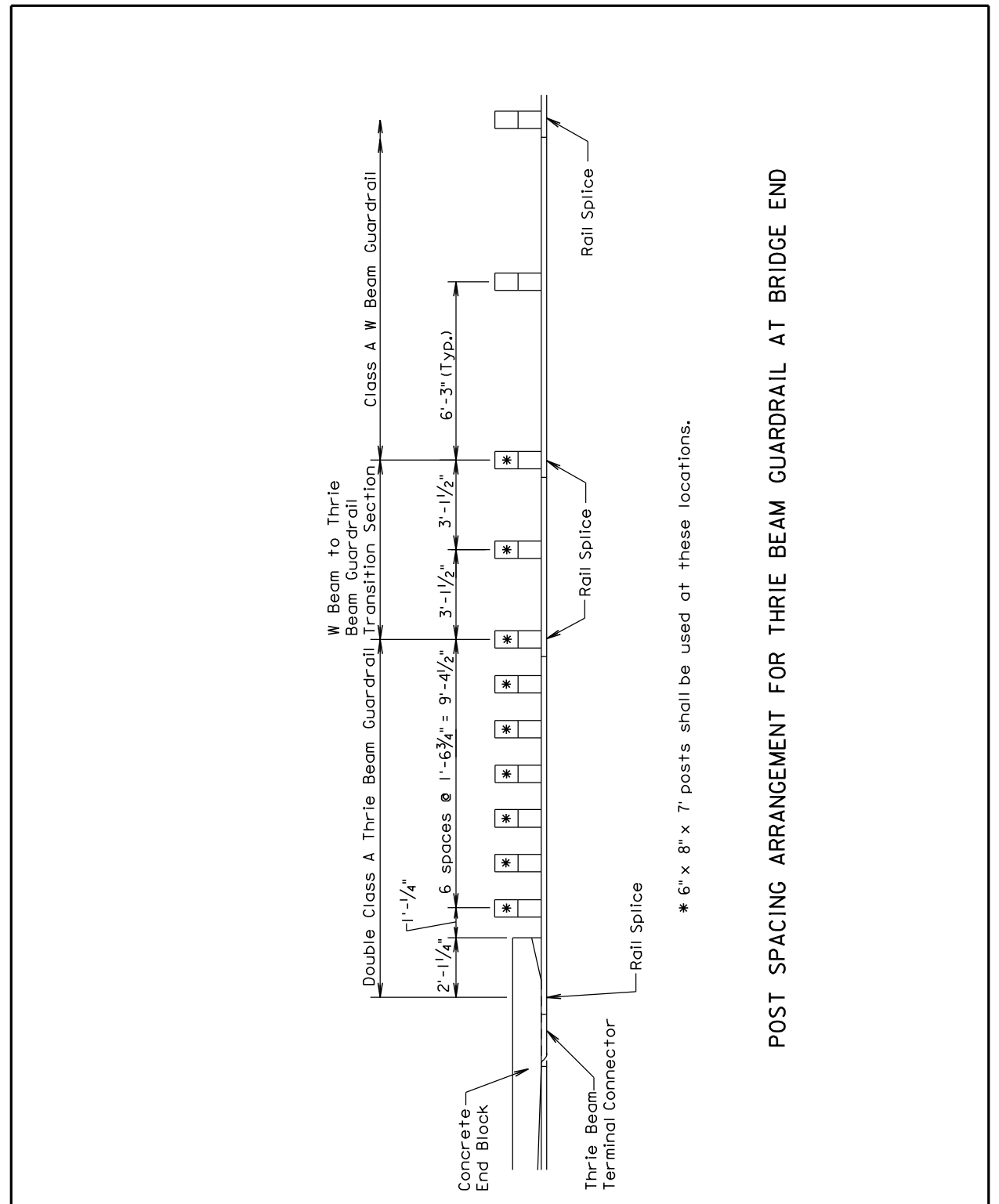
Thrie Beam Terminal Connectors shall be 10 gauge.

When the thrie beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the thrie beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.

There will be no separate payment for furnishing and installing the Thrie Beam Terminal Connector. All costs for the Thrie Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

September 14, 2001

Published Date: 1st Qtr. 2012	S D D O T	THRIE BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.05
			Sheet 1 of 1

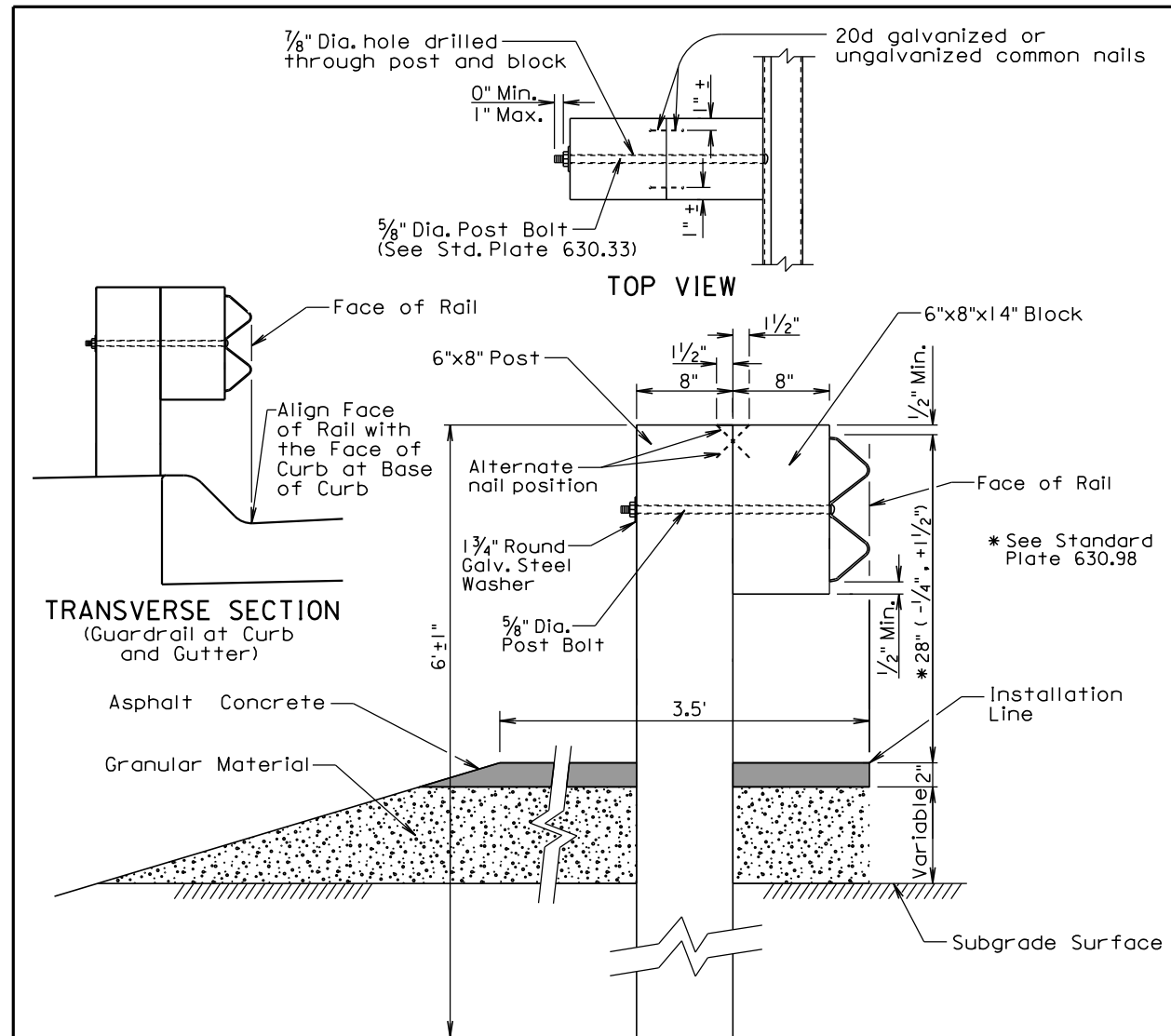


* 6" x 8" x 7' posts shall be used at these locations.

POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

December 23, 2002

Published Date: 1st Qtr. 2012	S D D O T	POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END	PLATE NUMBER 630.15
			Sheet 1 of 1



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

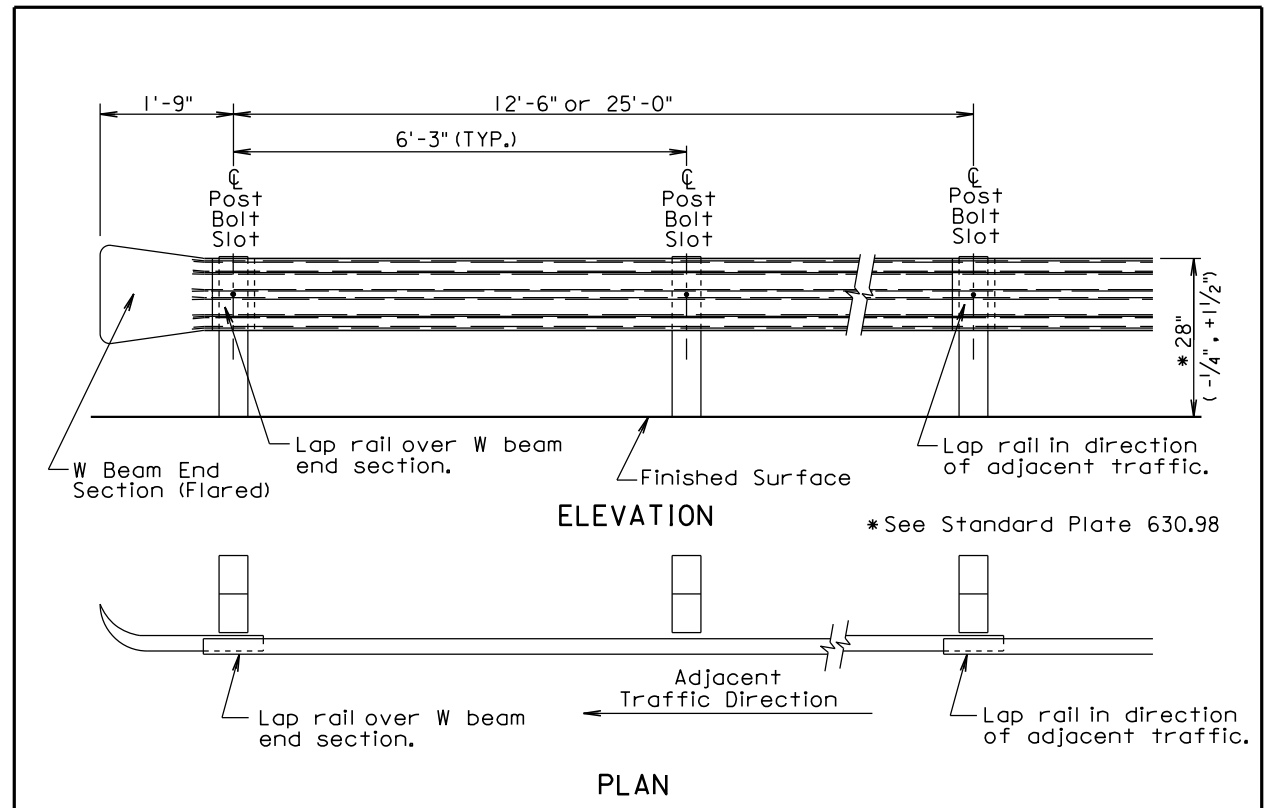
The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

December 23, 2010

SD DOT	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
		Sheet 1 of 1

Published Date: 1st Qtr. 2012



GENERAL NOTES:

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

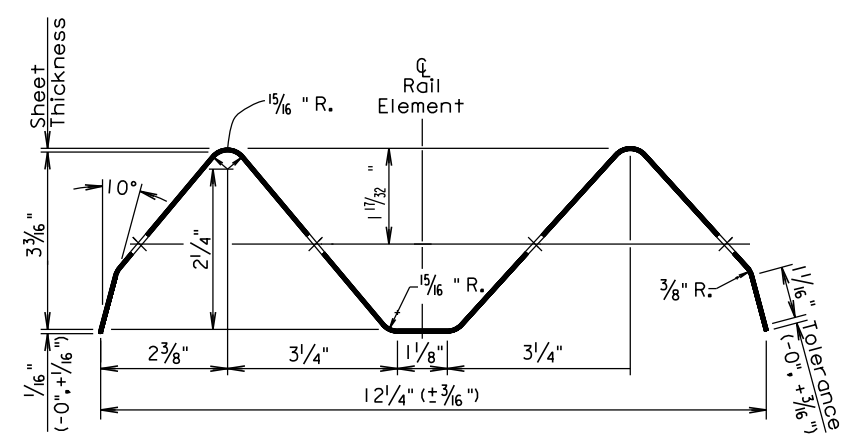
December 23, 2010

W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	3'-3"
3'-1 1/2"	2'-0"

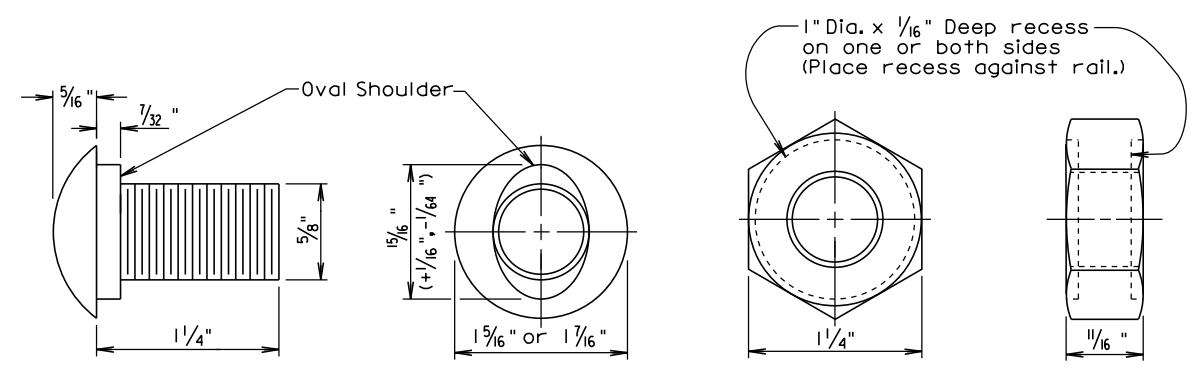
For Informational Purposes Only

SD DOT	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
		Sheet 1 of 1

Published Date: 1st Qtr. 2012

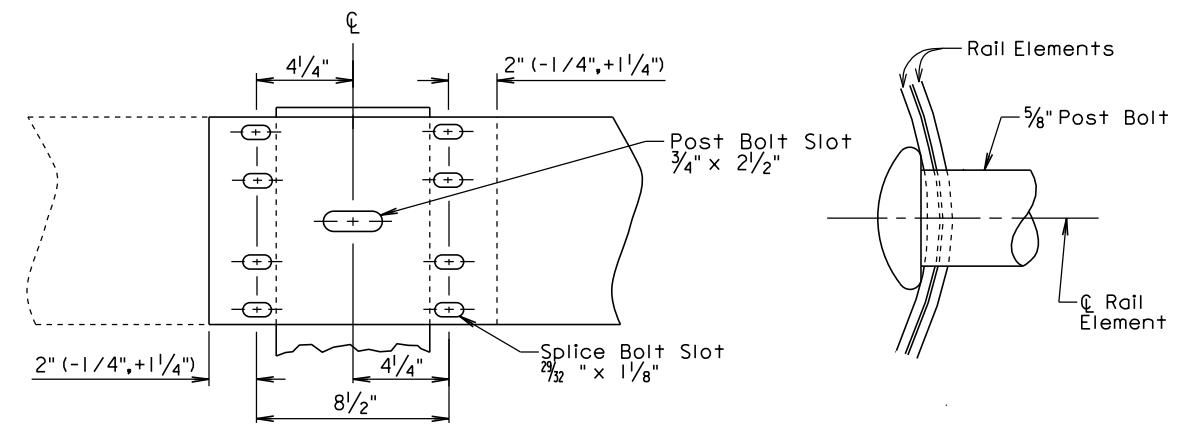


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)

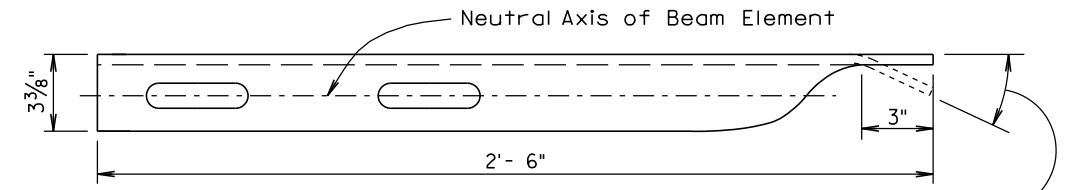


Lap in direction of traffic.

RAIL SPLICE

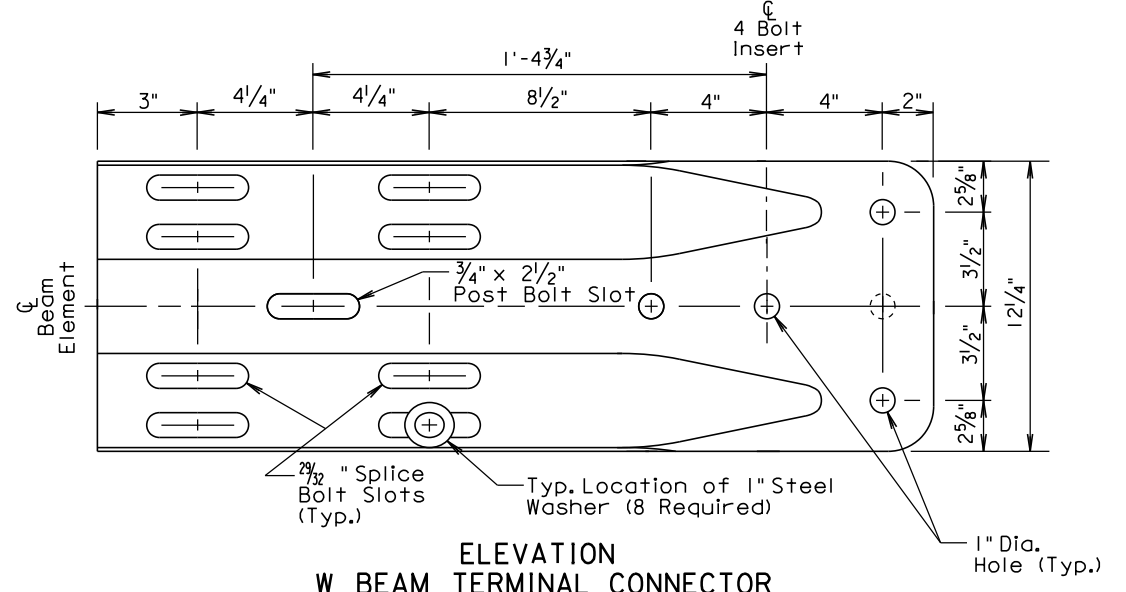
December 23, 2004

Published Date: 1st Qtr. 2012	S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1

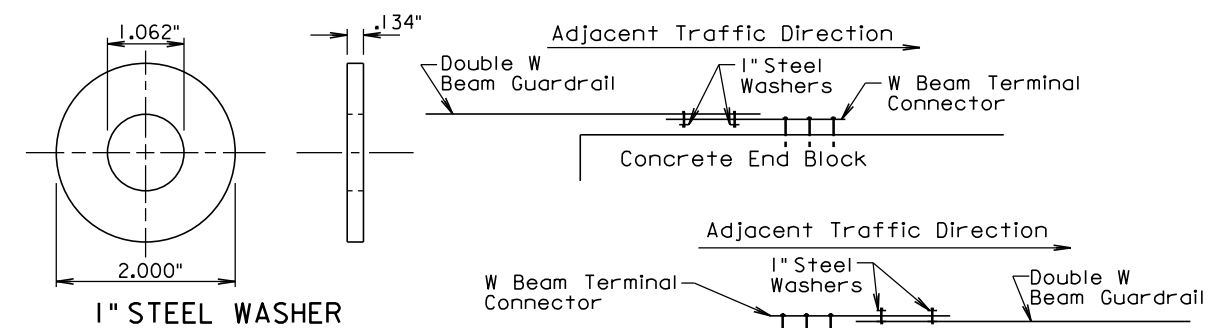


An extra hole and an approximate 26° bend shall be required only for the Breakaway Cable Terminal. The Modified W Beam Terminal Connector placement detail is shown on Standard Plate 630.47.

TOP VIEW



ELEVATION
W BEAM TERMINAL CONNECTOR



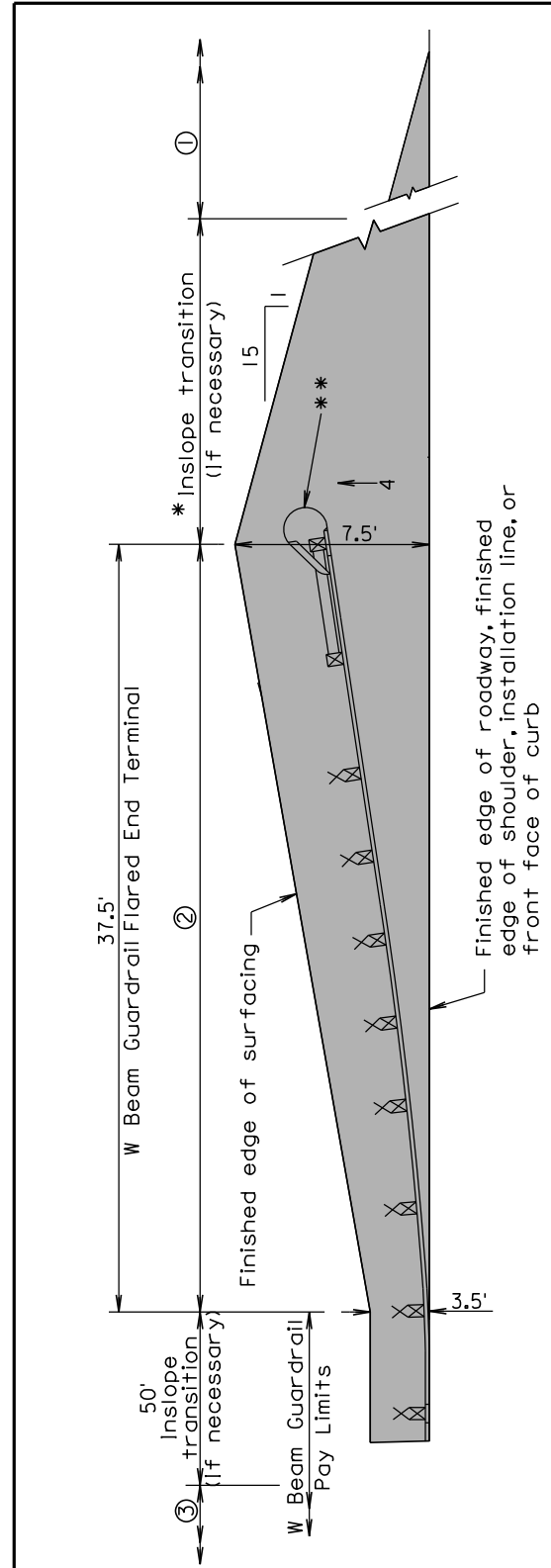
1" STEEL WASHER

GENERAL NOTES:

- W Beam Terminal Connectors shall be 10 gauge.
- When the W beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the W beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.
- There will be no separate payment for furnishing and installing the W Beam Terminal Connector. All costs for the W Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

September 14, 2001

Published Date: 1st Qtr. 2012	S D D O T	W BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.35
			Sheet 1 of 1



PLAN

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.

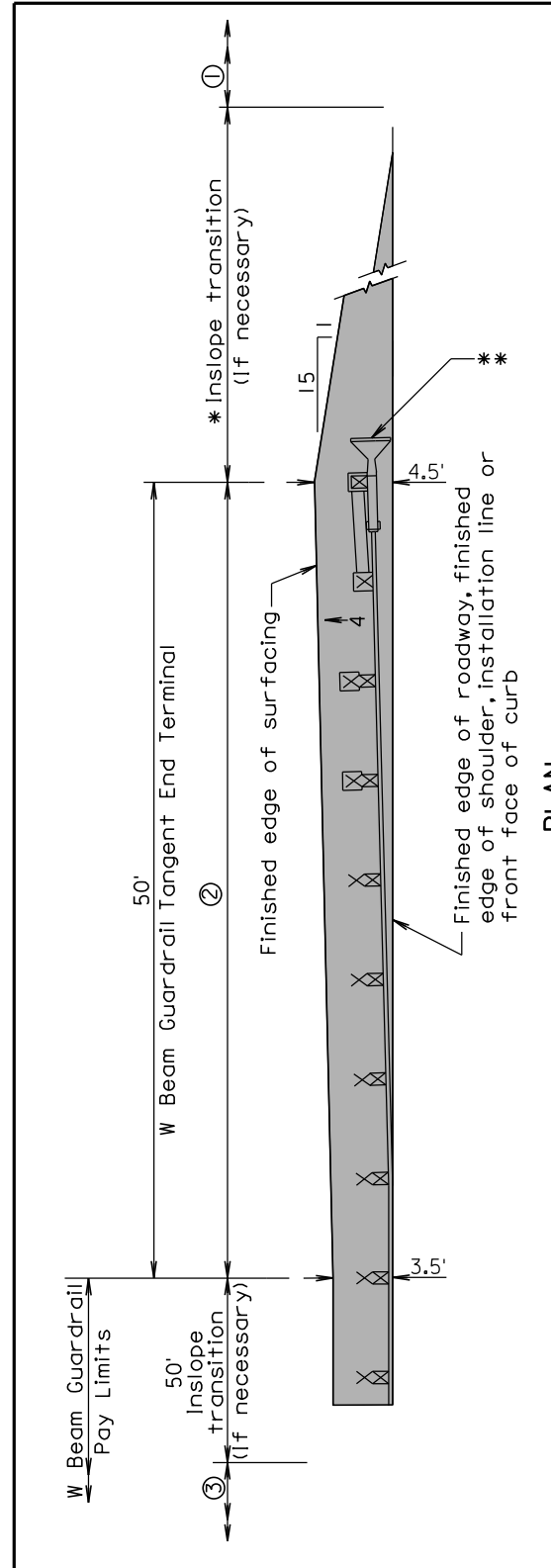
** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite."

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

September 6, 2009

Published Date: 1st Qtr. 2012	S D D O T	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER 630.45
			Sheet 1 of 1



PLAN

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

The W beam guardrail tangent end terminal shall be installed according to the manufacturer's installation instructions.

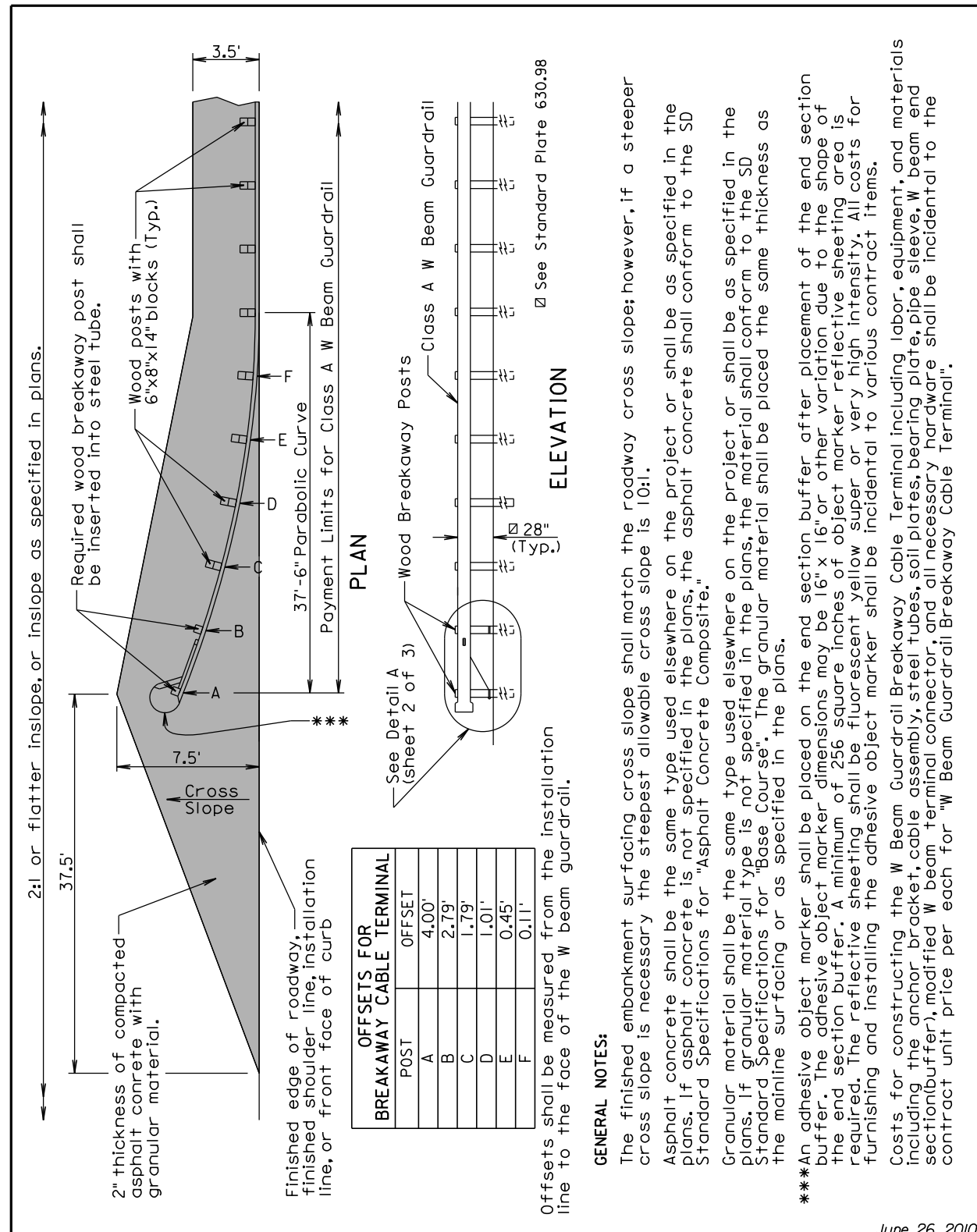
** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite."

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

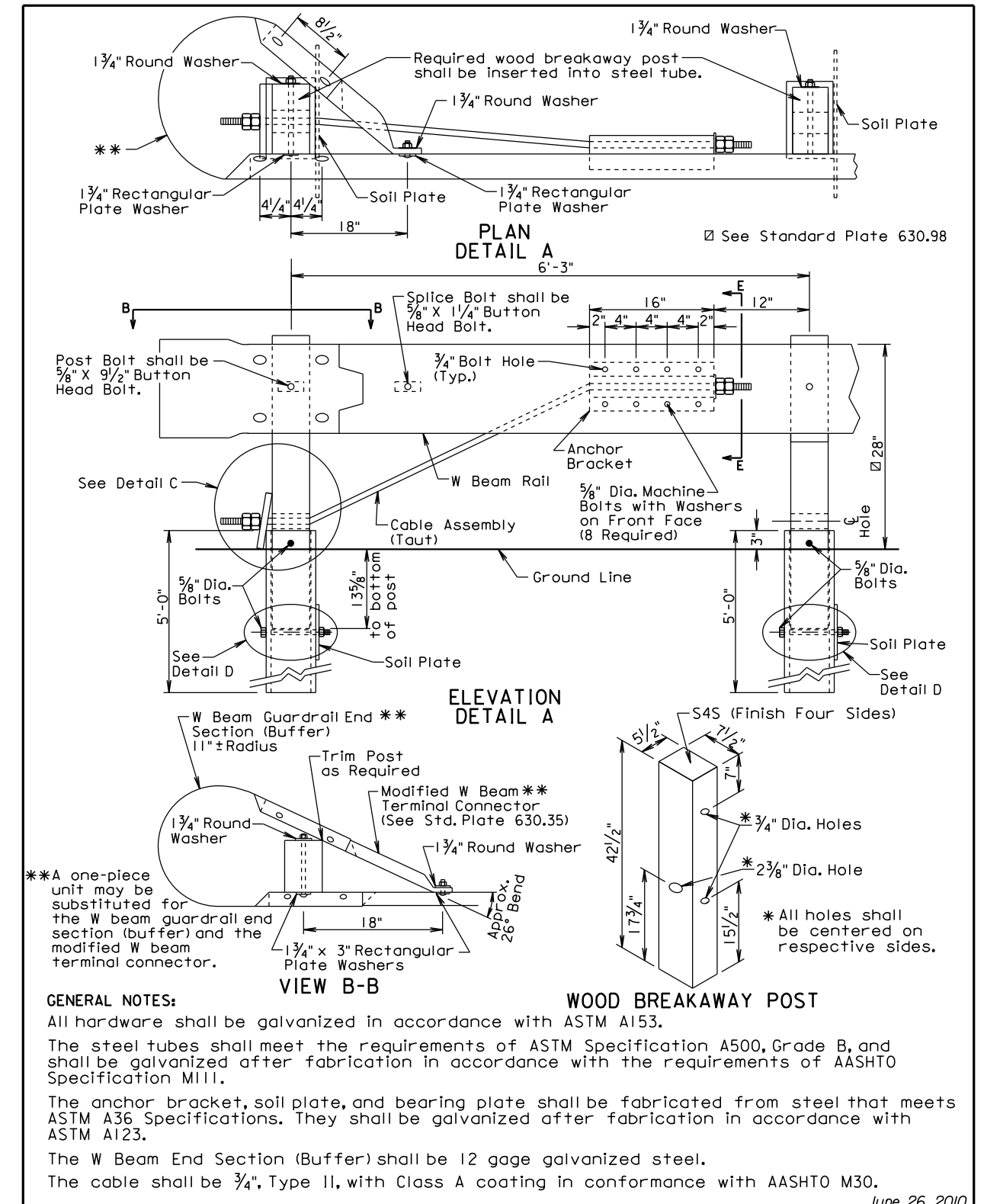
September 6, 2009

Published Date: 1st Qtr. 2012	S D D O T	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL TANGENT END TERMINAL	PLATE NUMBER 630.46
			Sheet 1 of 1

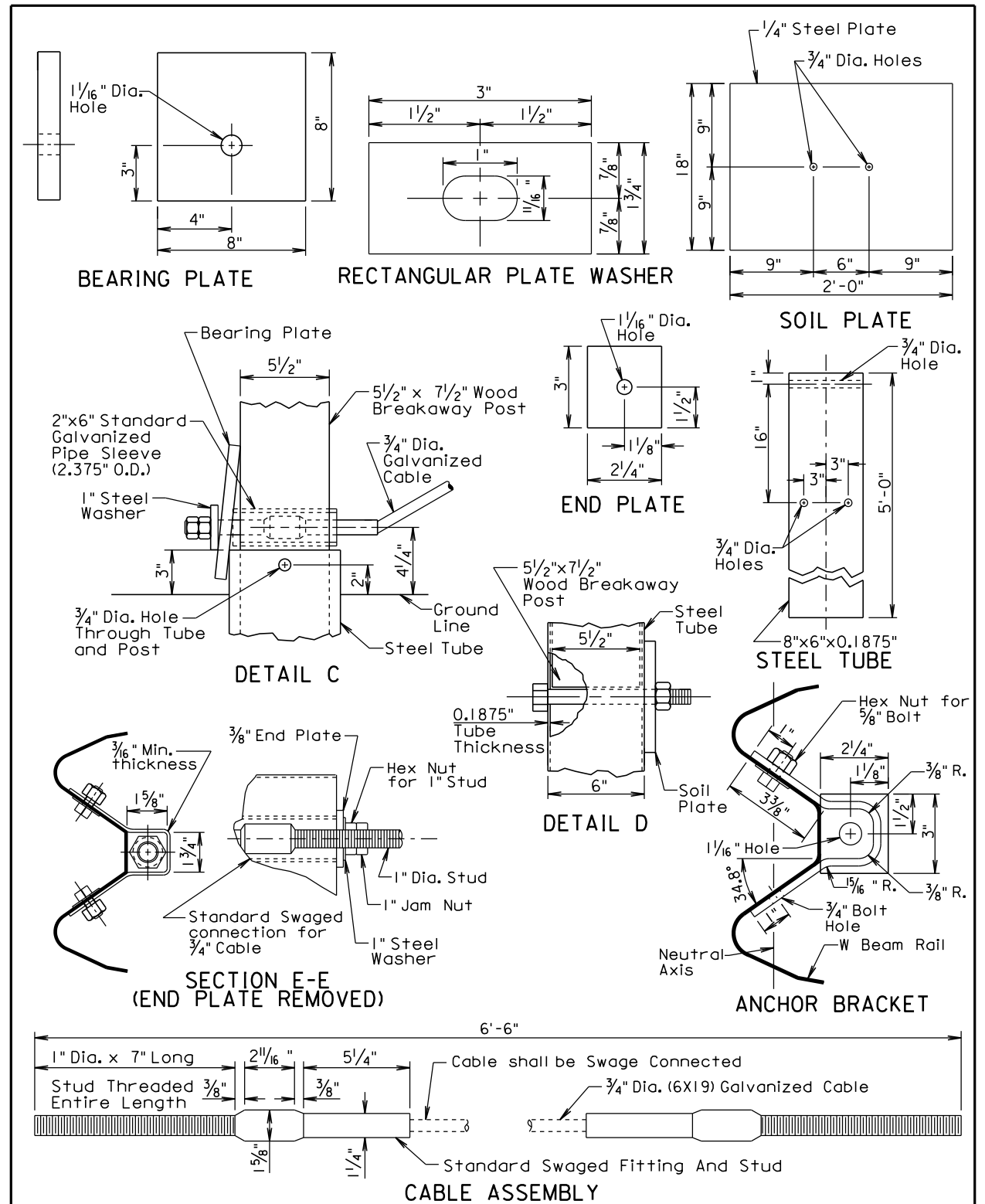


GENERAL NOTES:
The finished embankment surfacing cross slope shall match the roadway cross slope; however, if a steeper cross slope is necessary the steepest allowable cross slope is 10:1.
Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite."
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.
***An adhesive object marker shall be placed on the end section buffer after placement of the end section buffer. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.
Costs for constructing the W Beam Guardrail Breakaway Cable Terminal including labor, equipment, and materials including the anchor bracket, cable assembly, steel tubes, soil plates, bearing plate, pipe sleeve, W beam end section(buffer), modified W beam terminal connector, and all necessary hardware shall be incidental to the contract unit price per each for "W Beam Guardrail Breakaway Cable Terminal".

June 26, 2010

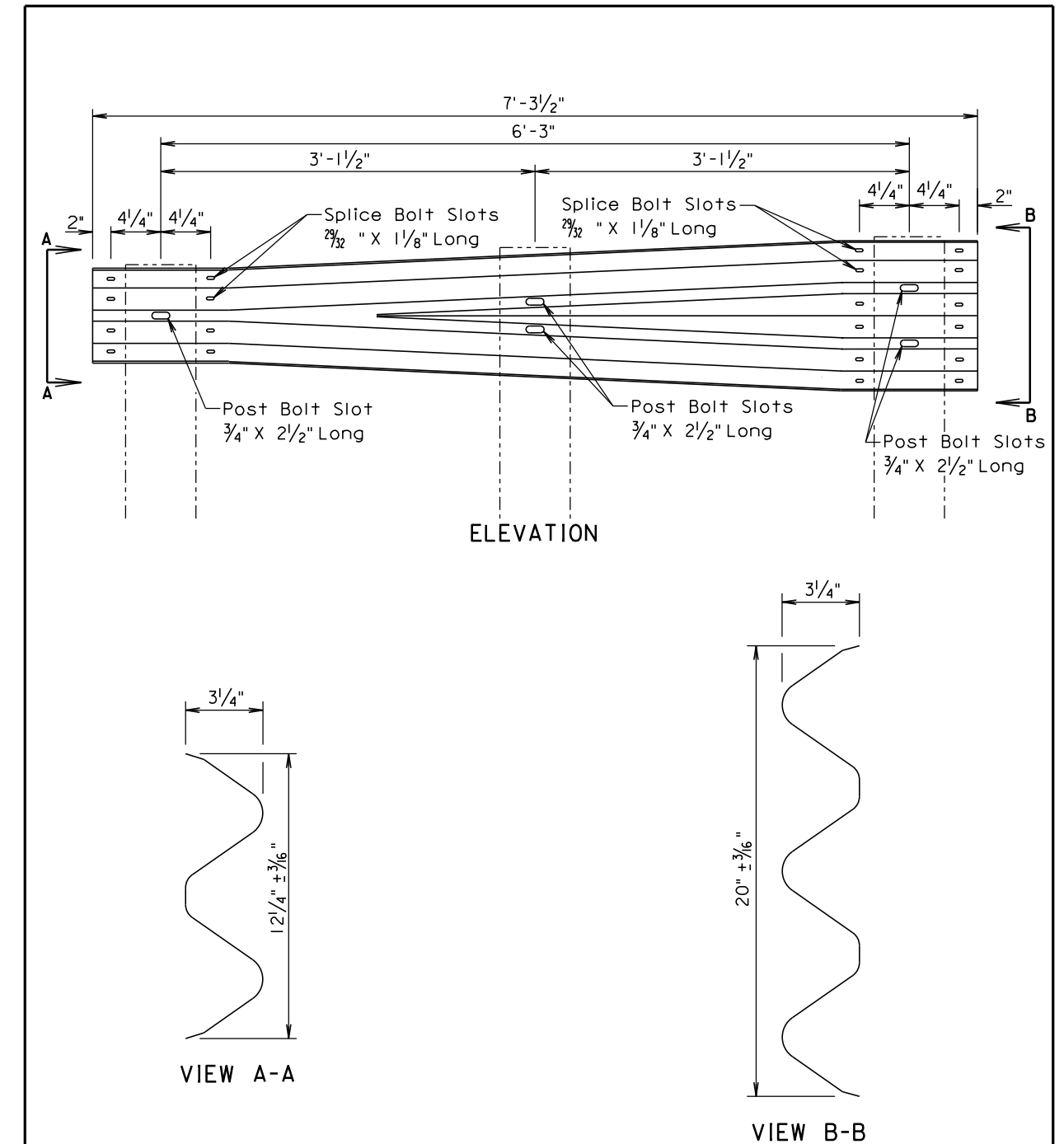


June 26, 2010



June 26, 2010

Published Date: 1st Qtr. 2012	S D D O T	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.47
			Sheet 3 of 3

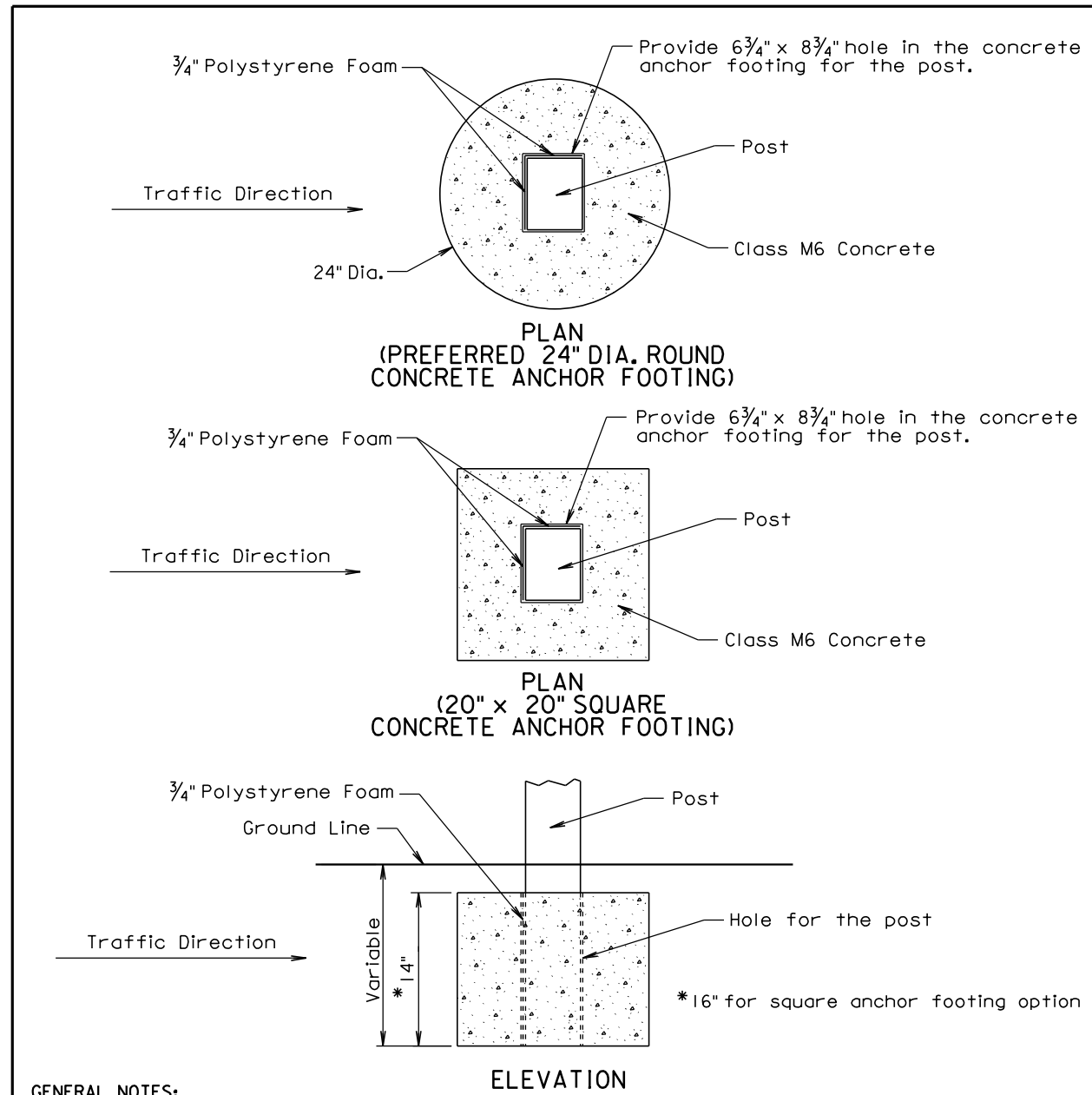


GENERAL NOTE:

All costs for constructing the W Beam to Thrie Beam Guardrail Transition including labor, equipment, and materials including two posts, two blocks, W beam to thrie beam transition section, and hardware shall be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.82
			Sheet 1 of 1



GENERAL NOTES:

In areas where the required guardrail wood post depth is not obtainable, shorter posts may be used and shall be anchored in concrete in accordance with the details shown on this standard plate.

A 20" x 20" square concrete anchor footing may be used in lieu of the 24" diameter round anchor footing.

Forms for the concrete anchor footing hole is not required.

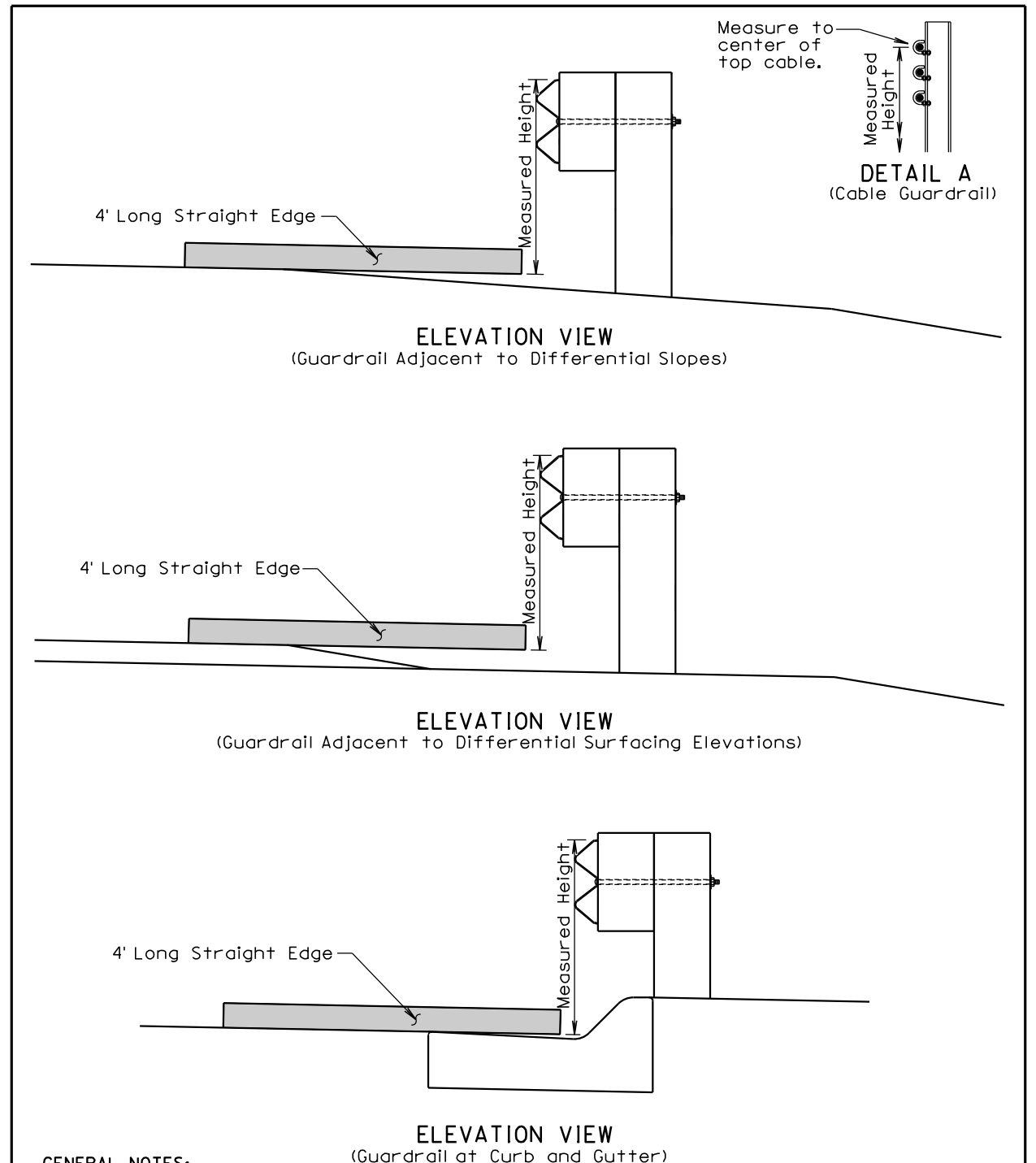
Concrete for the concrete anchor footing shall be Class M6.

Three quarter inch polystyrene foam shall be attached to two sides of the posts. See details above for placement position of the polystyrene foam.

There will be no separate payment for furnishing and installing the concrete anchor footing for short guardrail post. All costs for concrete anchor footings shall be incidental to the contract unit price per foot for the respective "Thrie Beam or W Beam Guardrail" bid item.

March 31, 2000

SDDOT	CONCRETE ANCHOR FOOTING FOR SHORT GUARDRAIL POST	PLATE NUMBER 630.84
		Sheet 1 of 1
<i>Published Date: 1st Qtr. 2012</i>		



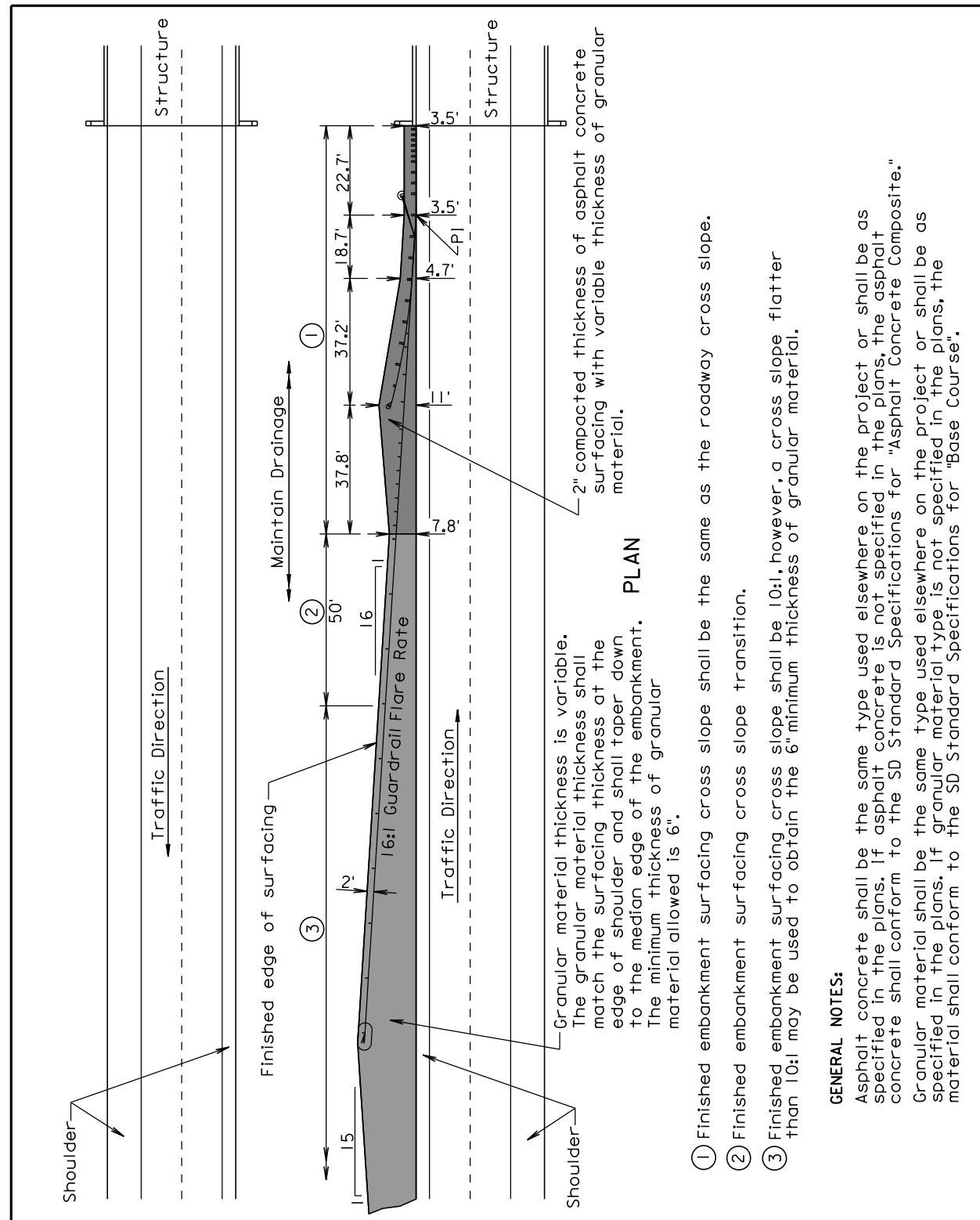
GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.

When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
		Sheet 1 of 1
<i>Published Date: 1st Qtr. 2012</i>		



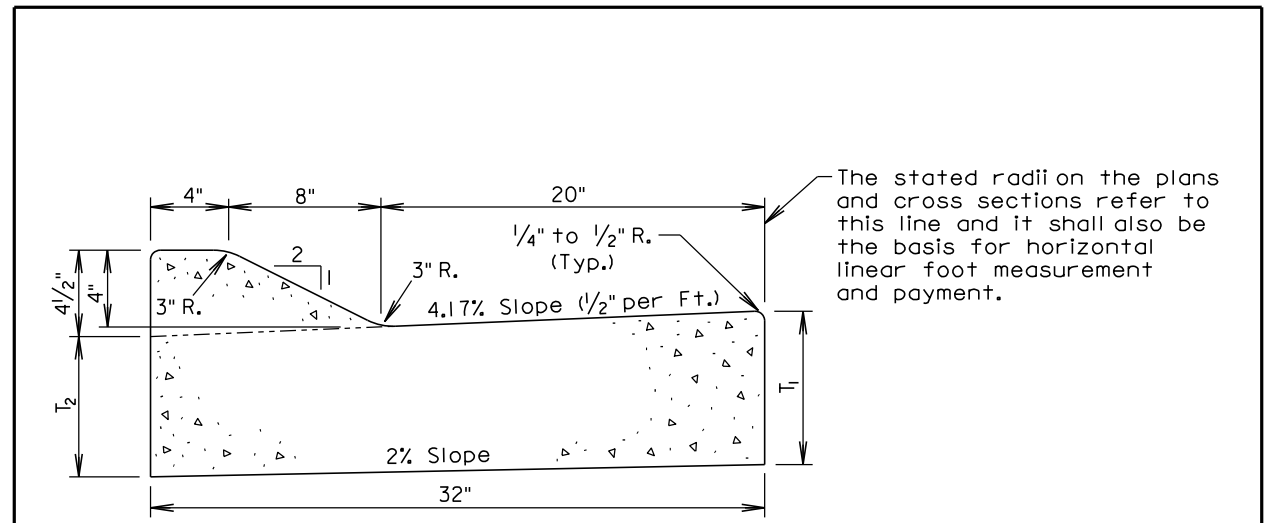
Granular material thickness is variable. The granular material thickness shall match the surfacing thickness at the edge of shoulder and shall taper down to the median edge of the embankment. The minimum thickness of granular material allowed is 6".

2" compacted thickness of asphalt concrete surfacing with variable thickness of granular material.

- ① Finished embankment surfacing cross slope shall be the same as the roadway cross slope.
- ② Finished embankment surfacing cross slope transition.
- ③ Finished embankment surfacing cross slope shall be 10:1, however, a cross slope flatter than 10:1 may be used to obtain the 6" minimum thickness of granular material.

GENERAL NOTES:
Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course".

March 31, 2000

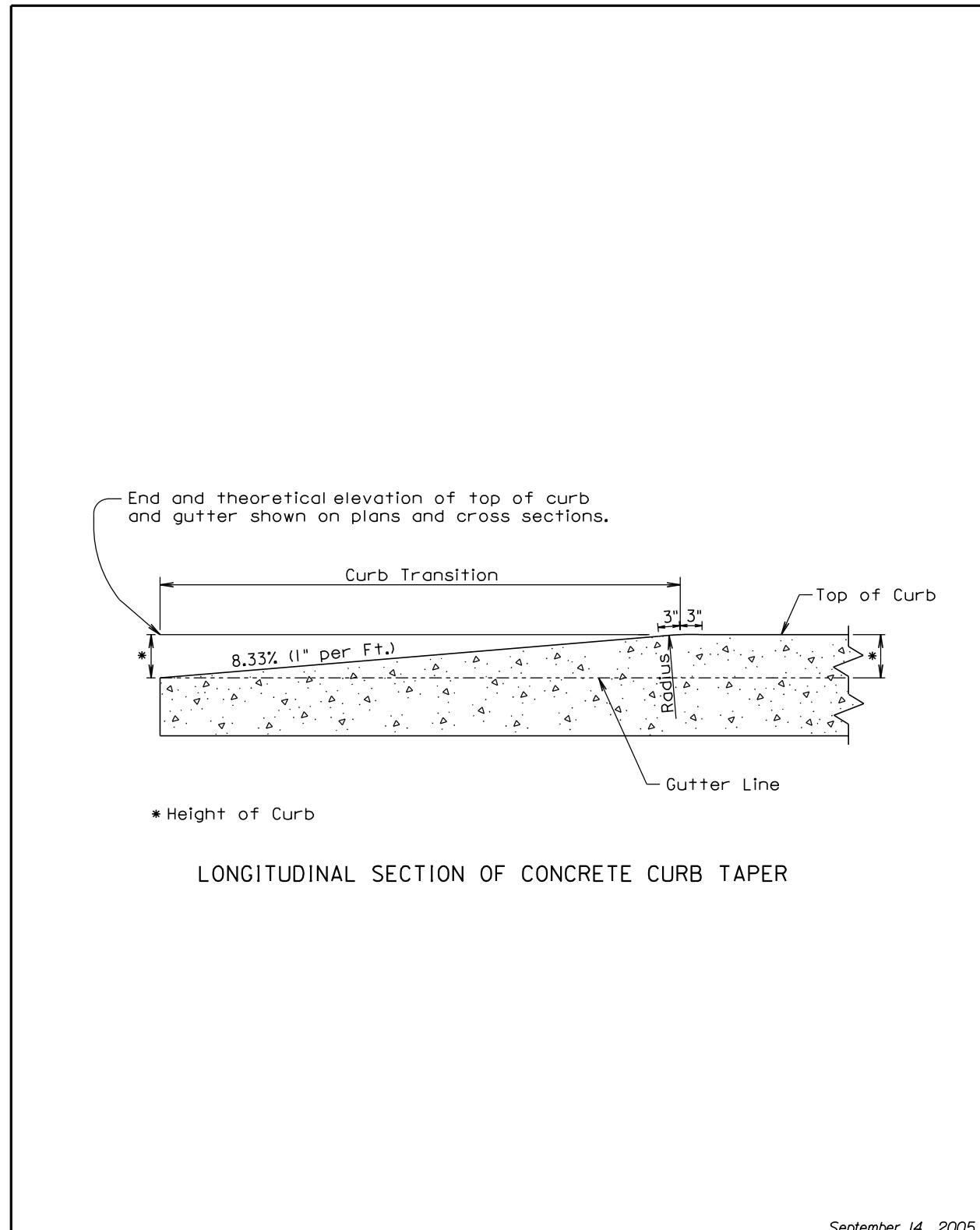


Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
D46	6	5 ⁵ / ₁₆	0.056	18.0
D47	7	6 ⁵ / ₁₆	0.064	15.7
D48	8	7 ⁵ / ₁₆	0.072	13.9
D48.5	8.5	7 ¹³ / ₁₆	0.076	13.1
D49	9	8 ⁵ / ₁₆	0.080	12.5
D49.5	9.5	8 ¹³ / ₁₆	0.084	11.9
D410	10	9 ⁵ / ₁₆	0.088	11.3
D410.5	10.5	9 ¹³ / ₁₆	0.093	10.8
D411	11	10 ⁵ / ₁₆	0.097	10.3
D411.5	11.5	10 ¹³ / ₁₆	0.101	9.9
D412	12	11 ⁵ / ₁₆	0.105	9.5

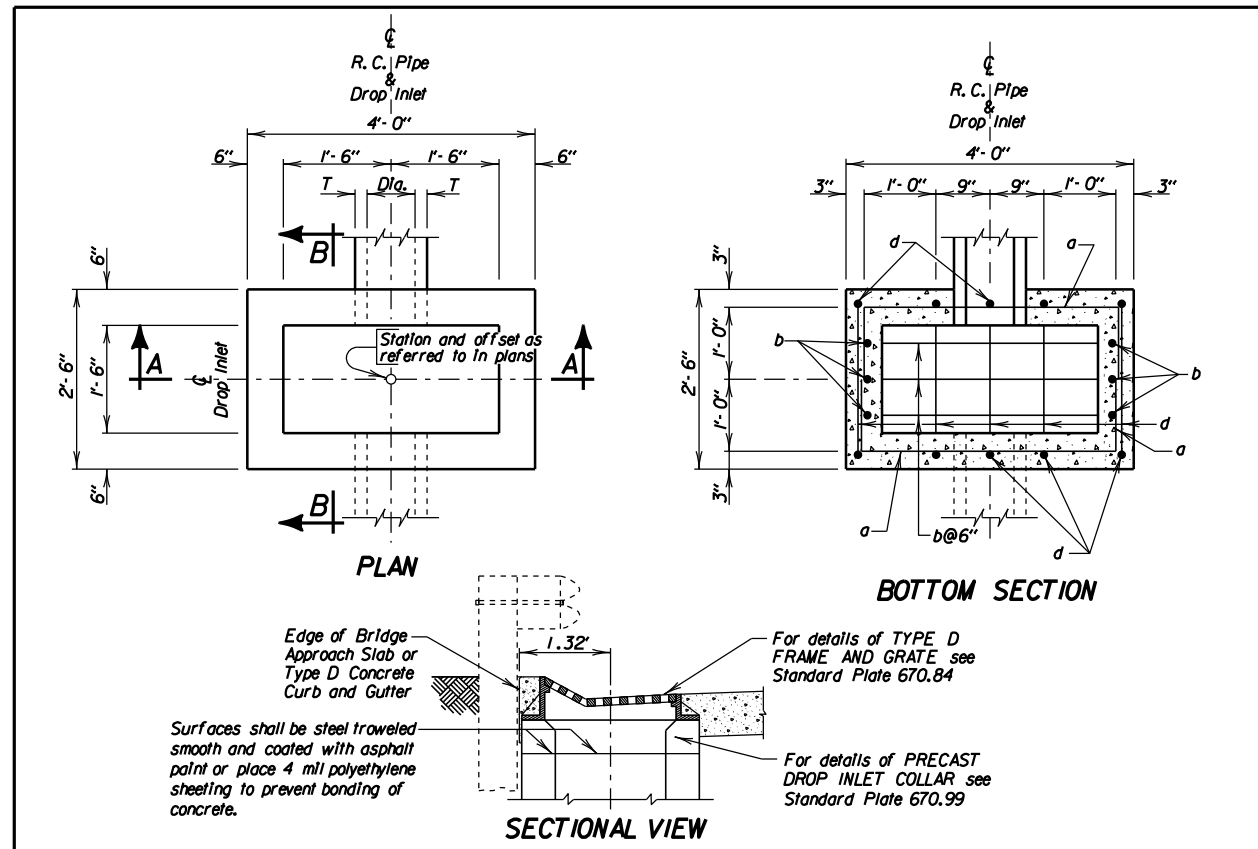
GENERAL NOTES:

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, 2006



Published Date: 1st Qtr. 2012	S D D O T	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	CuYd	0.22	0.20H
Reinforcing Steel	Lb	37	19.37H
Frame and Grate	Each	1	

DROP INLETS FOR 12" TO 27" DIAMETER PIPE

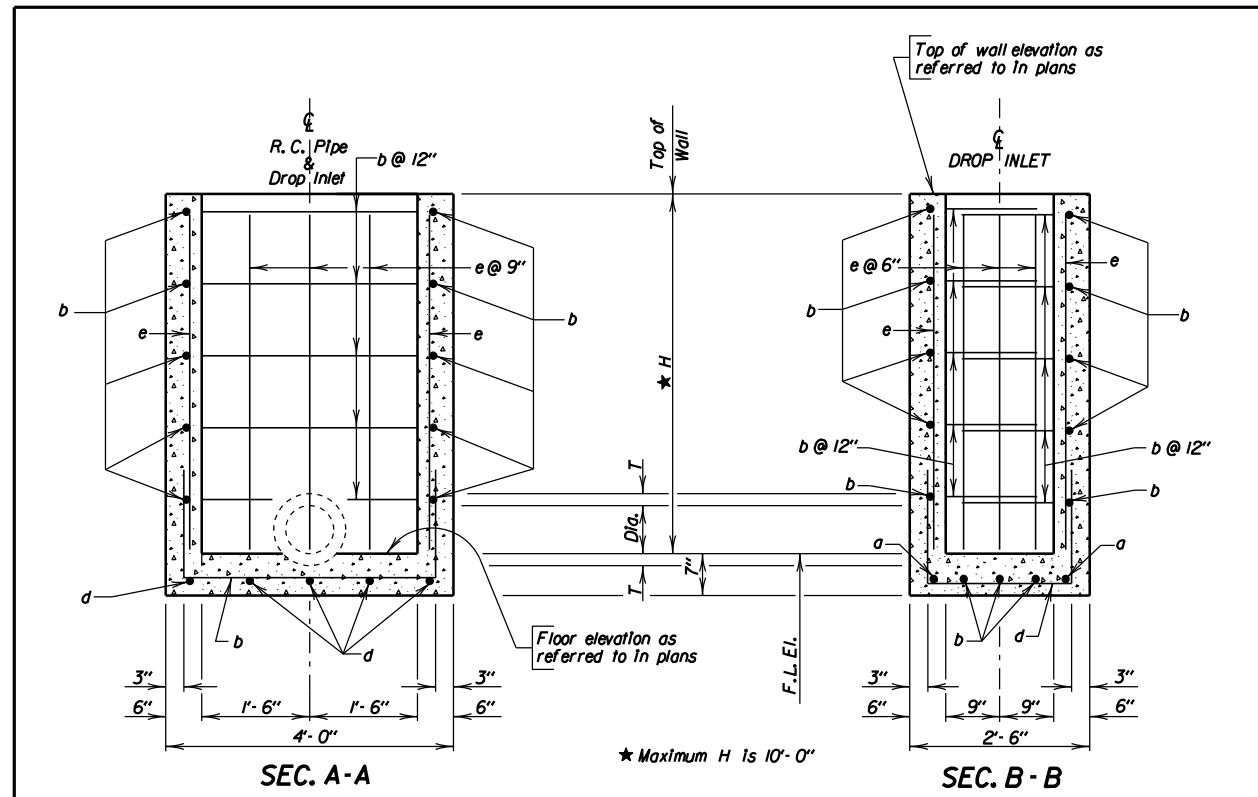
GENERAL NOTES:

- * Reduce total quantities of concrete by the amount of concrete displaced by the pipe. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.
- Drop Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts.
- Reinforcing steel shall conform to ASTM A615 Grade 60. The b bars shall be lapped 12 inches. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
- Pipe shall not enter through a corner of the drop inlet.
- Use 2" clear cover on all reinforcing steel unless otherwise noted.
- Precasting of reinforced drop inlets will be permissible. Prior to precasting, the Contractor shall submit details to the Engineer for approval.
- Maximum pipe diameter shall not exceed 12 inches on the 2.5 foot wide side and shall not exceed 27 inches on the 4 foot wide side of the drop inlet.
- The dimension of H is in feet.

PIPE DISPLACEMENT REDUCTIONS

R.C. Pipe Diameter Inches	T Inches	Class M6 Concrete CuYd
12	2	0.03
15	2 1/4	0.04
18	2 1/2	0.05
24	3	0.09
27	3 1/4	0.11

Published Date: 1st Qtr. 2012	S D D O T	1.5' X 3' TYPE D REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.20
			Sheet 1 of 2



DROP INLETS FOR 12" TO 27" DIAMETER PIPE

REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
a	2	4	5'-6"	17
b	3+2H	4	6'-6"	17
d	5	4	5'-0"	17
e	16	4	H - 2"	Str.

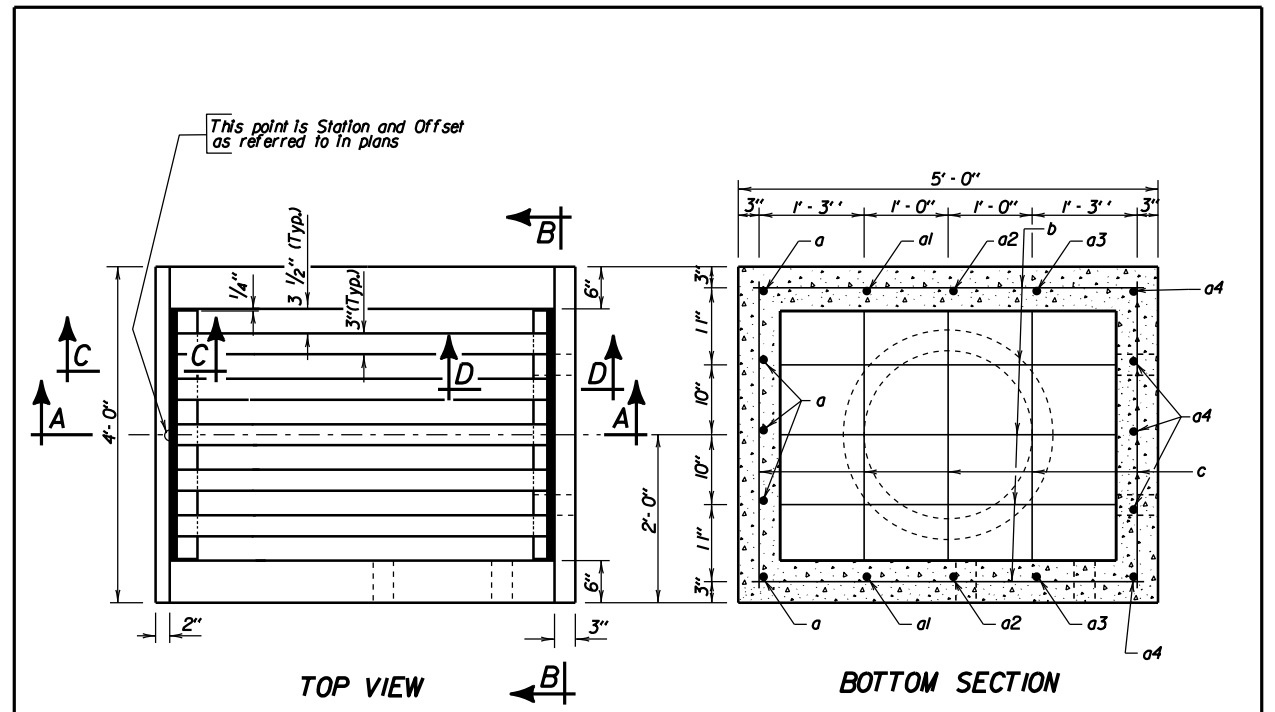
Bending Details	

NOTE:
All dimensions are out to out of bars.

December 23, 2009

S D D O T	1.5' X 3' TYPE D REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.20
		Sheet 2 of 2

Published Date: 1st Qtr. 2012



ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	CuYd	0.47	0.30H
Reinforcing Steel	Lb	69.58	10.69H
Type L Frame and Gate Assembly	Each	1	

PIPE DISPLACEMENT REDUCTIONS		
R.C. Pipe Diameter Inches	T Inches	Class M6 Concrete CuYd
15	2 1/4"	0.038
18	2 1/2"	0.053
24	3"	0.091

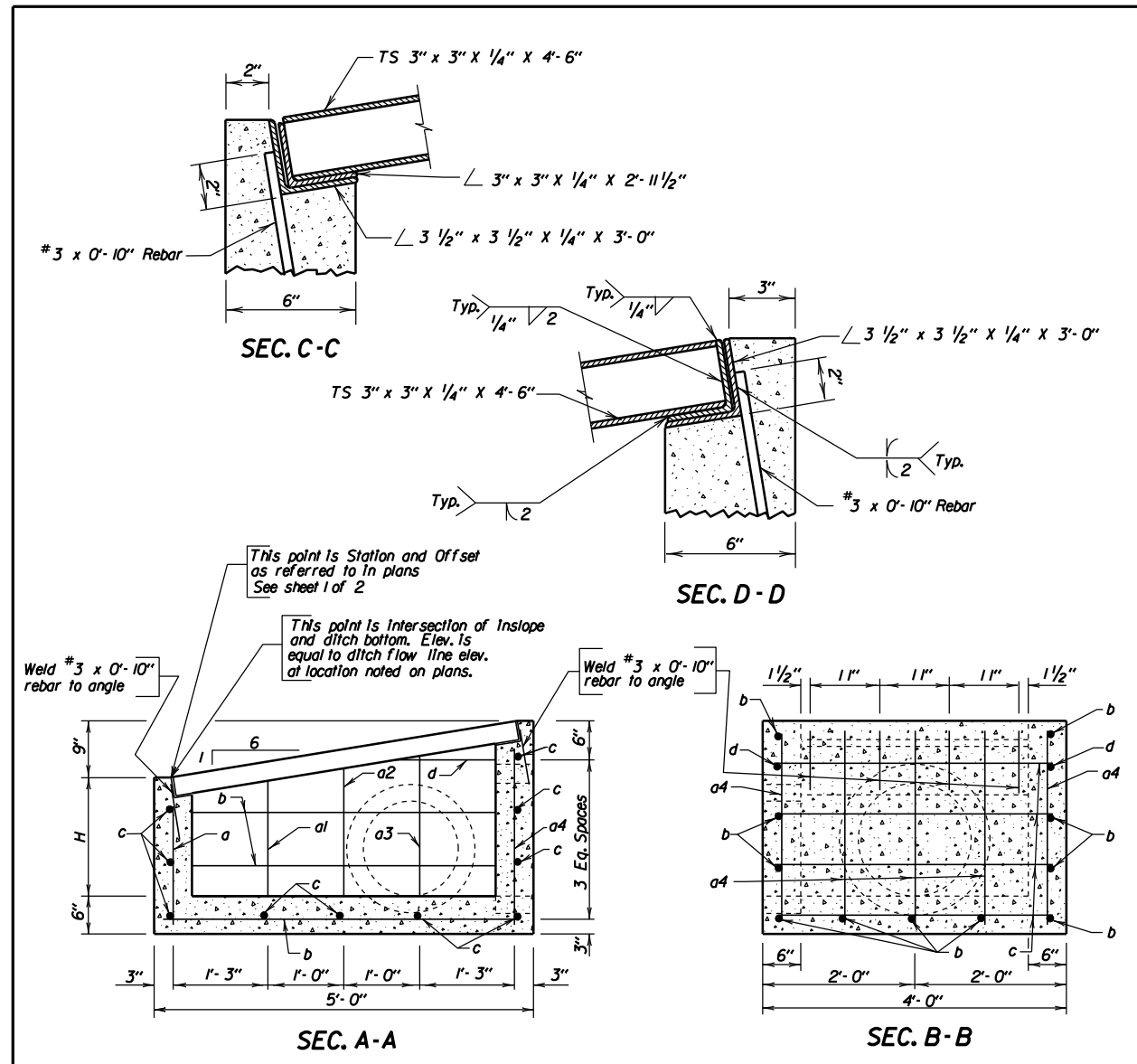
GENERAL NOTES:

- Maximum H = 3'-0"
- The dimension of H is in feet.
- * Reduce total quantities of concrete by the amount of concrete displaced by the pipe. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.
- Cut and bend reinforcing steel during construction as necessary to accommodate pipe outlet.
- All concrete shall be Class M6.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All structural steel shall conform to ASTM A36. Tubes shall conform to ASTM A500 or A501.
- All exposed edges shall be chamfered 3/4 inch.
- Use 1/2 inch clear cover on all reinforcing steel except as shown.
- After welding is complete, galvanize the frame and gate assembly in accordance with AASHTO M111 (ASTM A123). For information only, the estimated weight of the frame and gate assembly is 265 pounds.
- Type L Median Drain shall be paid for at the contract unit price per each or by the individual bid items as shown in the plans, which shall be full compensation for furnishing all materials and labor including necessary excavation and backfill required to construct one complete drain.
- The location and size of pipe outlet from the drain shall be as noted on cross section sheets.

September 14, 2001

S D D O T	TYPE L MEDIAN DRAIN	PLATE NUMBER 670.60
		Sheet 1 of 2

Published Date: 1st Qtr. 2012

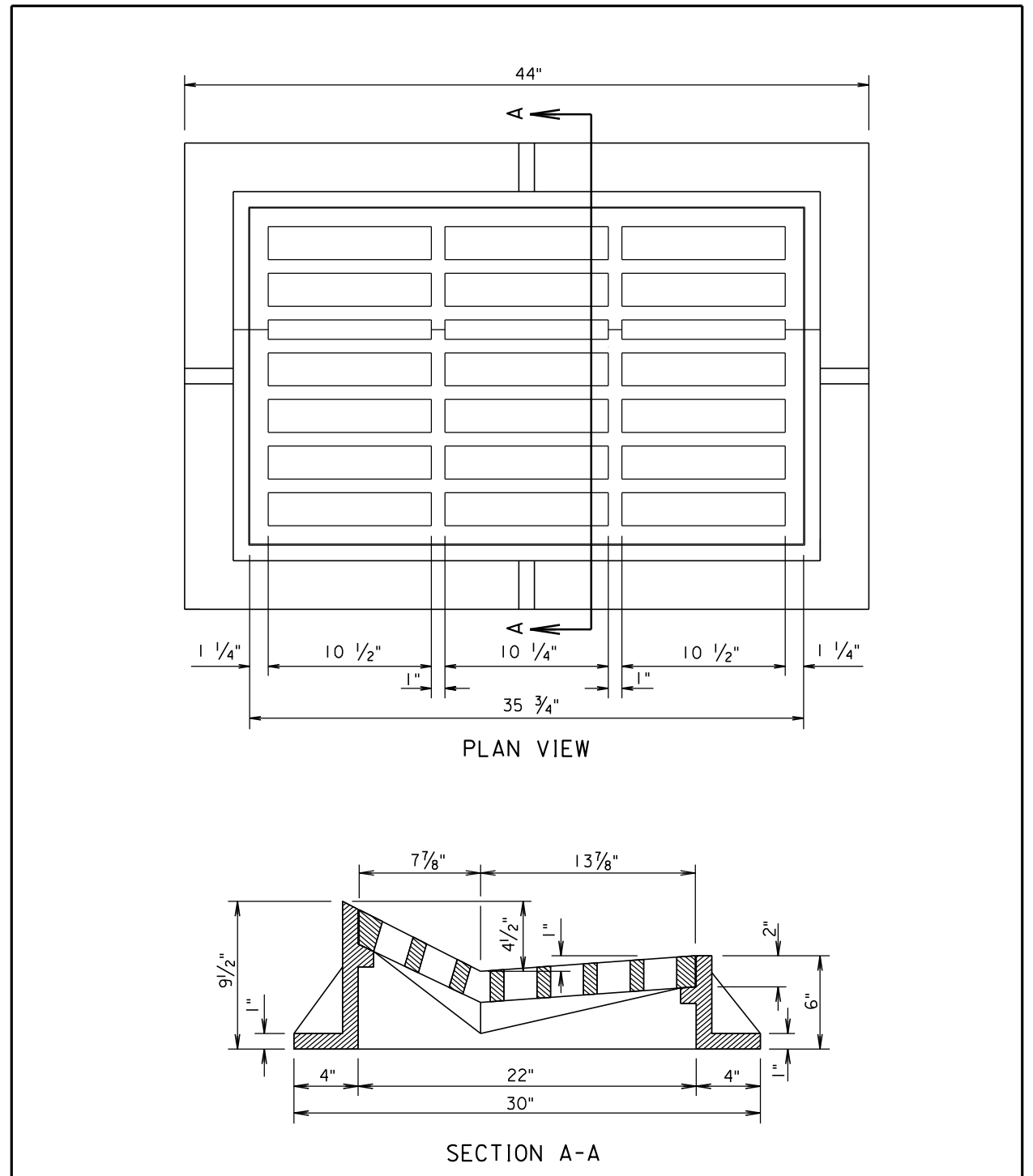


REINFORCING SCHEDULE (For 1 drain)				
Mk.	No.	Size	Length	Type
a	5	4	H + 3"	Str.
al	2	4	H + 5"	Str.
a2	2	4	H + 7"	Str.
a3	2	4	H + 9"	Str.
a4	5	4	H + 1'-0"	Str.
b	11	4	4'-9"	Str.
c	10	4	3'-9"	Str.
d	2	4	2'-4"	Str.

NOTE:
All dimensions are out to out of bars.

September 14, 2001

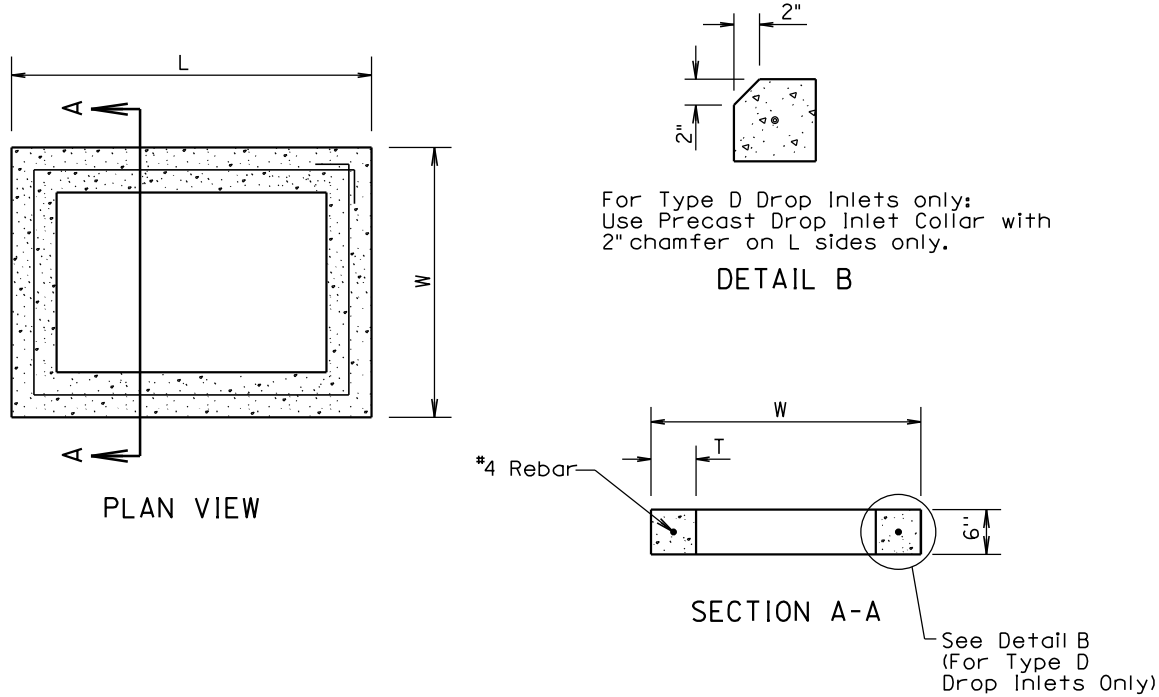
Published Date: 1st Qtr. 2012	S D D O T	TYPE L MEDIAN DRAIN	PLATE NUMBER 670.60
			Sheet 2 of 2



GENERAL NOTE:
The total weight of the frame and grate shall be 620 pounds minimum.

March 31, 2000

Published Date: 1st Qtr. 2012	S D D O T	TYPE D FRAME AND GRATE	PLATE NUMBER 670.84
			Sheet 1 of 1



INFORMATIONAL QUANTITIES					
FRAME AND GRATE TYPE	L Ft-In	W Ft-In	T In	CLASS M6 CONCRETE CuYd	REINFORCING STEEL Lb
TYPE B	4'-0"	3'-0"	6	0.11	9
TYPE C	5'-0"	4'-0"	6	0.15	11
TYPE D	4'-0"	2'-6"	6	0.10	8

GENERAL NOTES:

All reinforcing steel shall conform to ASTM A615, Grade 60.

The 1/2" diameter bar shall lap 6"± and shall be centered in the concrete.

The cost of furnishing and installing Precast Drop Inlet Collars, including labor, materials, and incidentals shall be incidental to the contract unit price per Each for "Precast Drop Inlet Collar".

March 31, 2000

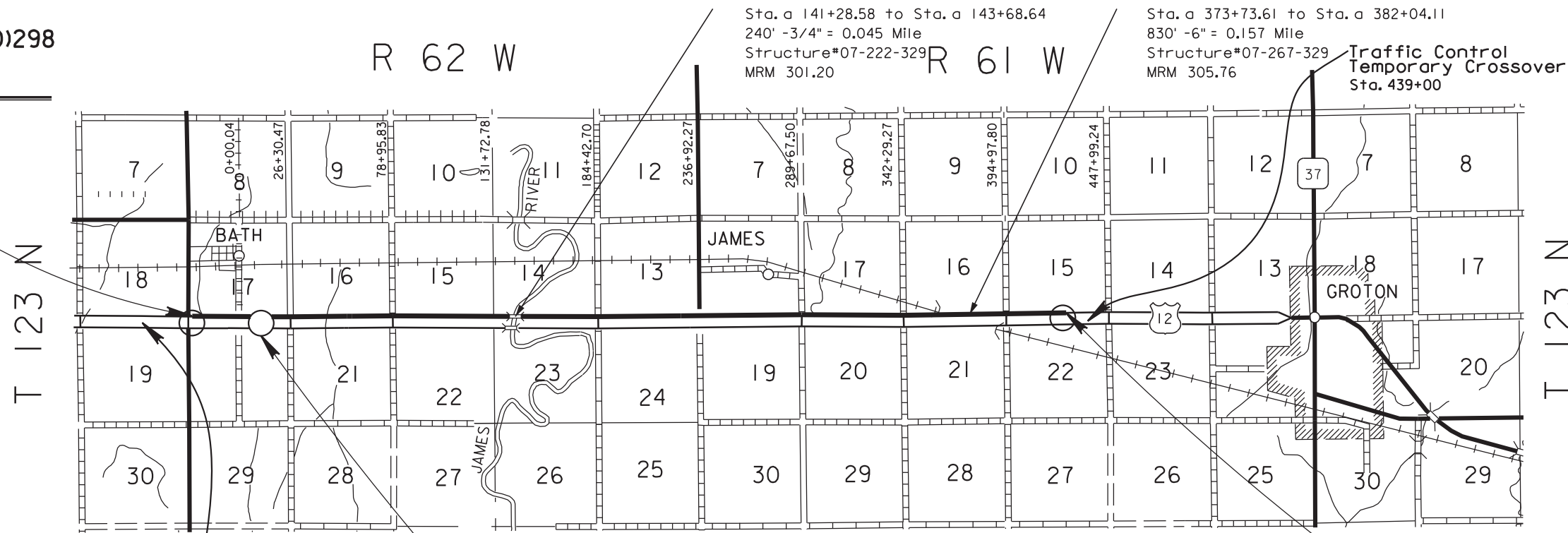
Section M: Pavement Marking

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	M1	M3
Plotting Date: 02/02/2012			

INDEX OF SHEETS

M1	General Layout with Index
M2	Estimate W/General Notes
M3	Pavement Marking Detail

BEGIN NH 0012(160)298
 Station 380+72.00
 MRM = 298.00 +0.087



Sta. a 141+28.58 to Sta. a 143+68.64
 240' - 3/4" = 0.045 Mile
 Structure#07-222-329
 MRM 301.20

Sta. a 373+73.61 to Sta. a 382+04.11
 830' - 6" = 0.157 Mile
 Structure#07-267-329
 MRM 305.76

Traffic Control
 Temporary Crossover
 Sta. 439+00

EQUATION
 403+68.31 =
 a 0+00.00

Traffic Control
 Temporary Crossover
 Sta. 366+00

END NH 0012(160)298
 Station a 429+94.00
 MRM = 306.00 +0.651

DESIGN DESIGNATION

ADT (2009)	2878 (West Bound Lanes Only)
ADT (2029)	2993 (West Bound Lanes Only)
DHV	323 (West Bound Lanes Only)
D	100

PLOT SCALE - 1:210

PLOTTED FROM - TRAB17882

PLOT NAME - 1

FILE - ... \BRWN023C\SECTION\M\TITLE.MXD

SECTION M - ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
633E1300	Pavement Marking Paint, White	321.0	Gal
633E1305	Pavement Marking Paint, Yellow	12.0	Gal
633E3000	Durable Pavement Marking, 4" White	111,574	Ft
633E3005	Durable Pavement Marking, 4" Yellow	89,259	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	196,906	Ft

PAVEMENT MARKINGS FOR 2 WAY HEAD TO HEAD TRAFFIC

Included in the Estimate of Quantities are 305 gallons of white paint to complete the painting of the Eastbound Lanes 4" edgelines prior to opening to two-way head to head traffic. Existing yellow edgeline in the Eastbound lanes shall be painted white.

DURABLE PAVEMENT MARKING

The Contractor shall mark the center skip lines and edgelines in both the WBL and EBL with a durable pavement marking, 4". Durable pavement markings shall be installed as per the special provision included in the plans.

Durable pavement marking application in the EBL shall be limited to that portion of the EBL that have a PCCP surface Sta. 403+00 to a425+40 (thru equation) and on the asphalt surface from Sta. a425+40 to a439+00. Waterborne pavement markings shall be installed in the EBL from Sta. 366+00 to 403+00.

TABLE OF DURABLE PAVEMENT MARKINGS

				Durable Pavement Markings,		
				4" White		4" Yellow
Sta	to	Sta	Length	Wide Shoulder Edgeline	CL Skips	Narrow Shoulder Edgeline
				(Ft)	(Ft)	(Ft)
Westbound Lanes:						
380+72.00		a429+94 (Thru Equation)	45290.3	45290.3	11322.6	45290.3
Eastbound Lanes:						
403+00		a425+40 (Thru Equation)	42608.3	42608.3	10652.1	42608.3
a425+40		a439+00	1360.0	1360.0	340.0	1360.0
Total:			87898.6	89258.6	22314.8	89258.6

The Engineer may eliminate the 1360' of White edgeline and 340' of White CL Skips from Sta. 425+40 to 439+00 if the condition of the in place durable epoxy pavement does not warrant replacement.

Both bridges in the east bound lane and both bridges in the west bound lane shall not be grooved because the bridge deck contain a bridge deck epoxy chip seal. The combined length of the 2 east bound bridge deck is 674' and the combined length of the 2 west bound lane bridges is 1,071'.

Prior to application of the durable pavement markings on both bridge decks in the east bound lane and both bridge decks in the west bound lane, the area to receive the durable markings shall be sand blasted to remove the in place pavement markings and delirious material. The cost of sand blasting shall be incidental to the contract unit price per foot for durable pavement markings.

COMPLETION OF PERMANENT PAVEMENT MARKINGS

Pavement markings must be installed on the new Westbound Lanes prior to restoring traffic to the reconstructed Westbound Lanes.

The Contractor shall begin installation of the waterborne or durable pavement markings on the Eastbound Lanes within the project limits following the removal of the channelizing devices separating the two-way traffic. The Contractor shall complete the pavement markings on the edgeline adjacent to the narrow shoulder first.

The Contractor will have 7 working days following the opening of the WBL to complete the installation of durable pavement marking paint on the edgeline adjacent to the narrow shoulder on the Eastbound Lanes.

The Contractor will have 14 working days following the opening of the WBL to complete the installation of the centerline skip and wide shoulder edgeline on the Eastbound Lanes

For each working day after the plans specified working days the application of permanent pavement marking remains uncompleted, the Contractor will be assessed \$1000.00 per day liquidated damages.

This provision applies up to the Contract Completion Date, as extended. After the completion date, liquidated damages will be assessed in accordance with Section 8.7, until the permanent pavement marking is completed, even though the project may be open to traffic.

WATERBORNE PAINT FORMULATED WITH "XSR" BINDER RESIN

Waterborne paint applied after October 15 shall be formulated with "Fastrack XSR" binder resin manufactured by Dow, and shall be applied in accordance with manufacturer's recommendations, including minimum temperature requirements.

Waterborne paint formulated with "Fastrack XSR" binder resin shall conform to section 980 of the Standard Specifications except for the following;

980.1 A - Resin Binder shall be Fastrack XSR

980.1.1 Quantitative Requirements:

The Pigment, Percent By Weight for white : 60.0 – 63.0, and for yellow: 58.5-61.5.

The Pigment, Percent By Weight when tested in accordance with ASTM D3723 for white: 60.0-63.0 and for yellow: 56.1-59.2.

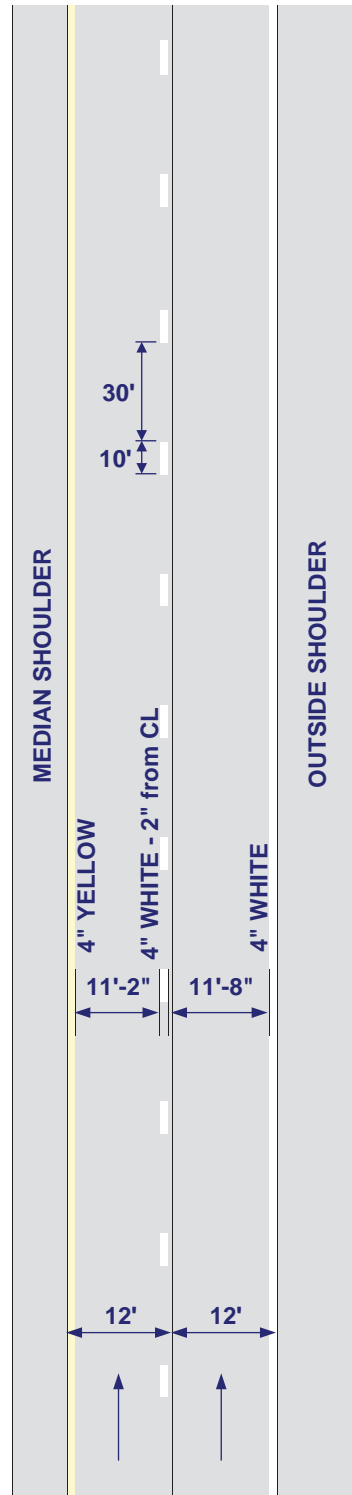
The Non-volatile Vehicle, percent by weight; min. white: 41.5 and yellow: 41.5 when tested in accordance with FTMS 141c (method 4051.1)

GLASS BEADS

Glass bead application rate when applied with waterborne paint shall be at a rate of 8 Lbs. glass beads per gallon of paint applied.

FURNISHING AND APPLYING PAVEMENT MARKINGS

**DIVIDED ROADWAY
(ONE DIRECTION SHOWN)**



Approximate waterborne paint application rates shall be as follows:

DIVIDED ROADWAY (Rates for one line)
<u>Solid Yellow Edgeline</u> Rate = 16.9 Gals./Pass-Mile
<u>Dashed White Centerline</u> Rate = 4.6 Gals./Pass-Mile
<u>Solid White Edgeline</u> Rate = 16.9 Gals./Pass-Mile
Glass Beads = 8 Lbs./Gal.

Typical pavement marking as shown on this sheet shall be applied throughout the entire length of divided roadway.

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

NOTE: All pavement marking dimensions are based on 12' driving lanes.

Section S: Permanent Signing

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	S1	S31
Plotting Date: 02/07/2012			

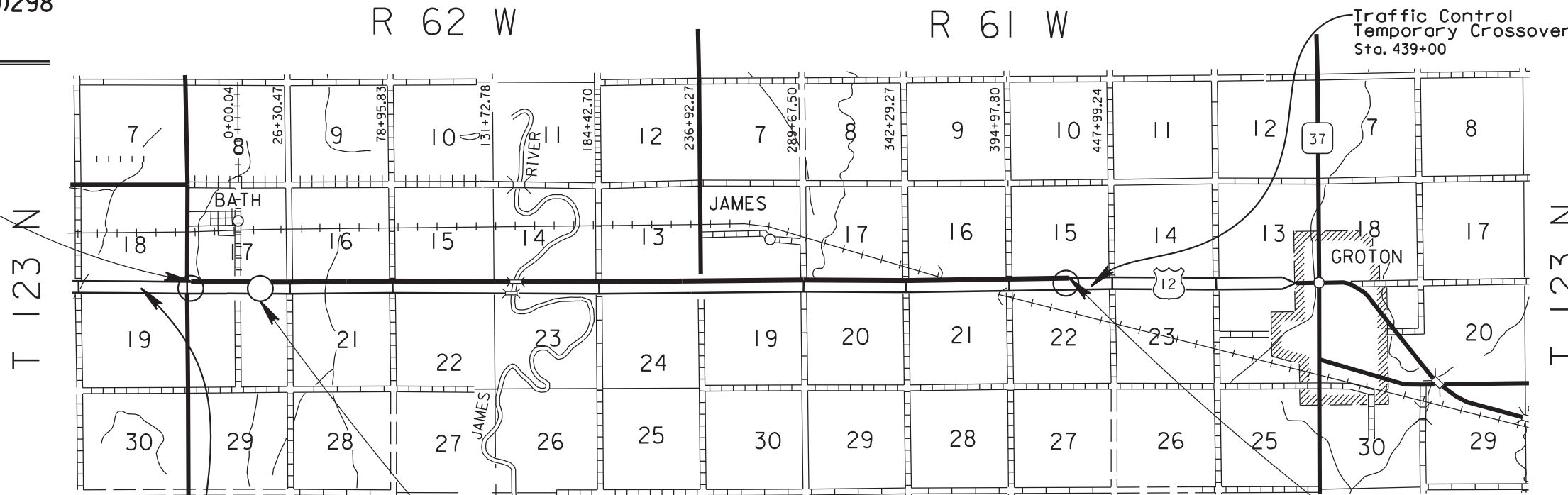
INDEX OF SHEETS

S1	Title Sheet with General Layout
S2-S3	Plan Notes
S4-S14	Table of Sign Replacement & Installation
S15-S17	Special Sign Details
S18-S28	Sign Installation Details
S29-S31	Standard Plates

BEGIN NH 0012(160)298
Station 380+72.00
MRM = 298.00 +0.087

R 62 W

R 61 W



DESIGN DESIGNATION

ADT (2009)	2878 (West Bound Lanes Only)
ADT (2029)	2993 (West Bound Lanes Only)
DHV	323 (West Bound Lanes Only)
D	100

Traffic Control
Temporary Crossover
Sta. 366+00

EQUATION
403+68.31 =
a 0+00.00

END NH 0012(160)298
Station a 429+94.00
MRM = 306.00 +0.651

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S2	S31
Plotting Date: 01/10/2012			

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E0130	Remove Traffic Sign	68	Each
632E1320	2.0"x2.0" Perforated Tube Post	1,171.0	Ft
632E1330	2.25"x2.25" Perforated Tube Post	445.5	Ft
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	85	Each
632E2220	Guardrail Delineator	35	Each
632E2510	Type 2 Object Marker Back to Back	36	Each
632E2520	Type 2 Object Marker	35	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	774.8	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	618.8	SqFt

GENERAL PERMANENT SIGNING NOTES

Permanent sign locations shall be staked in the field by the Engineer. The Contractor shall give the Engineer a minimum of two weeks advance notice to allow for staking prior to sign/post installation. The Contractor shall be responsible for staking the location of Delineators.

The Contractor shall be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

Prior to ordering sign posts, the Contractor shall verify post lengths.

REMOVE EXISTING SIGNS

Existing signs within the project limits are summarized in the Table of Sign Replacement and Installation. This table provides the approximate MRM location for each sign. Existing signs in the table shall be removed and not reused.

All existing signs, and hardware removed shall become the property of the Contractor.

Holes remaining from the removal of 4"x6" sign posts shall be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, and hardware shall be incidental to the contract unit price per each for "Remove Traffic Sign"

NEW PERMANENT SIGNING

New signs for installation are summarized in the Table of Sign Replacement and Installation.

Special design signs are illustrated on the Specail Sign Design layout sheets.

Sign Design

Signs shall be constructed as required per the Manual on Uniform Traffic Control Devices (MUTCD), the latest edition of "Standard Highway Signs", and as specified on the Permanent Sign Design Layouts sheet shown in the plans.

All sign material shall comply with Section 982 of the Standard Specifications.

All upper/lower case letters and numerals shall be as required per the MUTCD, the latest edition of "Standard Highway Signs", and as illustrated on the Permanent Sign Design Layouts sheet.

The Contractor shall furnish the Aberdeen Region Traffic Engineer (Alan Petrich; P.O. Box 1767; Aberdeen, SD 57402) with a detailed sign layout sheet for each sign shown. These detailed sign layout shall be approved by the Region Traffic Engineer prior to ordering the signs.

Sign Sheeting

Signs shall be constructed using High Intensity (ASTM D4956 Type III or IV) or Super/Very High Intensity (ASTM D4956 Type XI) reflective sheeting as summarized in the Install New Signs table.

All signs shall be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films. Digitally printed signs will not be accepted.

All black legend and borders shall be nonreflectorized (unless otherwise specified in these plans).

Sign Installation Hardware

Aluminum U-Channel stiffeners shall be used on all standard highway signs greater than 36 inches in width and shall conform to Alloy 6063-T6 or 6061-T6. The U-Channel shall be 2 inches in width and free of holes. The U-Channel stiffeners shall also be used to connect various signs together so that an entire sign assembly can be erected on a single installation.

Stiffeners may be fastened to signs by use of ¼ inch diameter drive rivets.

Refer to the Breakaway Sign Supports diagram for typical sign and stiffener details.

The Contractor shall use 3/8 inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts shall extend through each post.

All costs associated with furnishing and installing the new permanent signs, furnishing and installing stiffeners and hardware shall be incidental to the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy High Intensity" or "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

SQUARE TUBE ANCHOR SLEEVE

The Contractor shall furnish and install new square tube anchor sleeve as follows:

2.5" x 18", 12 Gauge square tube anchor sleeve, (or equivalent components as approved by the Engineer).

The square tube anchor sleeve may be obtained from 3-D Specialties, Inc.; 1110 25th Ave. N.; P.O. Box 1615; Fargo, ND 58107.

A 2.25" x 2.25" x 4' perforated tube post (12 Gauge) shall be used as the anchor post for installation with the square tube anchor sleeve.

SQUARE TUBE POST SLEEVE

All 2.5"x2.5" perforated tube post (10 Gauge) shall be sleeved with a 2 3/16"x2 3/16"x4' perforated tube post (10 Gauge).

WINGED SLIP BASE ANCHOR

The Contractor shall furnish and install new winged anchor as required per the plans.

Winged anchor shall be installed using direct drive method.

Winged Anchor shall consist of, a slip base (upper), 48 inch long winged anchor (lower), and hardware kit.

The slip base, 48 inch long winged anchor, and hardware kit components (or equal as approved by Engineer) may be obtained from 3-D Specialties, Inc.; 1110 25th Ave. N.; P.O. Box 1615; Fargo, ND 58107.

TYPE 2 OBJECT MARKERS

Type 2 object markers that are attached to other sign posts as indicated in the Table of Sign Installation will be paid for at the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

Type 2 object markers that are not attached to another sign post shall be paid for at the contract unit price per each for "Type 2 Object Marker Back to Back". These markers shall be installed at locations indicated in the Table of Sign Installation.

Type 2 object marker shall be installed at 200 Ft. spacing from MRM 301.307 to MRM 302.465 on the North Side of the West bound lanes regular delineation shall not be installed at this location. Payment for these object markers shall be at the contract unit price for "Type 2 Object Marker". 30 Type 2 Object Markers have been added to the Estimate of Quantities for this purpose.

MILEAGE REFERNCE MARKERS

MRMs (Mileage Reference Markers) are not to be disturbed unless noted in the Table of Sign Installation. MRMs that are attached to other posts as noted in the Table of Sign Installation shall be paid for at the contract unit price for "Flat Aluminum Sign, Nonremovable Copy High Intensity".

DELINEATION

Delineators South of the East bound lane are not to be disturbed. Delineators North of the West bound lane are to be removed before shoulder operations begin. Delineators designated for removal shall become property of the Contractor. New delineators shall be installed at 528ft intervals. Payment for removal of the and installation of delineators shall be paid for at the contract unit price per each for "4"X4" White Delineator with 1.12 LB/FT Post."

Table of Permanent Guardrail Delineation

Structure #	Corner of Bridge	Guardrail Delinators	Type 2 Object Marker
07-222-329	N.E.	4	
07-222-329	S.E.	4	1
07-267-329	N.E.	8	1
07-267-329	S.E.	9	1
07-267-329	N.W.	4	1
07-267-330	S.E.	6	1
	Total	35	5

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
306.483	Median	East/West							Type 2 Object Marker					1		
306.483	Median	East/West							Type 2 Object Marker					1		
306.283	Shoulder	East	AAH	4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of Groton Kiwanis Club	27	2					1
					36	12	3									
			AD-7					Litter Crew Ahead								
306.000	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
306.000	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
		East			4.5	9		0.28	MRM 306							
305.98	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
305.98	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
305.972	Median	South	R1-2	4x6	36	36	3.9		Yield			12	1			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
305.962	Median	North	R1-2	4x6	36	36	3.9		Yield			12	1			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
305.962	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign			12	1			
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
305.827	Shoulder	East		2x2 Tel spare	36	36		9	Watch For Ice On Bridge			13	1			1
305.827	Median	East		2x2 Tel spare	36	36		9	Watch For Ice On Bridge			13	1			1

PLOT SCALE - 1:210

PLOTTED FROM - TRAB1222

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
305.228	Median	East/West							Type 2 Object Marker					1		
305.228	Median	East/West							Type 2 Object Marker					1		
305.050	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
305.050	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
304.989	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
304.989	shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
304.969	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
304.969	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
304.979	Median	South	R1-2	4x6	36	36	3.9		Yield			12.5	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
304.993	Median	North	R1-2	4x6	36	36	3.9		Yield			24	2			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
304.993	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
304.314	Median	East/West						Type 2 Object Marker					1			
304.314	Median	East/West						Type 2 Object Marker					1			
304.289	Shoulder	East	AAH	2-4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of	30	2					1
					36	1		3	Aberdeen Lions Club							
			AD-7						Litter Crew Ahead							
															Salvage Sign/Reset	

PLOT SCALE - 1:210

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

PLOTTED FROM - TRAB1222

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
304.050	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
304.050	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
304.03	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
304.03	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
304.020	Median	South	R1-2	4x6	36	36	3.9		Yield	12	1					1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
304.000	Median	North	R1-2	4x6	36	36	3.9		Yield	12	1					1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
304.000	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign	13	1					1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
		East			4.5	9		0.28	MRM 304							
303.489	Median	East/West						Type 2 Object Marker					1			
303.489	Median	East/West						Type 2 Object Marker					1			
303.313	Median	East/West						Type 2 Object Marker					1			
303.313	Median	East/West						Type 2 Object Marker					1			
303.179	Shoulder	East		2x2 Perforated tube Post					Brown County 18	13	1				Salvage Sign/Reset	
		East					<----->		Salvage Sign/Reset							
303.124	Shoulder	East		2-4x6	84	54		31.5	Granary Rural Cultural Center 6 1/2 Miles ----->	31	2					1
303.054	Shoulder	East		4x6	54	48		18	Granary Road ----->	31	2					1
303.054	Shoulder	West	R5-1 a		36	24	6		Wrong Way						Install on Granary Sign	

PLOT SCALE - 1:210

PLOTTED FROM - TRAB12222

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)	
303.029	Median	West	R5-1 a	4x6	36	24	6		Wrong Way	11	1					1	
303.004	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation		
303.004	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1	
302.984	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation		
302.997	Median	South	R1-2	4x6	36	36	3.9		Yield	12	1	12	1			1	
		North	R6-1R		54	18		6.75	One Way								
		South	R6-1L		54	18		6.75	One Way								
		East			4	8	0.22		Yellow Delineator								1
		West			4	8	0.22		Yellow Delineator								1
302.993	Median	North	R1-2	4x6	36	36	3.9		Yield	12	1	12	1			1	
		North	R6-1L		54	18		6.75	One Way								
		South	R6-1R		54	18		6.75	One Way								
		East			4	8	0.22		Yellow Delineator								1
		West			4	8	0.22		Yellow Delineator								1
302.993	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign	13	1	13	1			1	
		North	R6-1R		54	18		6.75	One Way								
		South	R6-1L		54	18		6.75	One Way								
		North	R6-3		30	24		5	Divided Highway Crossing								
302.967	Shoulder	East	M1-4		24	24		4	US 12	13	1					1	
		East	M3-4		24	12		2	West								
302.493	Median	East/West							Type 2 Object Marker							1	
302.493	Median	East/West							Type 2 Object Marker							1	
302.004	Median	East/West							Type 2 Object Marker							1	
302.004	Median	East/West							Type 2 Object Marker							1	
301.890	Shoulder	East	W11-3	4x6	36	36	9		Deer Crossing Sign							1	
301.272	Median	East/West							Type 2 Object Marker							1	
301.272	Median	East/West							Type 2 Object Marker							1	

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
301.232	Shoulder	East		U Channel	42	24		7	James River	12	1					1
		East			4.5	9		0.28	MRM 301							
301.162	Median	East/West							Type 2 Object Marker					1		
301.162	Median	East/West							Type 2 Object Marker					1		
300.747	Median	East/West							Type 2 Object Marker					1		
300.747	Median	East/West							Type 2 Object Marker					1		
300.517	Median	East/West							Type 2 Object Marker					1		
300.517	Median	East/West							Type 2 Object Marker					1		
300.229	Median	East/West							Type 2 Object Marker					1		
300.229	Median	East/West							Type 2 Object Marker					1		
300.076	Median	East/West							Type 2 Object Marker					1		
300.076	Median	East/West							Type 2 Object Marker					1		
300.031	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
300.031	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
300.051	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
300.051	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
300.027	Median	South	R1-2	4x6	36	36	3.9		Yield	12	1					1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
300.011	Median	North	R1-2	4x6	36	36	3.9		Yield	12	1					1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							

PLOT SCALE - 1:210

PLOTTED FROM - TRAB1222

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
300.011	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign			13	2			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
300.000	Shoulder	East	AAH	4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of	27	2					1
					36	12		3	Aberdeen Christian School							
			AD-7						Litter Crew Ahead					Salvage Sign/Reset		
					4.5	9		0.28	MRM 300							
299.428	Median	East/West						Type 2 Object Marker					1			
299.428	Median	East/West						Type 2 Object Marker					1			
299.140	Median	East/West						Type 2 Object Marker					1			
299.140	Median	East/West						Type 2 Object Marker					1			
299.029	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
299.029	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
299.09	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
299.09	Shoulder	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
299.020	Median	South	R1-2	4x6	36	36	3.9		Yield			12	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
299.010	Median	North	R1-2	4x6	36	36	3.9		Yield			24	2			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							

PLOT SCALE - 1:210

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TITLES.DGN

PLOTTED FROM - TRAB12222

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
299.010	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
298.693	Median	East/West						Type 2 Object Marker					1			
298.693	Median	East/West						Type 2 Object Marker					1			
298.528	Median	West	R5-1		36	36	9		Do Not Enter	12	1				New Sign Installation	
298.528	Shoulder	West	R5-1	4x6	36	36	9		Do Not Enter	12	1					1
298.508	Median	West	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
298.508	Shoulder	West	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation	
298.518	Median	South	R1-2	4x6	36	36	3.9		Yield			12	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
298.503	Median	North	R1-2	4x6	36	36	3.9		Yield			12	1			1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		East			4	8	0.22		Yellow Delineator							
		West			4	8	0.22		Yellow Delineator							
298.503	Shoulder	North	R1-1	4x6	36	36	7.5		Stop Sign	26	2					1
		North	R6-1R		54	18		6.75	One Way							
		South	R6-1L		54	18		6.75	One Way							
		North	R6-3		30	24		5	Divided Highway Crossing							
298.414	Shoulder	East	W3-5	4x6	48	48		16	Reduce Speed Limit Ahead - 65	27	2					1
298.209	Shoulder	East	R5-1	4x6	36	48		12	Speed Limit 65	13	1					1
298.159	Shoulder	East		2-4x6	114	54		42.75	<--Stratford 11 Bath 1--> Columbia 12-->			31	2			1
298.114	Median	West	R5-1 a	4x6	36	24	6		Wrong Way	11	1					1
298.100	Shoulder	East	D1-1		90	42		26.25	Sand Lake National Wildlife Refuge 21 Miles -->	30	2					1
298.1	Median	West	R5-1 a		36	24	6		Wrong Way						Install on Sand Lake Sign	

PLOT SCALE - 1:210

PLOTTED FROM - TRAB1222

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
East Bound																
298.502	Median	East	R5-1 a		36	24	6		Wrong Way	13	1				New Sign Installation	
298.502	Shoulder	East	R5-1 a		36	24	6		Wrong Way	13	1				New Sign Installation	
298.522	Median	West	R5-1		36	36	9		Do Not Enter	14	1				New Sign Installation	
298.522	Shoulder	East	R5-1	4x6	36	36	9		Do Not Enter	14	1					1
298.542	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1		54	18		6.75	One Way							
		South	R6-1		54	18		6.75	One Way							
		South	R6-3		30	24		5	Divided Highway Crossing							
299.041	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		South	R6-3		30	24		5	Divided Highway Crossing							
298.96	Median	East	R5-1 a		36	24	6		Wrong Way	13	1			New Sign Installation		
298.96	Shoulder	East	R5-1 a		36	24	6		Wrong Way	13	1			New Sign Installation		
299.021	Median	West	R5-1		36	36	9		Do Not Enter	14	1			New Sign Installation		
299.021	Shoulder	East	R5-1	4x6	36	36	9		Do Not Enter	14	1					1
		West			4.5	9		0.28	MRM 300							
300.019	Median	East	R5-1	4x6	36	36	9		Do Not Enter	14	1					1
300.047	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign	26	2					1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		South	R6-3		30	24		5	Divided Highway Crossing							
300.971		West	W11-3	4x6	36	36	9		Deer Crossing Sign			13	1			1
301.205		East		U Channel	42	24		7	James River	13	1					1

PLOT SCALE - 1:210

PLOT NAME - 2

FILE - ... \BRW023C\SECTIONS\TITLES.DGN

PLOTTED FROM - TRAB12222

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)	
302.000	Shoulder	West	AAH	2-4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of	29	2					1	
					36	12		3	Aberdeen Lions Club								
			AD-7						Litter Crew Ahead								Salvage Sign/Reset
					4.5	9		0.28	MRM 300								
302.843	Shoulder	West		2x2 Perforated tube Post					Brown County 18	14	1			Salvage Sign/Reset	1		
		West						<----->	Salvage Sign/Reset								
302.899	Shoulder	West		2-4x6	84	54		31.5	Granary Rural Cultural Center 6 1/2 Miles ----->	31	2					1	
302.944	Shoulder	West		4x6	54	48		18	Granary Road <-----	31	2					1	
302.944	Shoulder	East	R5-1 a	4x6	36	24	6		Wrong Way						Install on Granary Sign	1	
302.944	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation		
302.98	Median	East	R5-1 a		36	24	6		Wrong Way	12	1				New Sign Installation		
303.000	Median	West	R5-1		36	36	9		Do Not Enter						New Sign Installation		
303.000	Shoulder	East	R5-1	4x6	36	36	9		Do Not Enter	12	1					1	
	Shoulder	West			4.5	9		0.28	MRM 303								
303.026	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1	
		North	R6-1L		54	18		6.75	One Way								
		South	R6-1R		54	18		6.75	One Way								
		South	R6-3		30	24		5	Divided Highway Crossing								
303.98	Median	East	R5-1 a		36	24	6		Wrong Way	13	1				New Sign Installation		
303.98	Shoulder	East	R5-1 a		36	24	6		Wrong Way	13	1				New Sign Installation		
304.020	Median	West	R5-1		36	36	9		Do Not Enter	13	1				New Sign Installation		
304.020	Shoulder	East	R5-1		36	36	9		Do Not Enter	14	1					1	
304.000	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1	
		North	R6-1		54	18		6.75	One Way								
		South	R6-1L		54	18		6.75	One Way								
		South	R6-3R		30	24		5	Divided Highway Crossing								
					4.5	9		0.28	MRM 304								

PLOT SCALE - 1:210

PLOTTED FROM - TRAB12222

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
304.279	Shoulder	West	AAH	4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of	30	2					1
					36	12		3	Groton Knights of Columbus							
			AD-7						Litter Crew Ahead							
304.98	Median	East	R5-1 a		36	24	6		Wrong Way	12	1					New Sign Installation
304.98	Shoulder	East	R5-1 a		36	24	6		Wrong Way	13	1					New Sign Installation
305.000	Median	West	R5-1		36	36	9		Do Not Enter	13	1					New Sign Installation
305.000	Shoulder	East	R5-1	4x6	36	36	9		Do Not Enter	14	1					1
	Shoulder	West			4.5	9		0.28	MRM 305							
305.045	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		South	R6-3		30	24		5	Divided Highway Crossing							
305.574	Shoulder	West		2x2 Tel spare	36	36		9	Watch For Ice On Bridge			14	1			1
305.574	Median	West		2x2 Tel spare	36	36		9	Watch For Ice On Bridge			14	1			1
305.98	Median	East	R5-1 a		36	24	6		Wrong Way	13	1					New Sign Installation
305.98	Shoulder	East	R5-1 a		36	24	6		Wrong Way	13	1					New Sign Installation
306.009	Median	West	R5-1		36	36	9		Do Not Enter	14	1					New Sign Installation
306.009	Shoulder	East	R5-1		36	36	9		Do Not Enter	14	1					1
306.000	Shoulder	South	R1-1	4x6	36	36	7.5		Stop Sign			13	1			1
		North	R6-1L		54	18		6.75	One Way							
		South	R6-1R		54	18		6.75	One Way							
		South	R6-3		30	24		5	Divided Highway Crossing							
					4.5	9		0.28	MRM 306							
306.322	Shoulder	West	AAH	4x6	36	36		9	Adopt-A-Highway Litter Control Courtesy of	30	2					1
					3	1		3	Groton Kiwanis Club							
			AD-7						Litter Crew Ahead							
					Totals		618.76	774.8		1171	89	445.5	36	36		68

PLOT SCALE - 1:210

PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TITLES.DGN

PLOTTED FROM - TRAB12222

TABLE OF SIGN REPLACEMENT AND INSTALLATION

Location MRM	Median or Inslope	Direction Sign is Facing	Sign Code	In Place Post Type	Width (In.)	Height (In.)	Very High Intensity (SqFt)	High Intensity (SqFt)	Description	Perforated Tube Post 2.0"x2.0" (12) ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Perforated Tube Post 2.5"x2.5" (12) ga. (FT)	(N.A.B.I.) 48" Winged Anchor (Each)	Type 2 Object Marker Back to Back (Each)	Remarks	Remove Traffic Sign (Each)
Do Not Disturb Rural Address signs. Any other signing not specifically addressed in the above table shall remain undisturbed.																
New sign installations shall be at the same location as existing signs, unless indicated otherwise. Cost of removing and resetting signs shall be incidental to the various signing bid items.																
Multiple signs on one post or a multiple signposts shall be considered as 1 sign for sign removal payment purposes.																

PLOT SCALE - 1:210

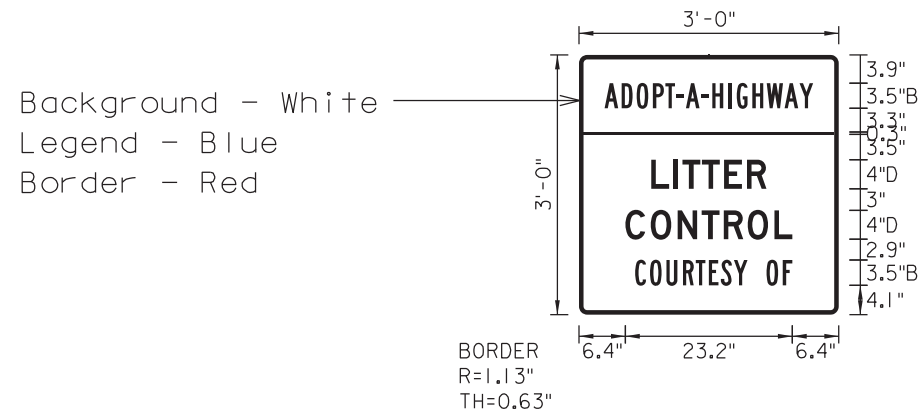
PLOT NAME - 2

FILE - ... \BRWN023C\SECTIONS\TTILES.DGN

PLOTTED FROM - TRAB1222

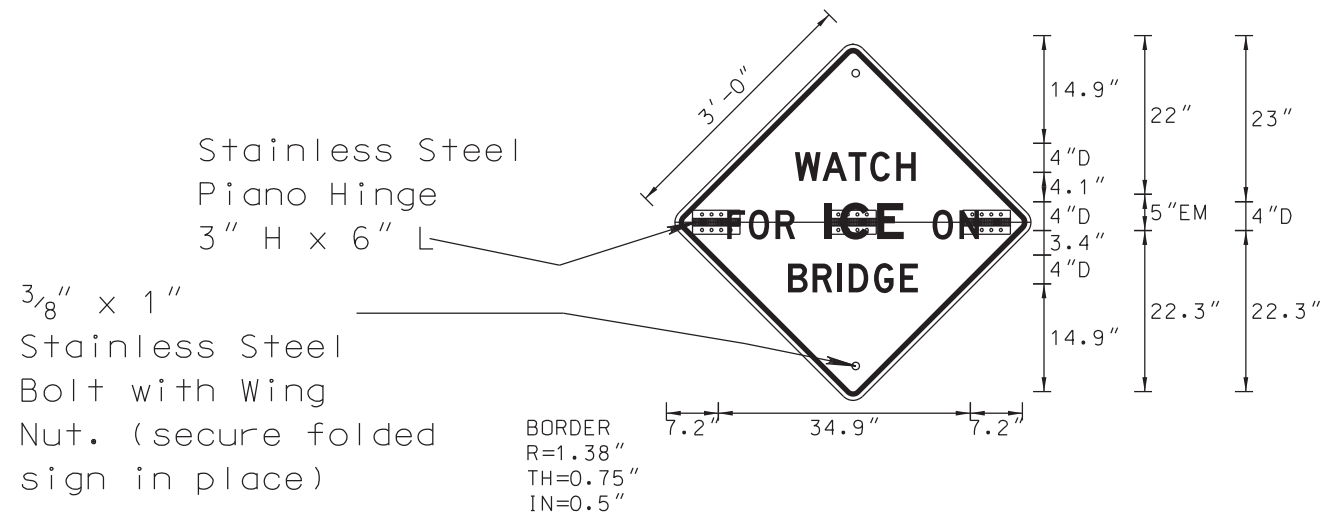
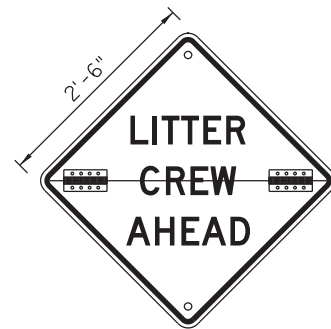
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160)298	S15	S31
Plotting Date: 02/07/2012			

SPECIAL SIGN DESIGN



Background - White
Legend - Blue
Border - Red

Background - White
Legend - Blue
Border - Red

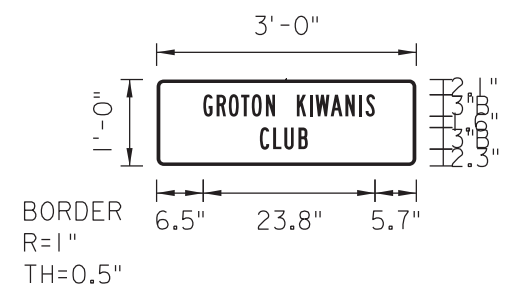
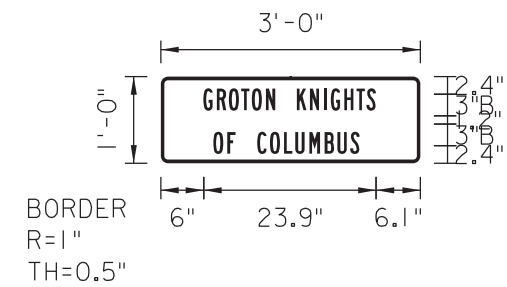
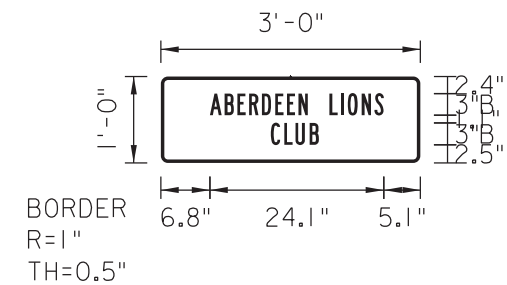
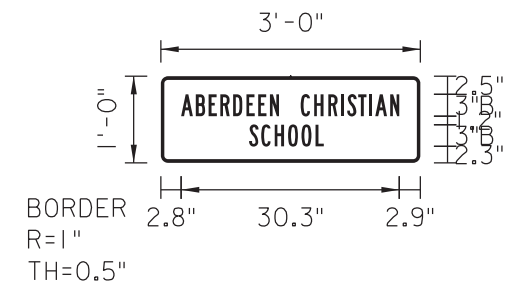


Stainless Steel
Piano Hinge
3" H x 6" L

3/8" x 1"
Stainless Steel
Bolt with Wing
Nut. (secure folded
sign in place)

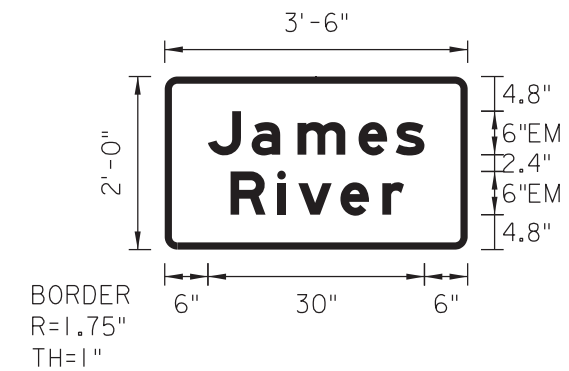
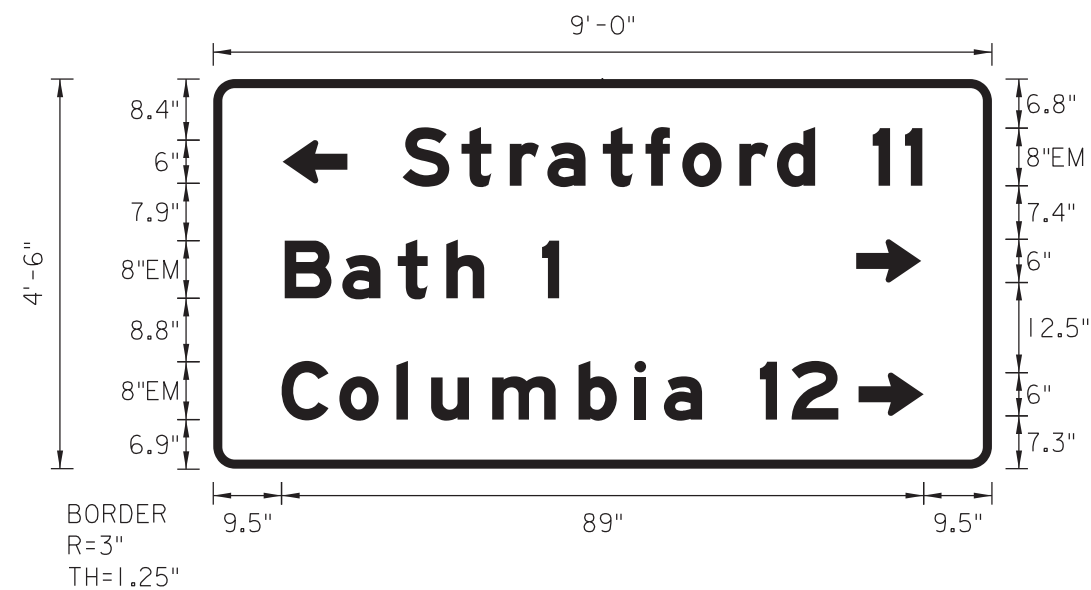
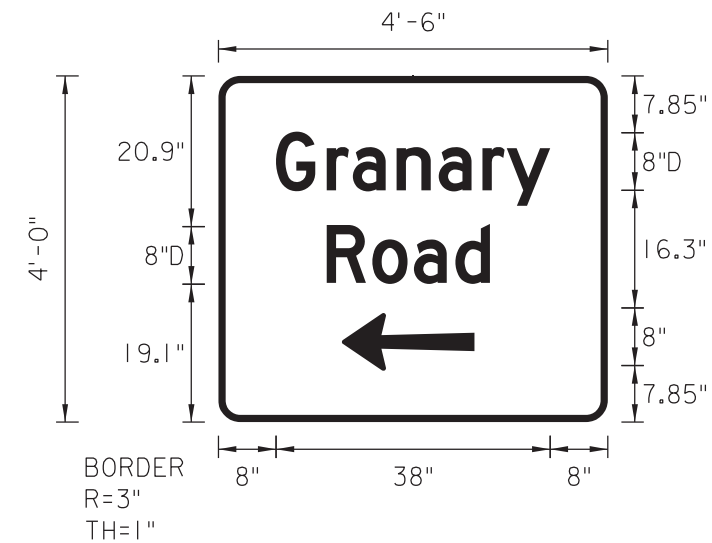
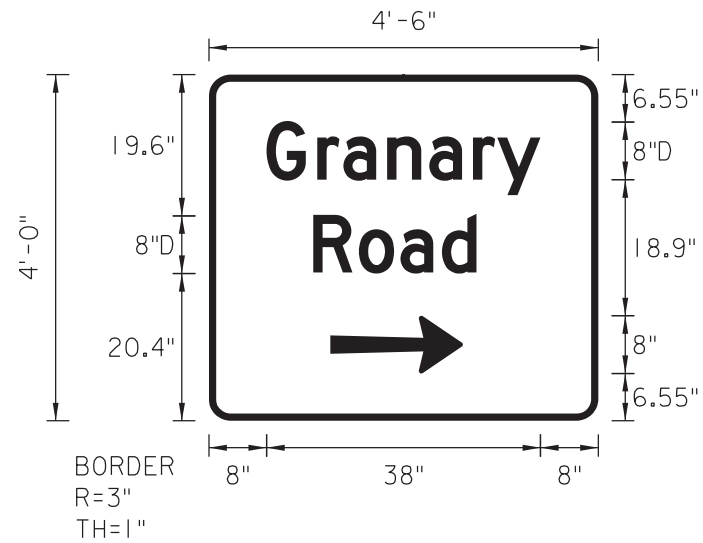
BORDER
R=1.38"
TH=0.75"
IN=0.5"

Club Name Signs



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S16	S31
Plotting Date: 02/07/2012			

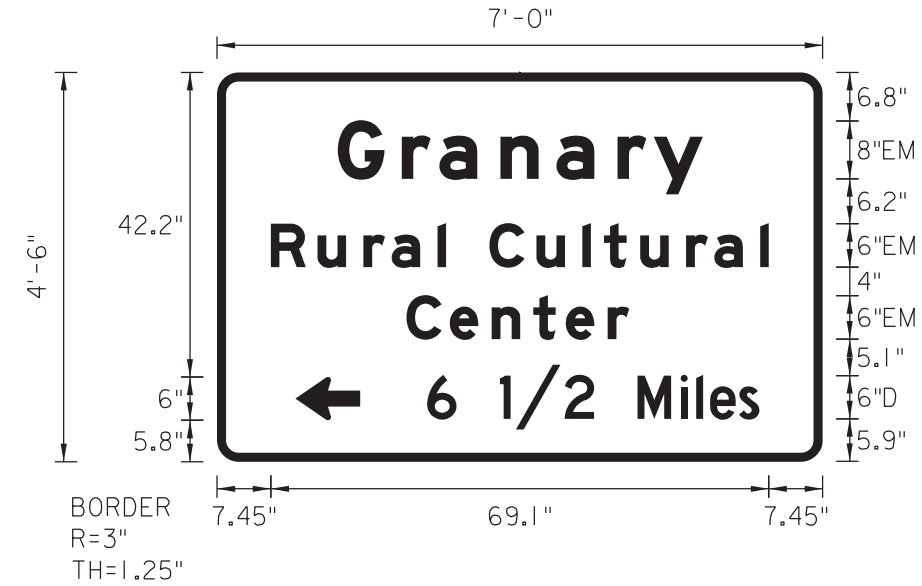
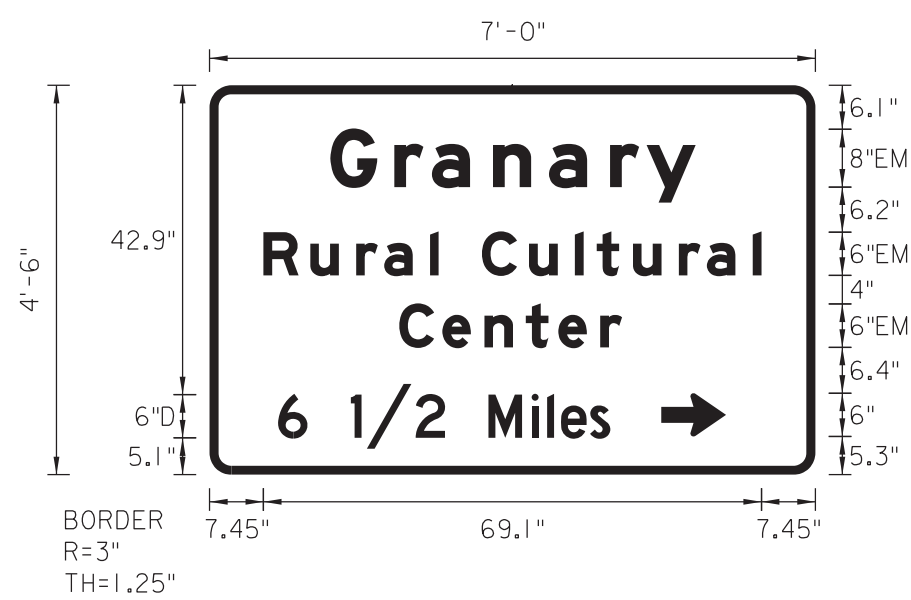
SPECIAL SIGN DESIGN



All signs on this sheet shall have a green background with white legend and white border

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	S17	S31
Plotting Date: 02/07/2012			

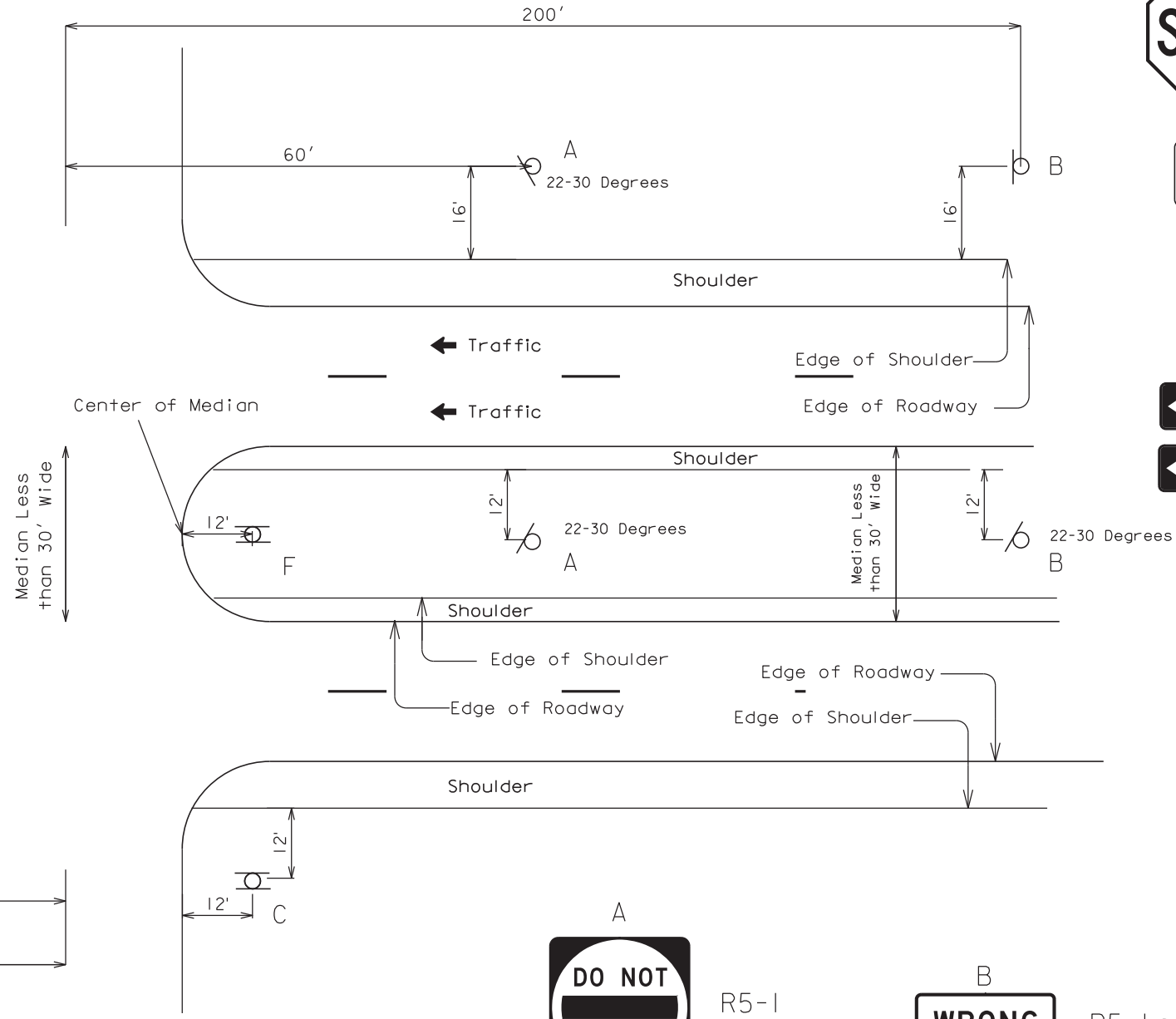
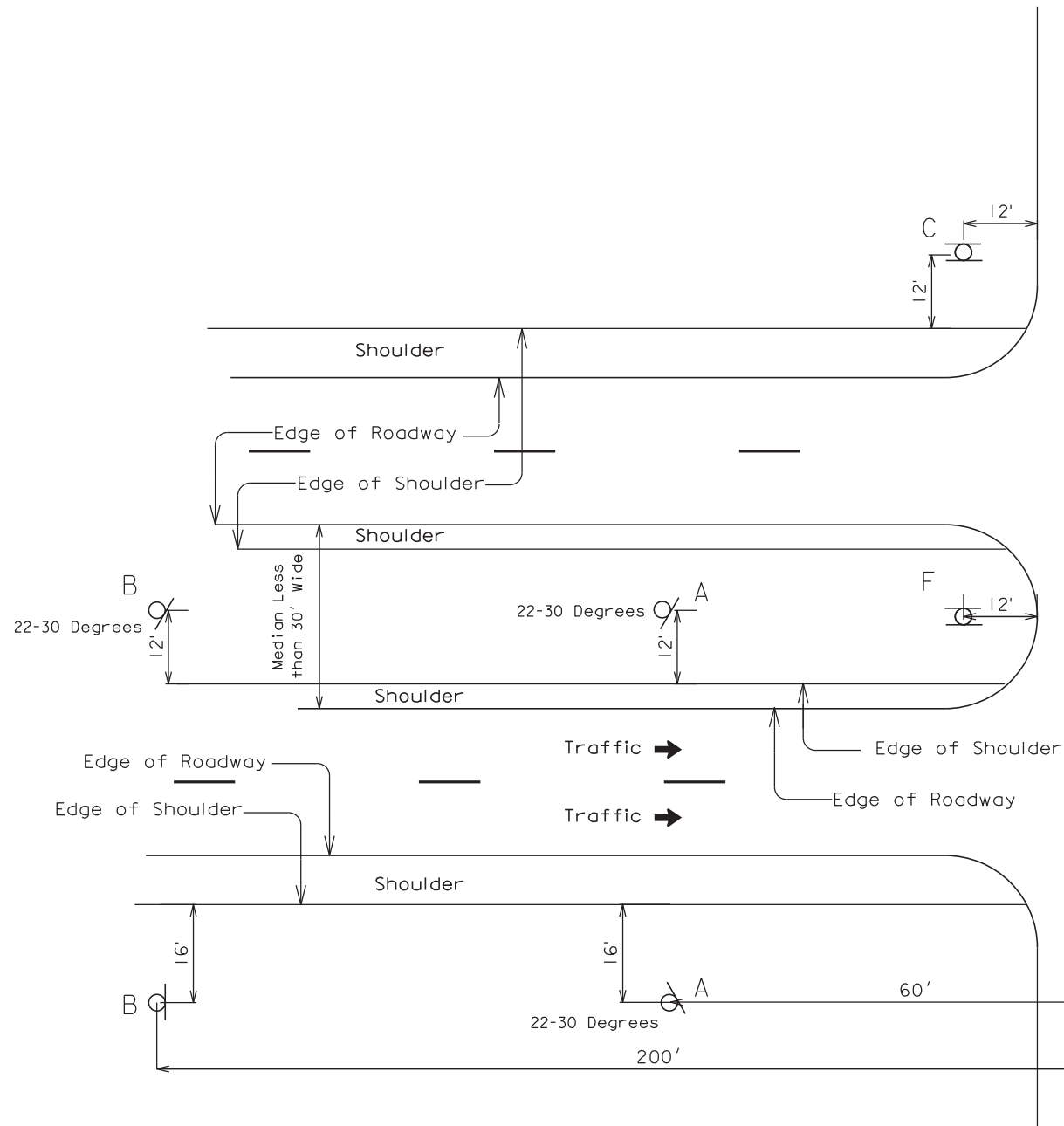
SPECIAL SIGN DESIGN











All signs on this sheet shall have a brown background with white legend and white border

Signing for Divided Highways with Median Widths Narrower than 30 Feet

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S18	S31
Plotting Date: 02/07/2012			



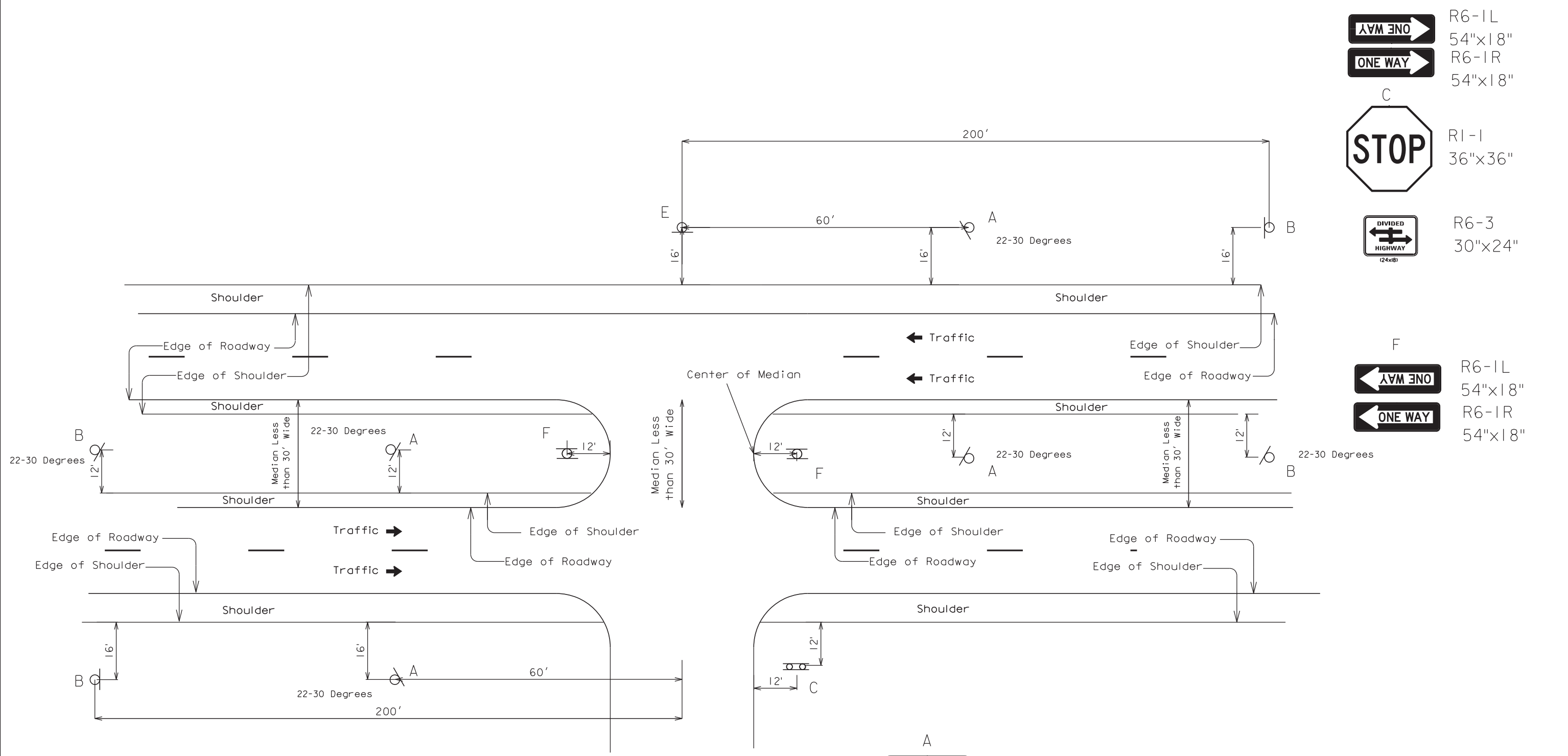
-  R6-1L
54"x18"
-  R6-1R
54"x18"
-  C
R1-1
36"x36"
-  R6-3
30"x24"
-  F
R6-1L
54"x18"
-  R6-1R
54"x18"







-  A
R5-1
36"x36"
-  B
R5-1a
36"x24"

Sign Post "F" - Install Type II Object Markers back to back @ 4' mounting height

Signing for Divided Highways with Median Widths Narrower than 30 Feet

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S19	S31
Plotting Date: 02/07/2012			



-  R6-1L
54"x18"
-  R6-1R
54"x18"
-  R1-1
36"x36"
-  R6-3
30"x24"
-  R6-1L
54"x18"
-  R6-1R
54"x18"

Sign Post "F" - Install Type II Object Markers back to back @ 4' mounting height



R5-1
36"x36"



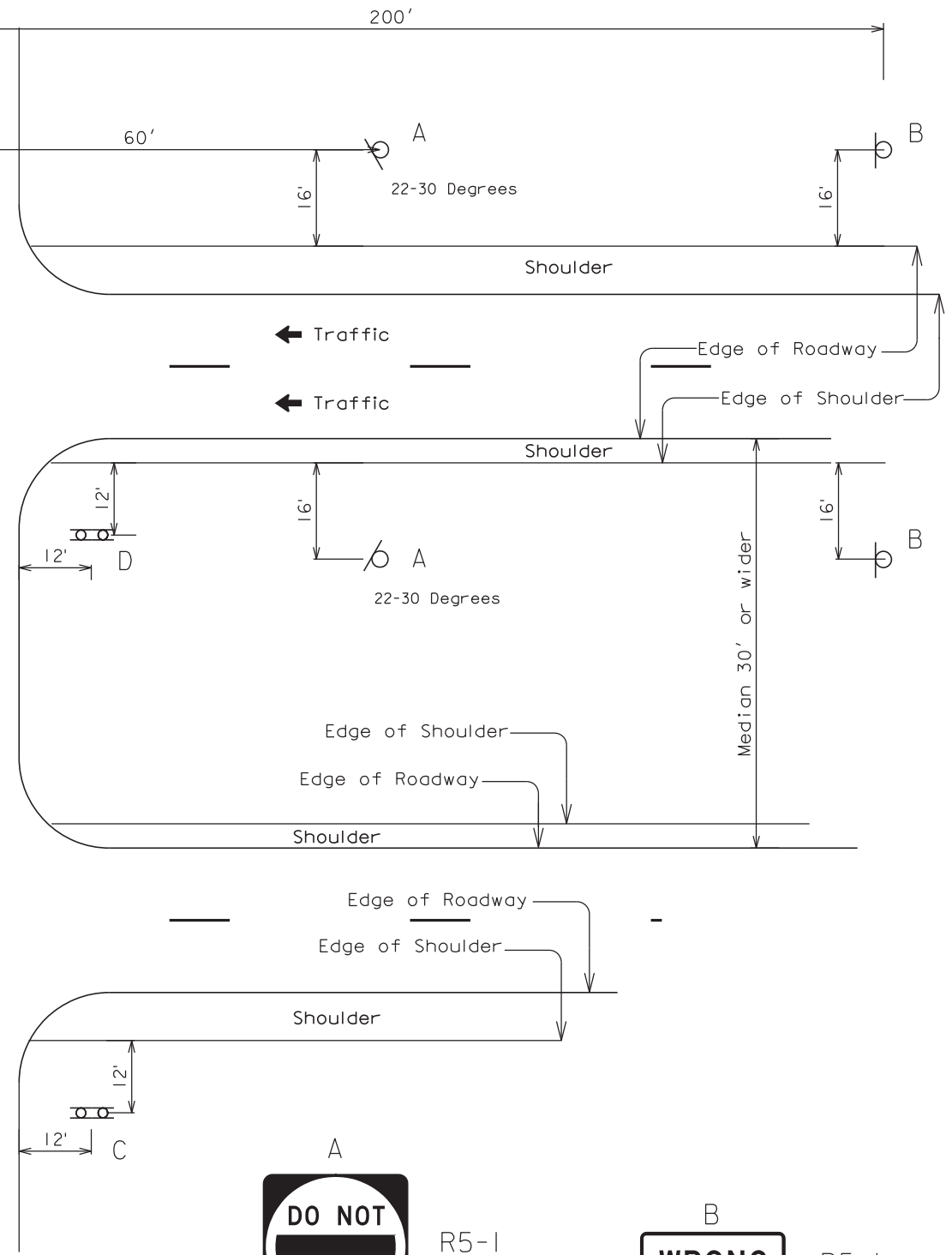
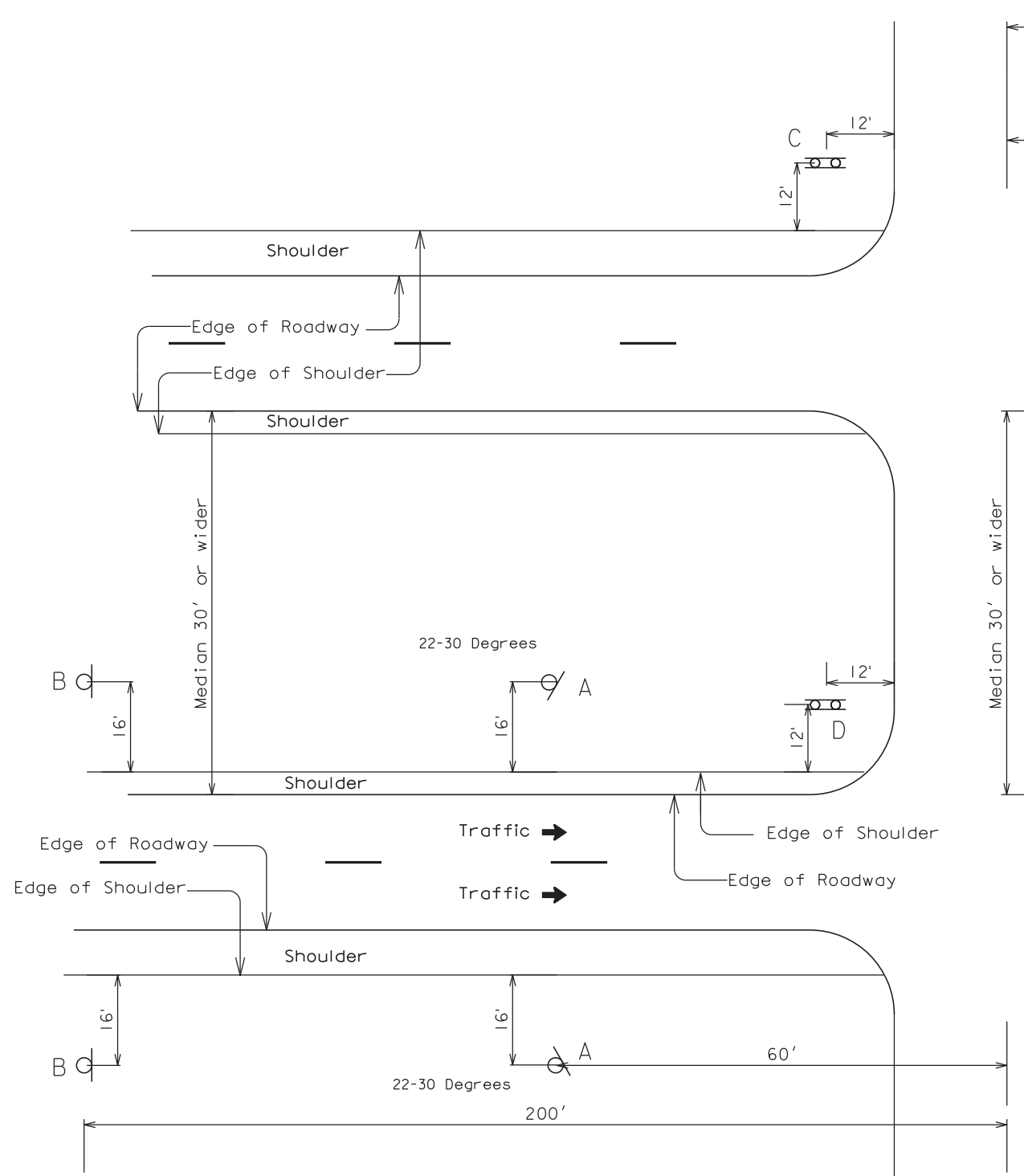
R5-1a
36"x24"








PLOT SCALE - 1:27,3375

PLOTTED FROM - TRAB1222

Signing for Divided Highways with Median Widths of 30 Feet or Wider

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S20	S31
Plotting Date: 02/07/2012			



-  R6-1L
54"x18"
-  R6-1R
54"x18"
-  R1-1
36"x36"
-  R6-3
30"x24"
-  R6-1L
54"x18"
-  R6-1R
54"x18"
-  R1-2
36"x36"x36"



R5-1
36"x36"



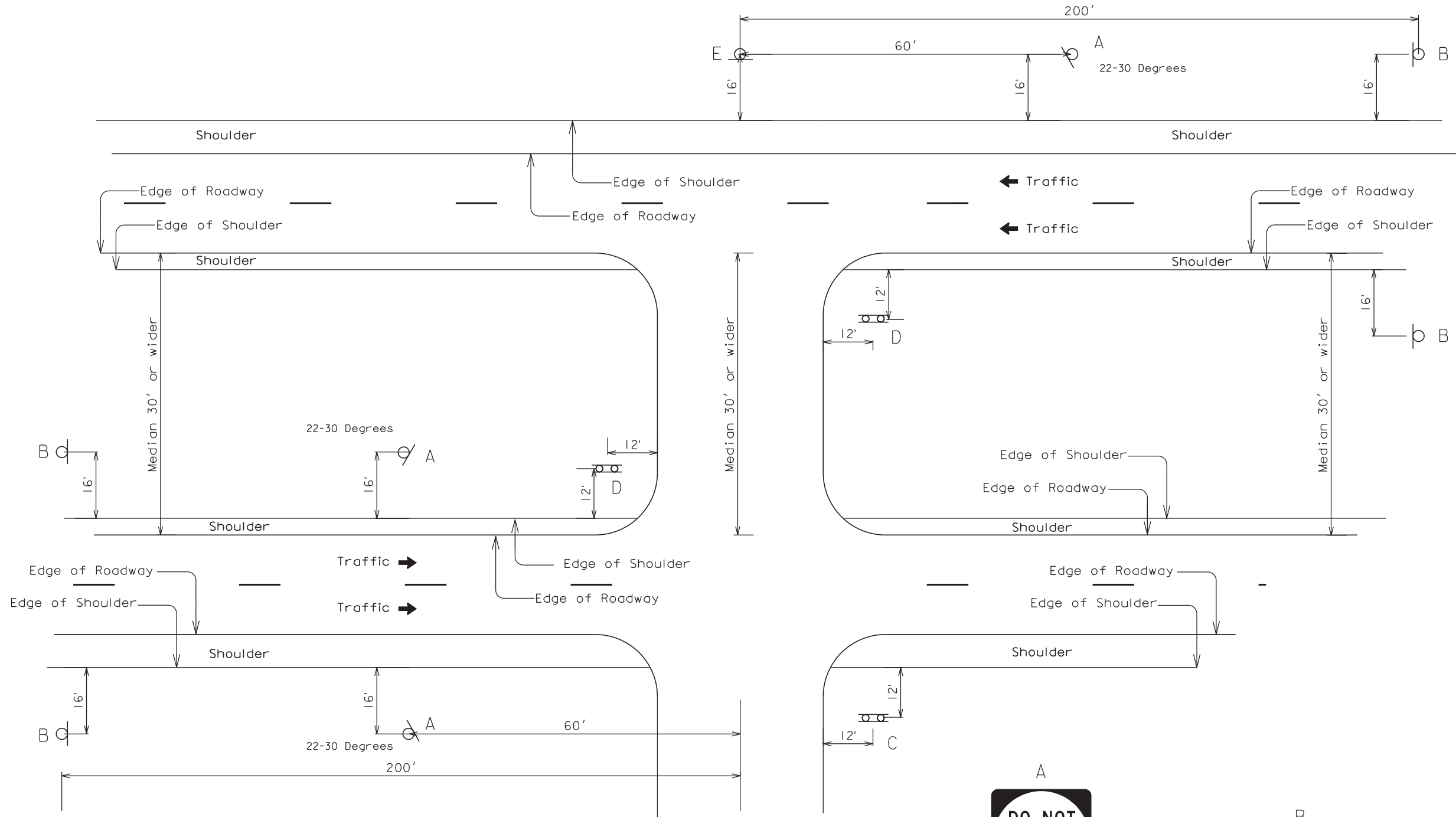
R5-1a
36"x24"

Sign Post "D" - Install Type II Object Markers back to back @ 4' mounting height

FILE ... \022J DIVIDED HIGHWAY MEDIAN XING SIGNING.DGN PLOT NAME - 10

Signing for Divided Highways with Median Widths of 30 Feet or Wider

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012 (160) 298	S21	S31
Plotting Date: 02/07/2012			



-  R6-1L
54"x18"
-  R6-1R
54"x18"


-  R1-1
36"x36"

-  R6-3a
30"x24"

-  R6-1L
54"x18"
-  R6-1R
54"x18"

-  R1-2
36"x36"x36"

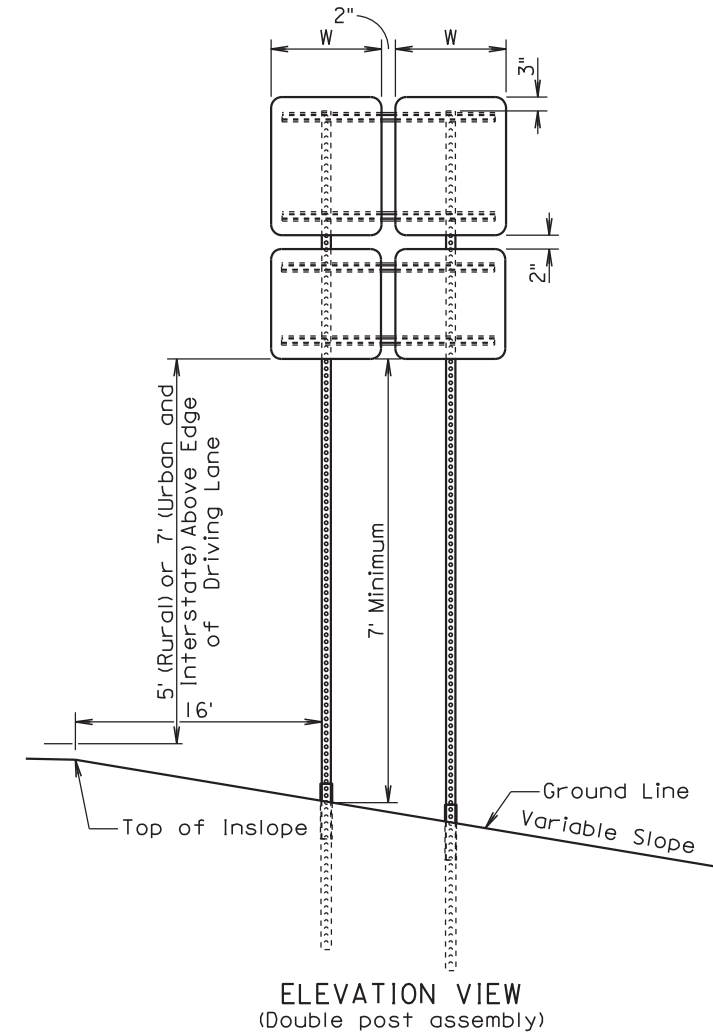
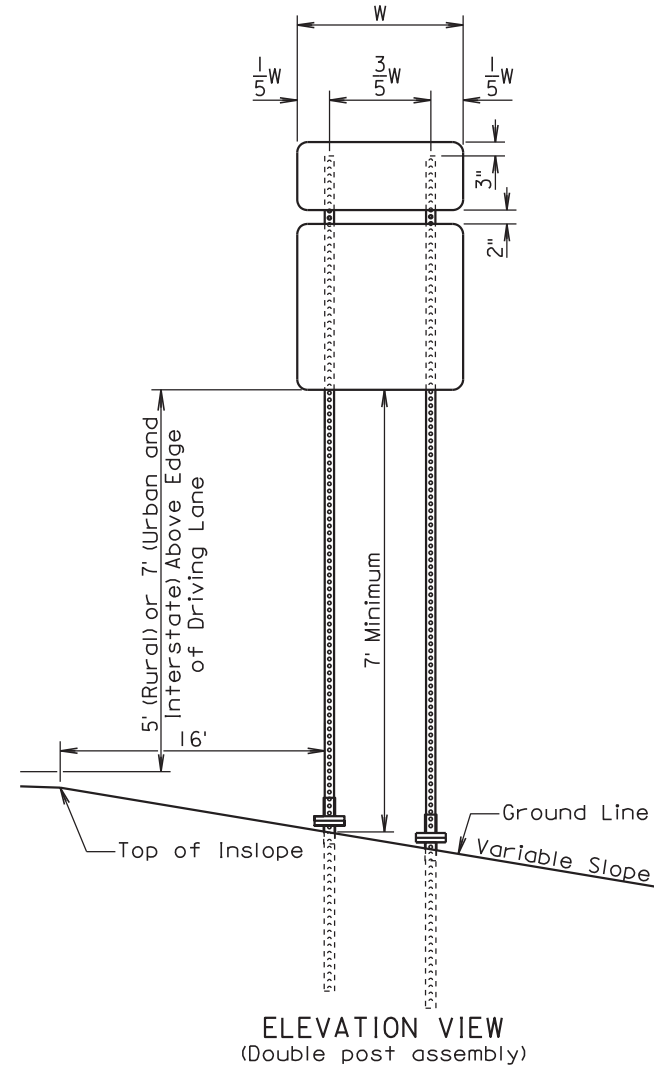
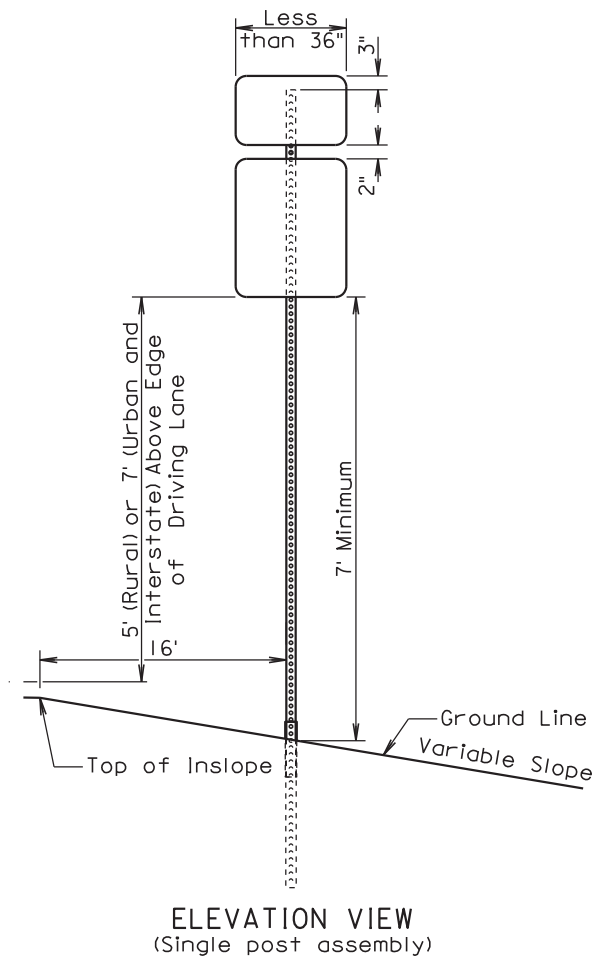
-  R6-1L
54"x18"

-  R5-1
36"x36"

-  R5-1a
36"x24"

Sign Post "D" - Install Type II Object Markers back to back @ 4' mounting height

INSTALLATION DETAILS FOR MULTIPLE SIGN ASSEMBLIES



GENERAL NOTES:

The sign posts and bases shown are for illustrative purpose. The post type required shall be the type specified in the plans.

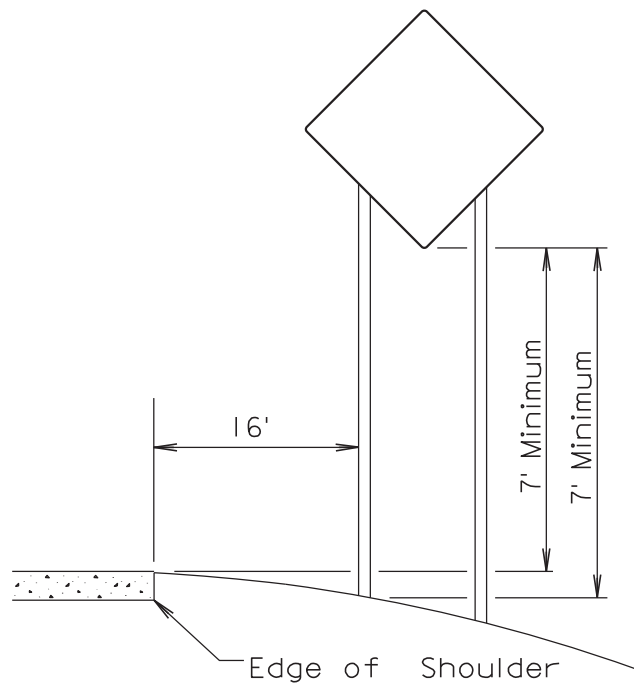
All breakaway sign supports shall comply with NCHRP 350 or MASH crash testing requirements and FHWA requirements. The Contractor shall provide post installation details at the preconstruction meeting for all breakaway sign support assemblies.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	S23	S31
Plotting Date: 02/07/2012			

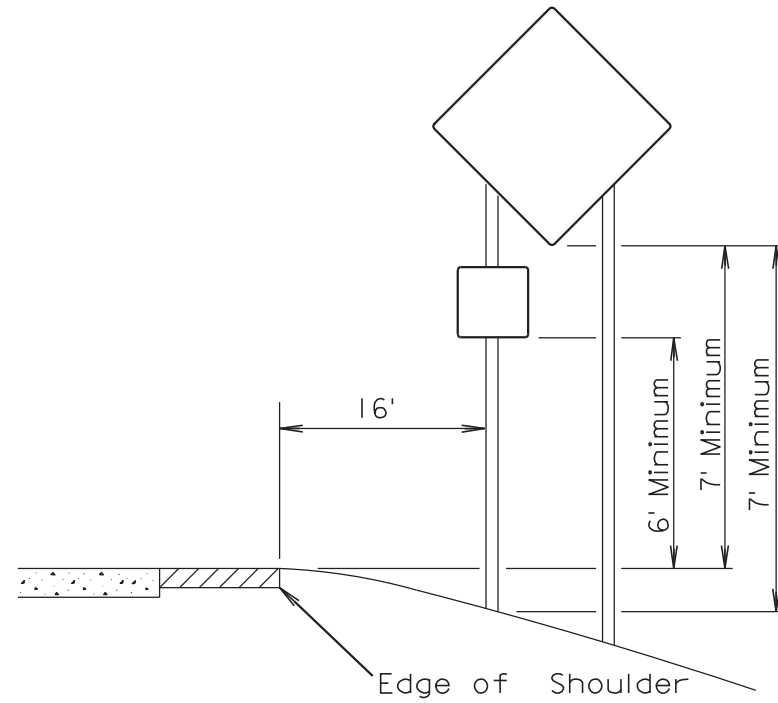
SIGN SUPPORTS (Lateral Off-Sets)

PLOT SCALE - 1:200

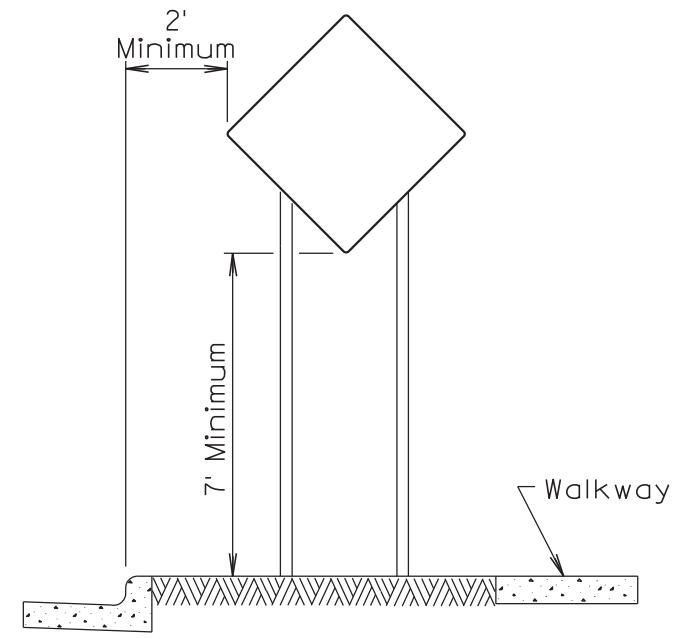
PLOT NAME - 15



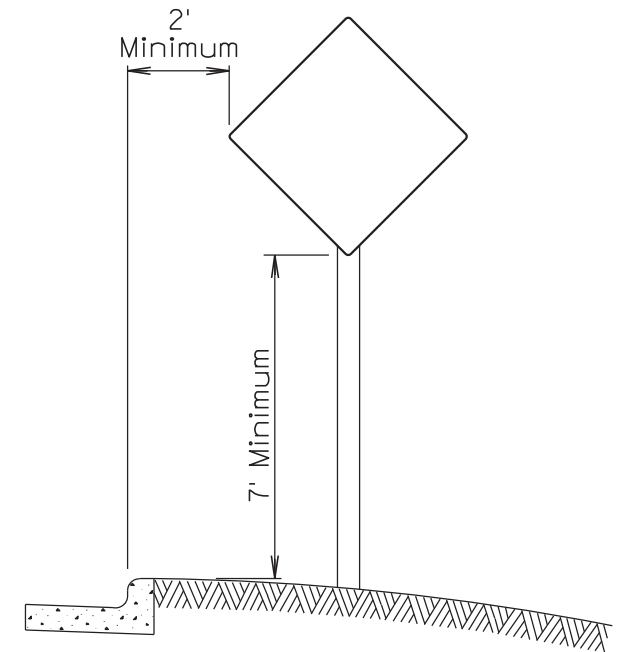
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT



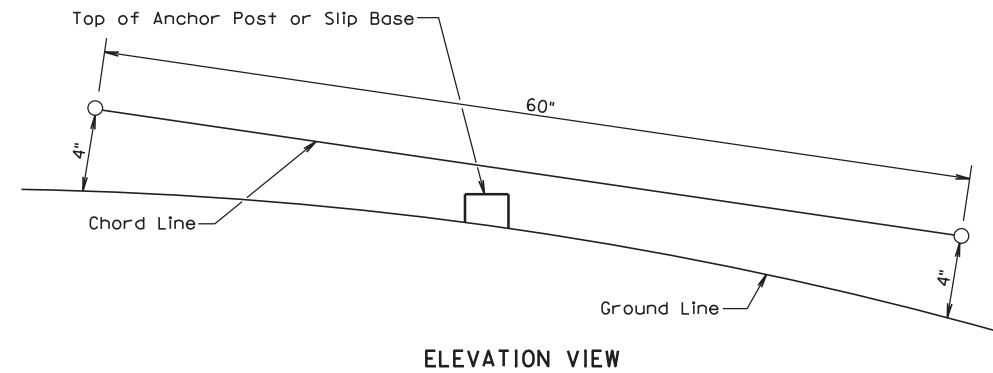
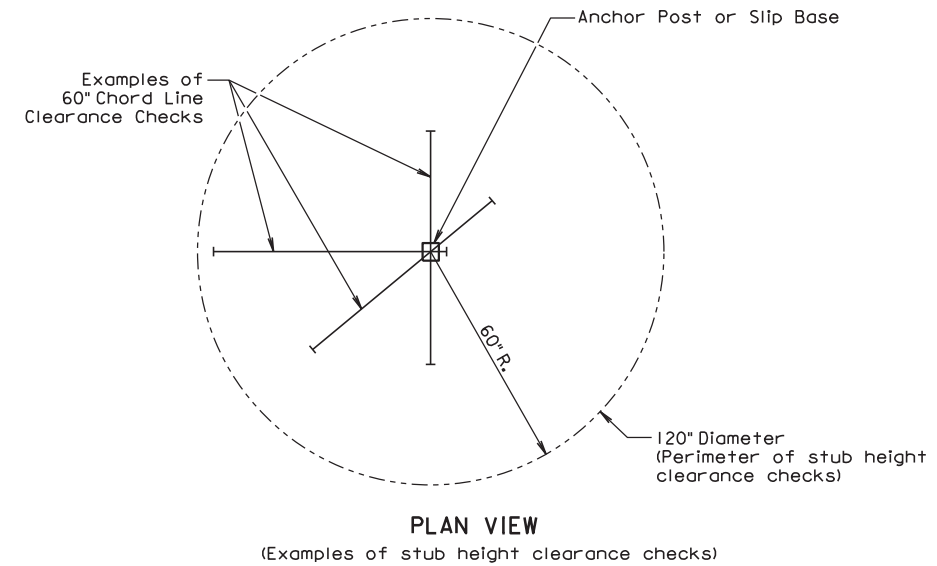
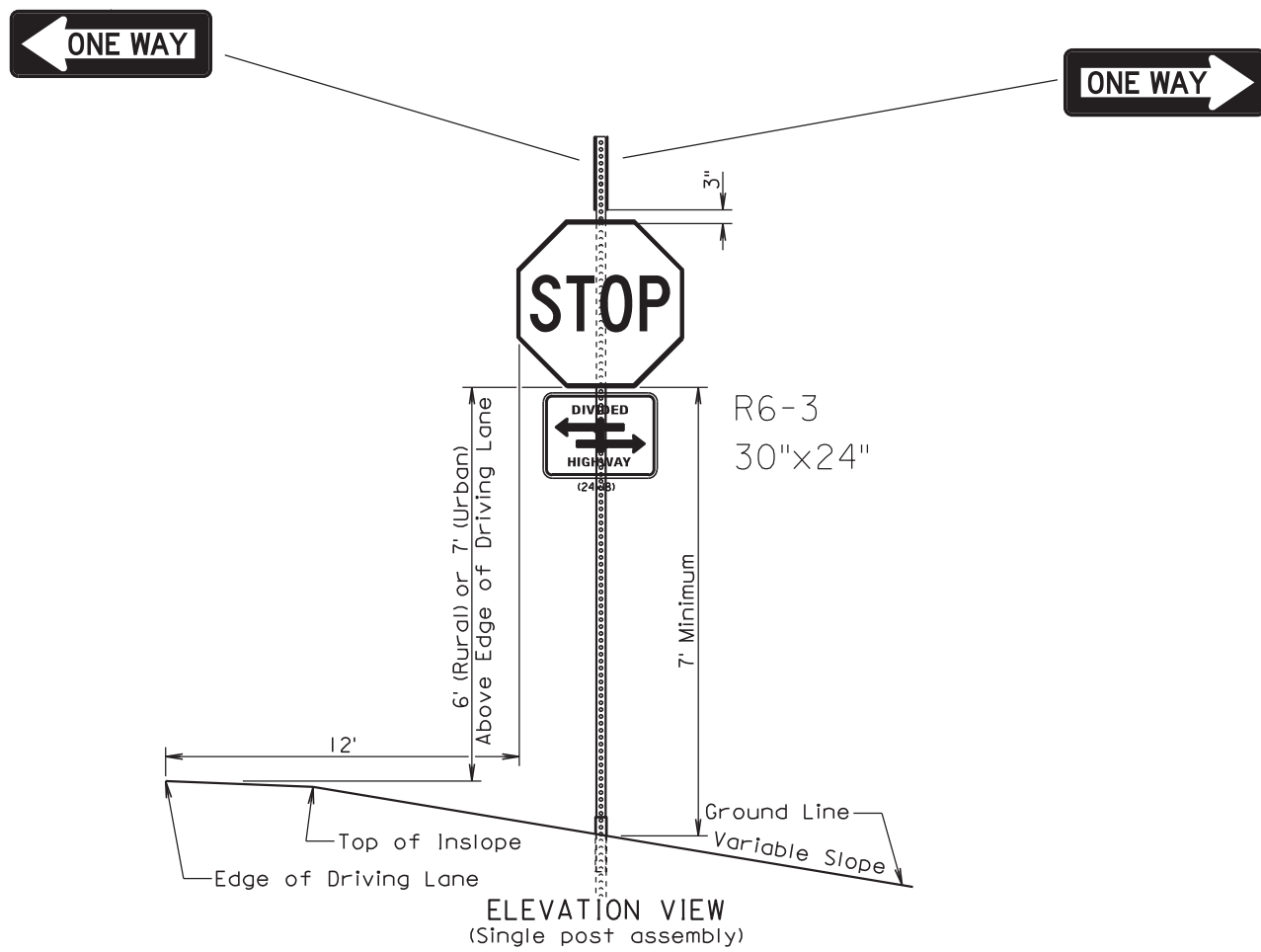
URBAN DISTRICT

PLOTTED FROM - TRAB1222

FILE - ... \SIGN POST INSTALL DETAILS.DGN

INSTALLATION DETAILS FOR STOP SIGNS

BREAKAWAY SUPPORT STUB CLEARANCE



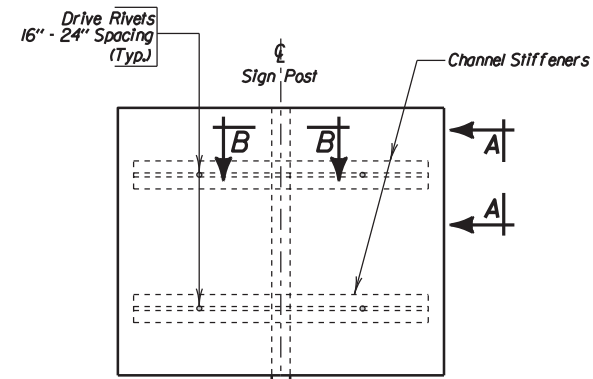
GENERAL NOTES:

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.

ONE POST BREAKAWAY SIGN SUPPORTS

TWO POST BREAKAWAY SIGN SUPPORTS

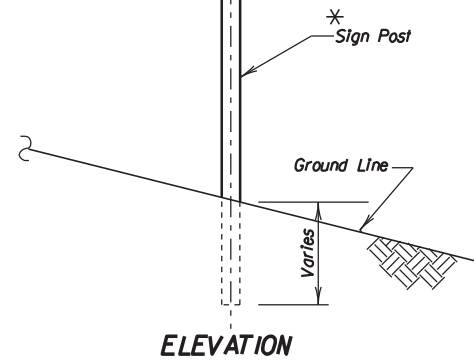


A plastic washer, as recommended by the sheeting manufacturer, shall be installed between the sign face and the metal washer shown.

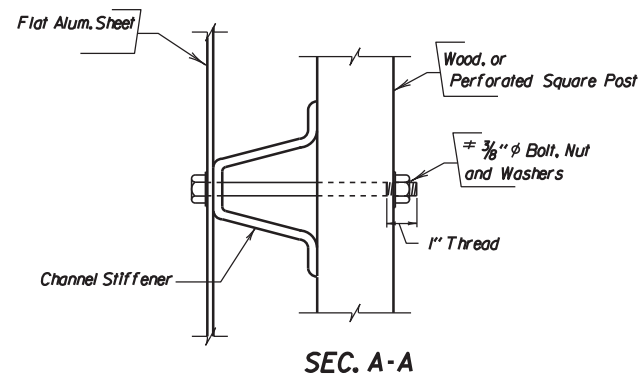
Height and lateral distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

*Single post installation shown. (See applicable Details or Standard Plates shown in these plans for multiple post spacing requirements.)

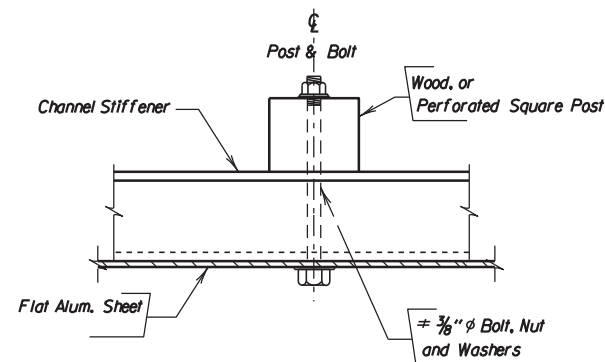
(Typical Sign and Stiffener Details)



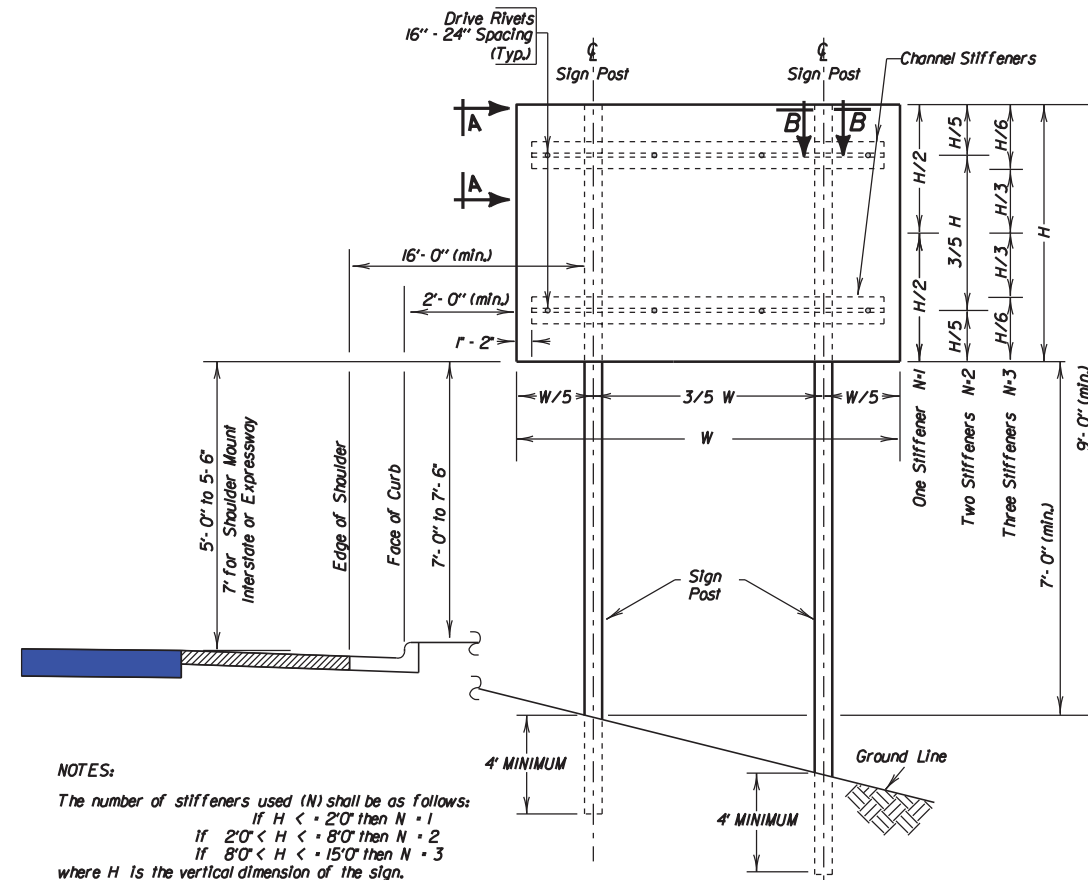
ELEVATION



SEC. A-A



SEC. B-B



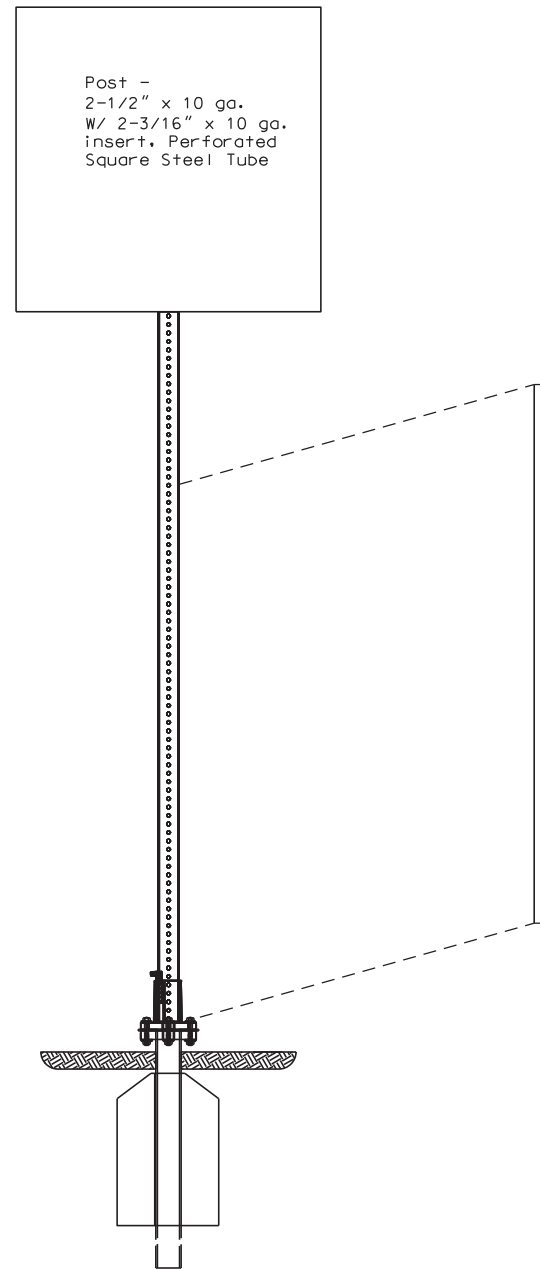
NOTES:

The number of stiffeners used (N) shall be as follows:
 If $H < 2'0"$ then $N = 1$
 If $2'0" < H < 8'0"$ then $N = 2$
 If $8'0" < H < 15'0"$ then $N = 3$
 where H is the vertical dimension of the sign.

A minimum of two bolts shall be required to fasten the sign to each post.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(160)298	S26	S31
Plotting Date: 01/10/2012			

SLIP BASE SLEEVE DETAIL

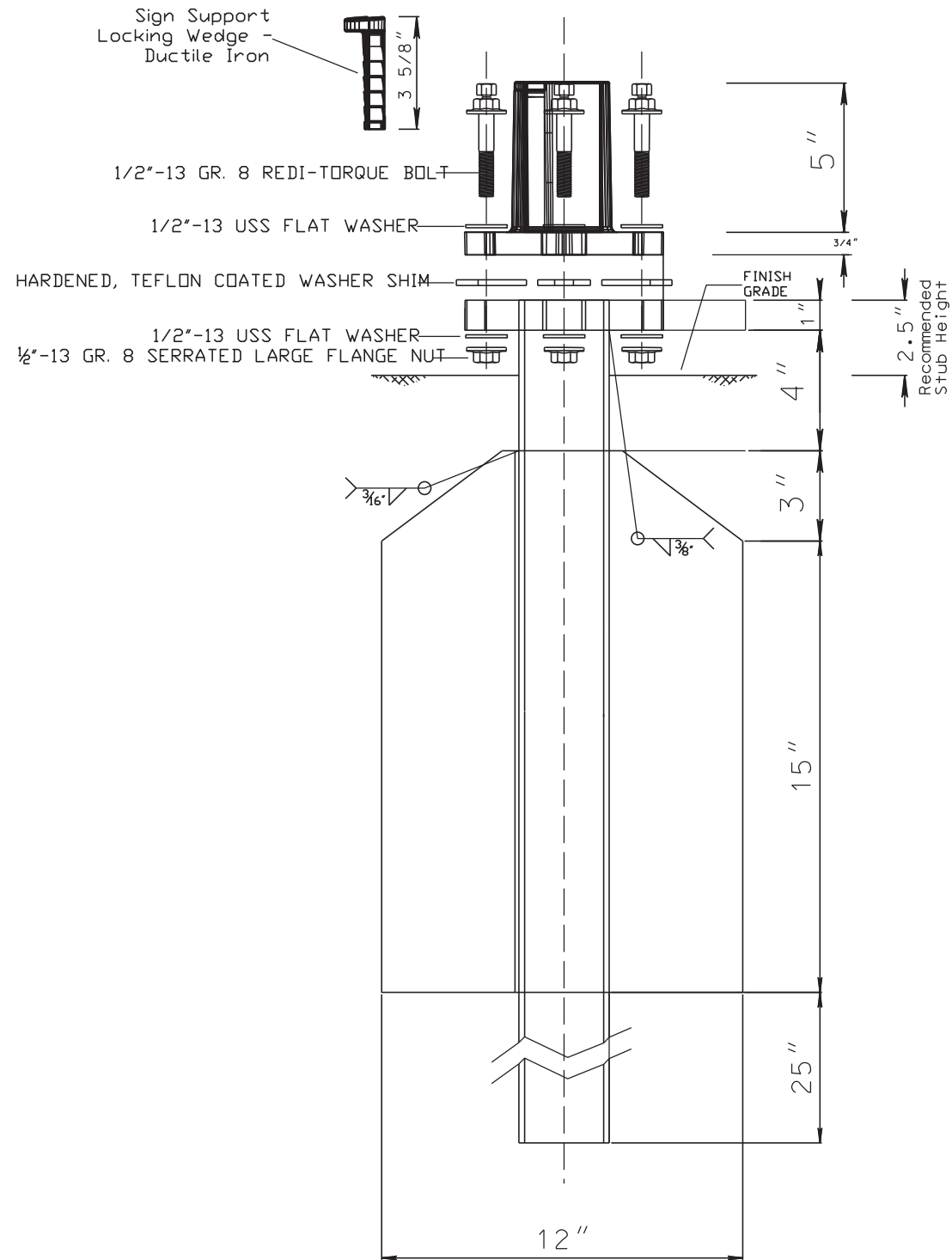


Post -
2-1/2" x 10 ga.
W/ 2-3/16" x 10 ga.
insert. Perforated
Square Steel Tube

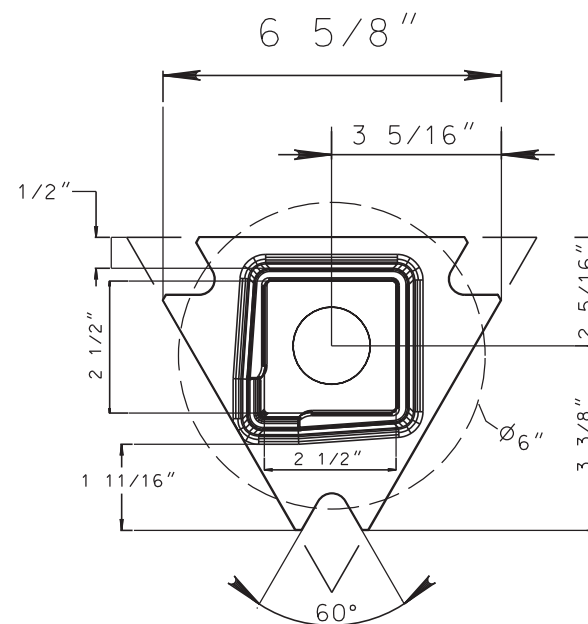
Slip Base - sleeve insert
Post - 2-3/16" x 4' 10 Ga.

For multiple post
installations
sleeve each post.

48" WINGED ANCHOR SLIP BASE

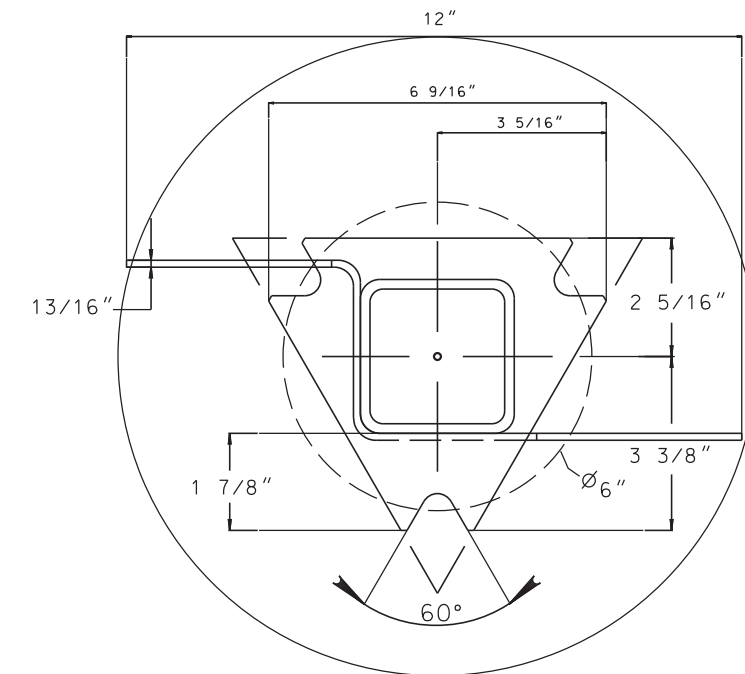


TOP POST RECEIVER
for 2-1/2" SQUARE POST

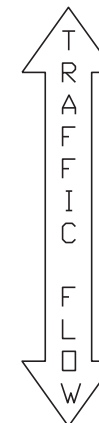


MATERIAL:
DUCTILE IRON CASTING, CLASS 65-45-12

BOTTOM UNIBASE
SOIL STUB



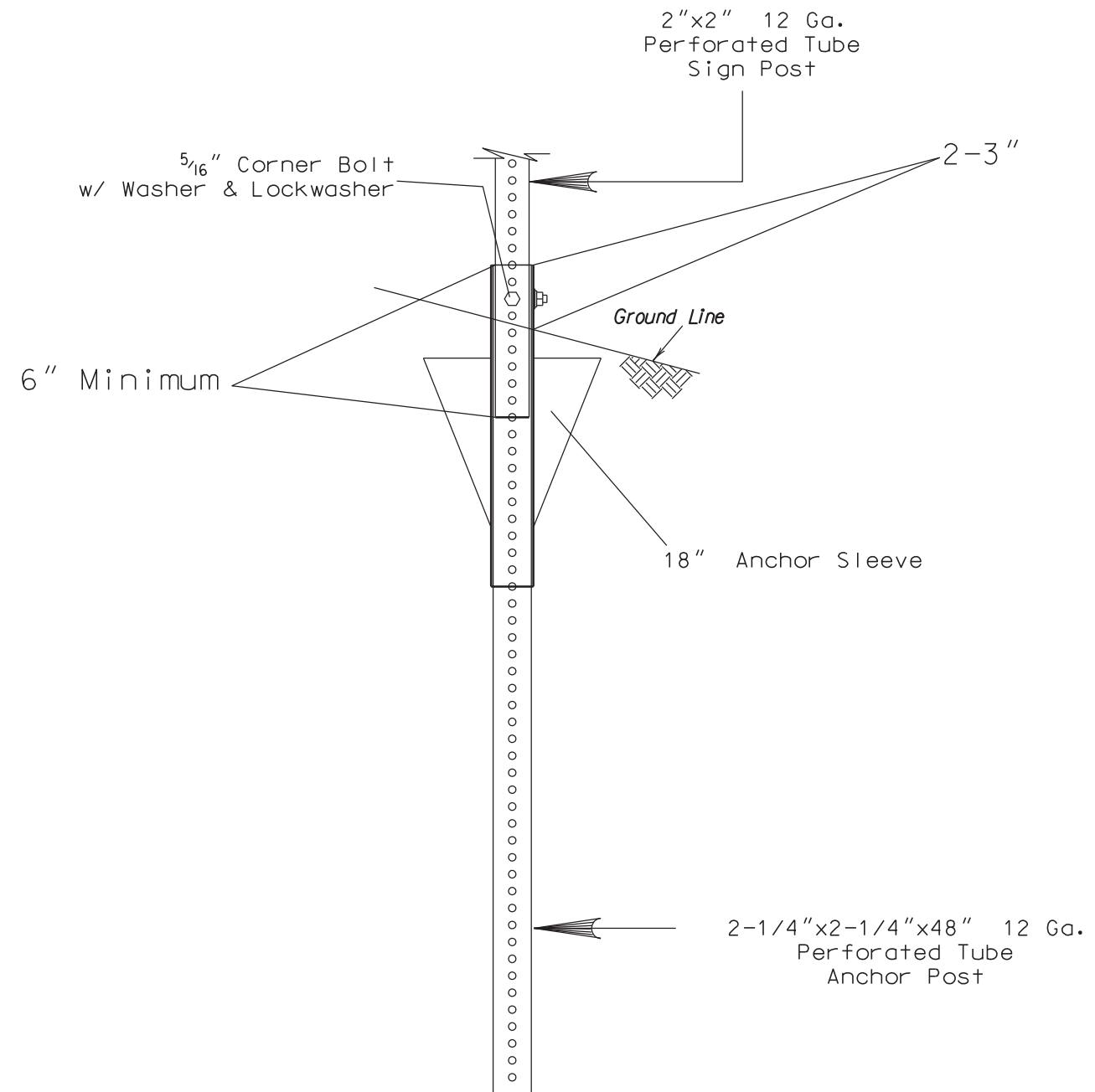
MATERIALS:
Tube - 3" x 3" x 7 ga. ASTM A500 Grade B tube
Stabilizing Wing - 7 ga. H.R.P.D. ASTM A 569
Plate - ASTM A572 grade 50



SLIP BASE [SB8C-250AG] (upper)
WINGED ANCHOR [SB8-CTWA48-G] (lower)
HARDWARE KIT [RTSB-MPHDW]

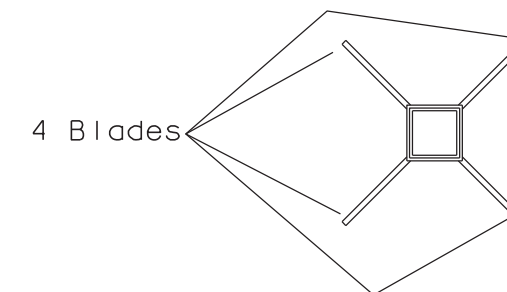
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0037(118)113	S28	S31
Plotting Date: 02/07/2012			

SQUARE TUBE 4 BLADE ANCHOR DETAIL

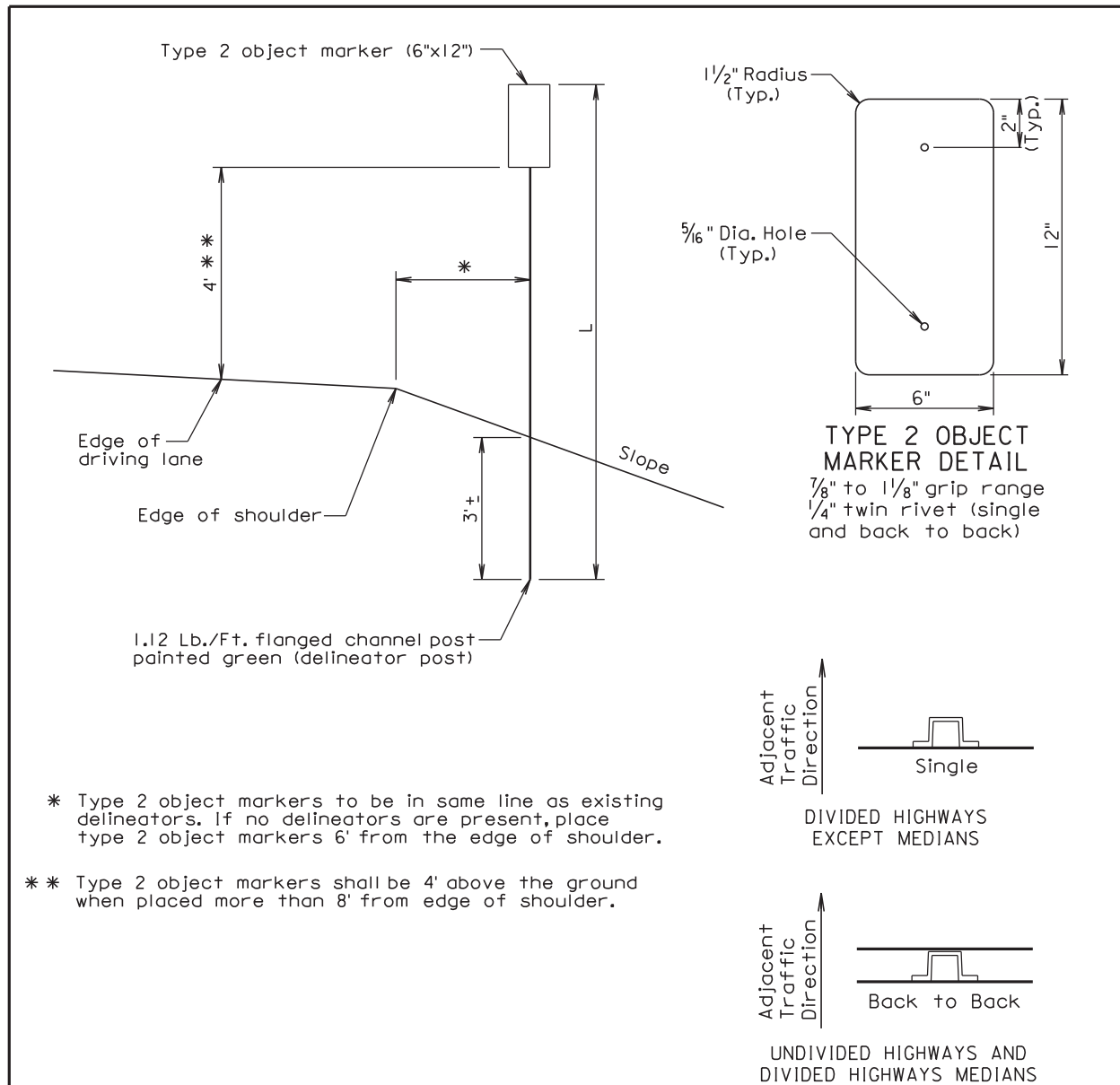


2-1/2" x 18" 12 Ga. Anchor Sleeve
Allied Tube - Part No. 739199

Anchor Sleeve
Top View



2-1/2" x 18" Anchor Sleeve
For Soil Stabilization



* Type 2 object markers to be in same line as existing delineators. If no delineators are present, place type 2 object markers 6' from the edge of shoulder.

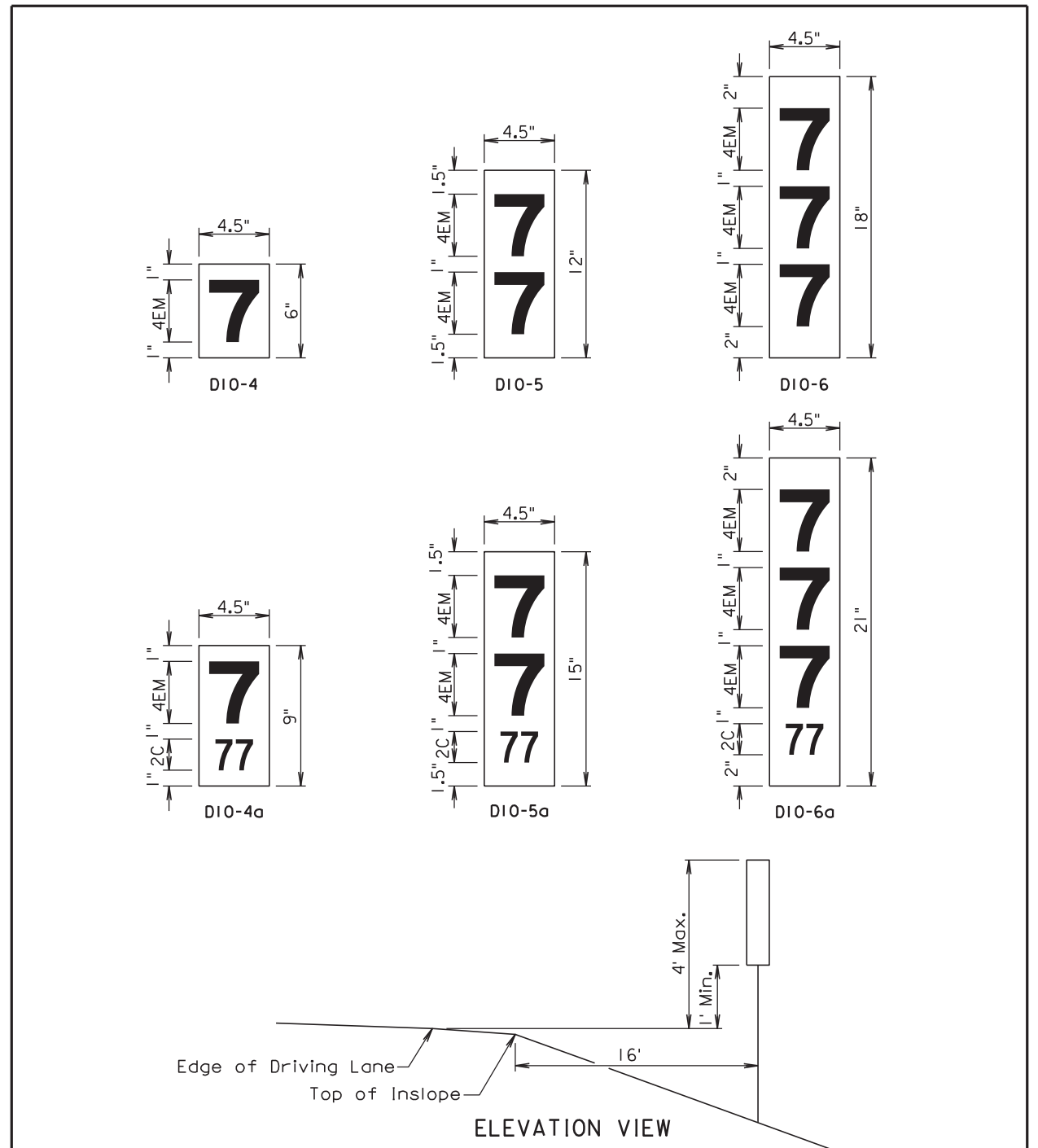
** Type 2 object markers shall be 4' above the ground when placed more than 8' from edge of shoulder.

Distance To Marker (Ft.) *	2	3	4	5	6	7	8
	Post Length L (Ft.)						
Slope	4:1	9	9	9	9	10	10
	3:1	9	9	9	10	10	11

TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

June 26, 2006

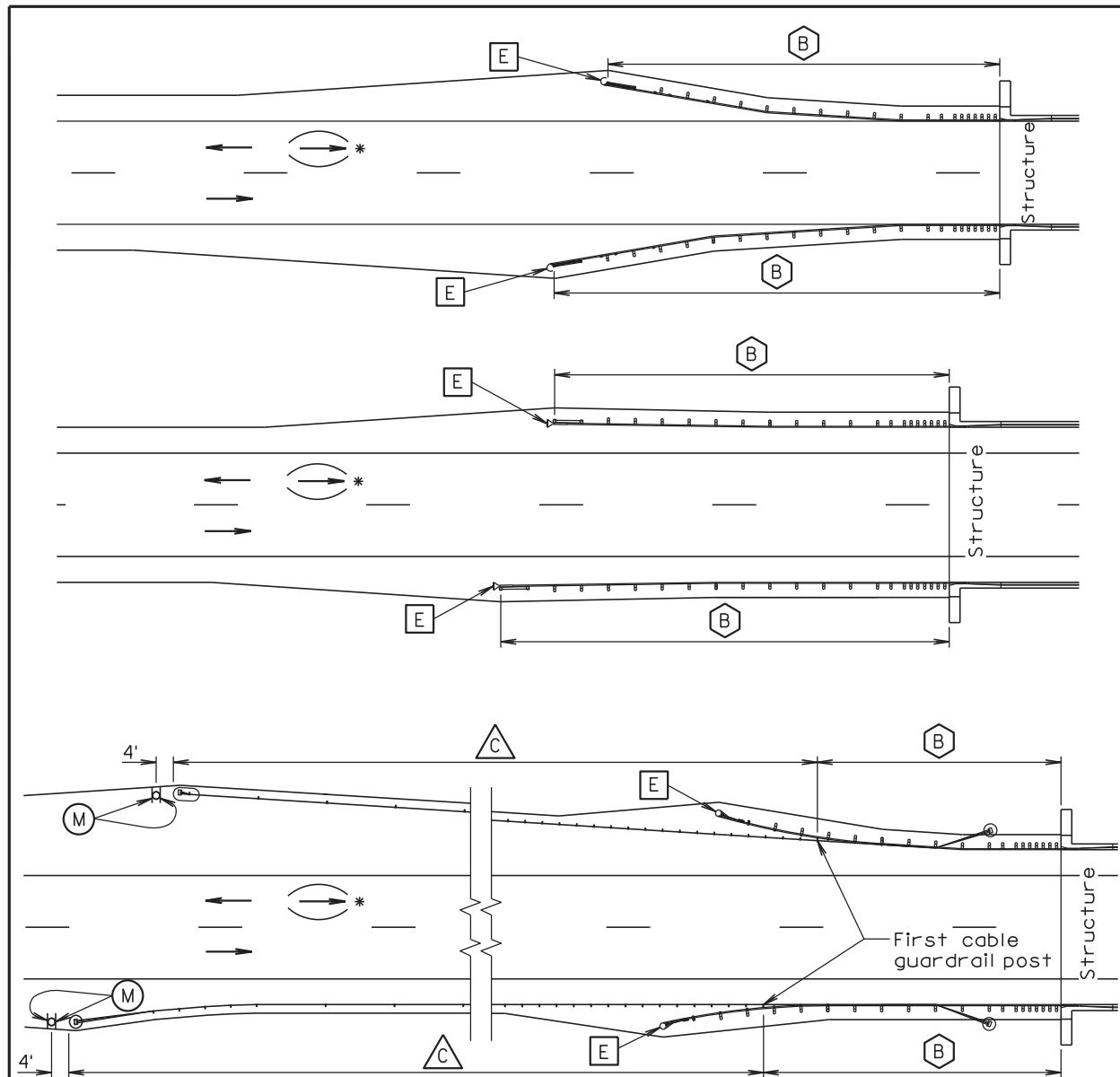
Published Date: 1st Qtr. 2012	S D D O T	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01
			Sheet 1 of 1



GENERAL NOTES:
Background shall be high intensity green.
Legend shall be high intensity white.
Signs shall have squared corners with no border.
Sign locations shall be staked by the Engineer.

December 23, 2003

Published Date: 1st Qtr. 2012	S D D O T	NON-INTERSTATE MILEAGE REFERENCE MARKERS	PLATE NUMBER 632.30
			Sheet 1 of 1



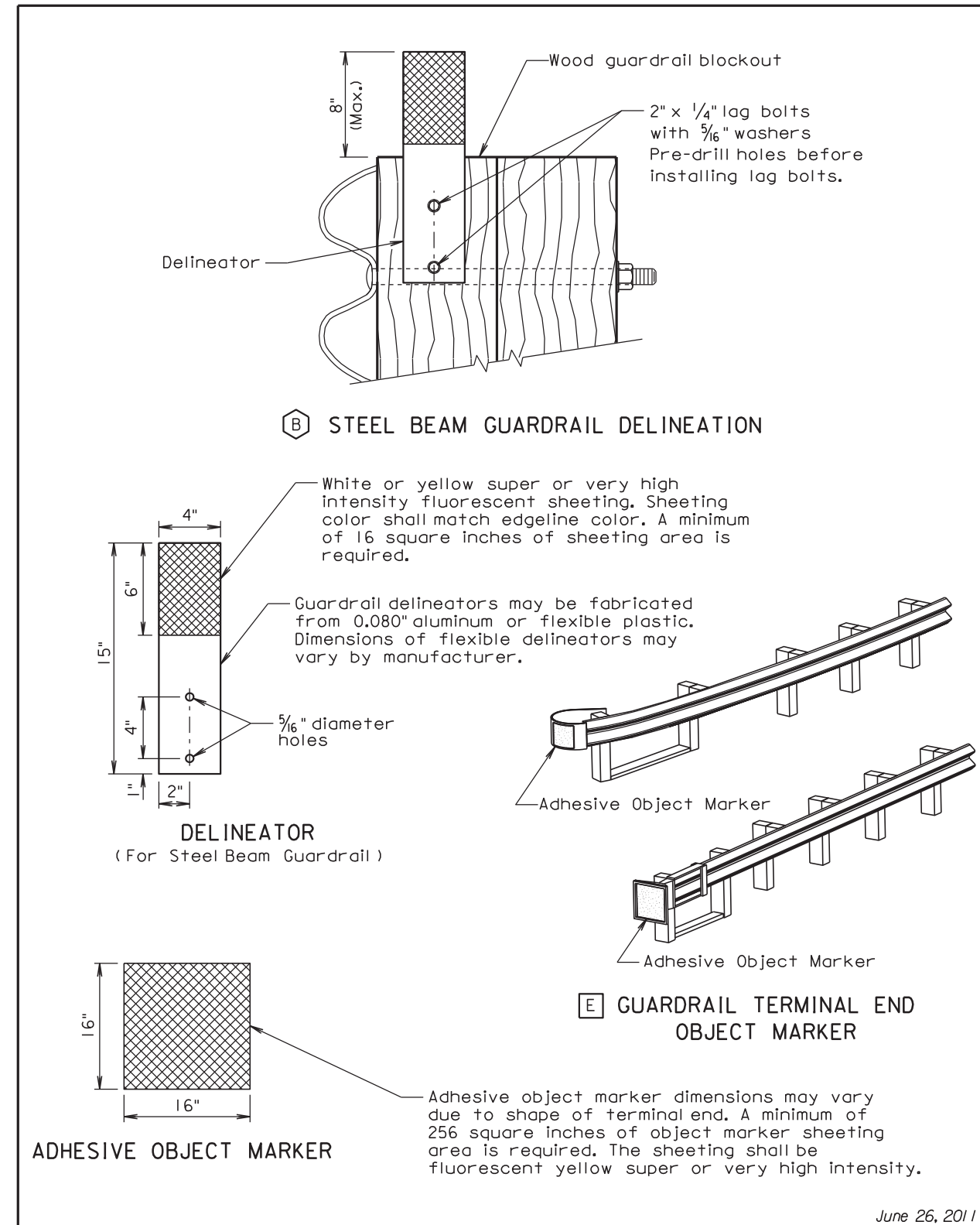
TYPICAL GUARDRAIL LAYOUTS

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

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

June 26, 2011

Published Date: 1st Qtr. 2012	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 1 of 4

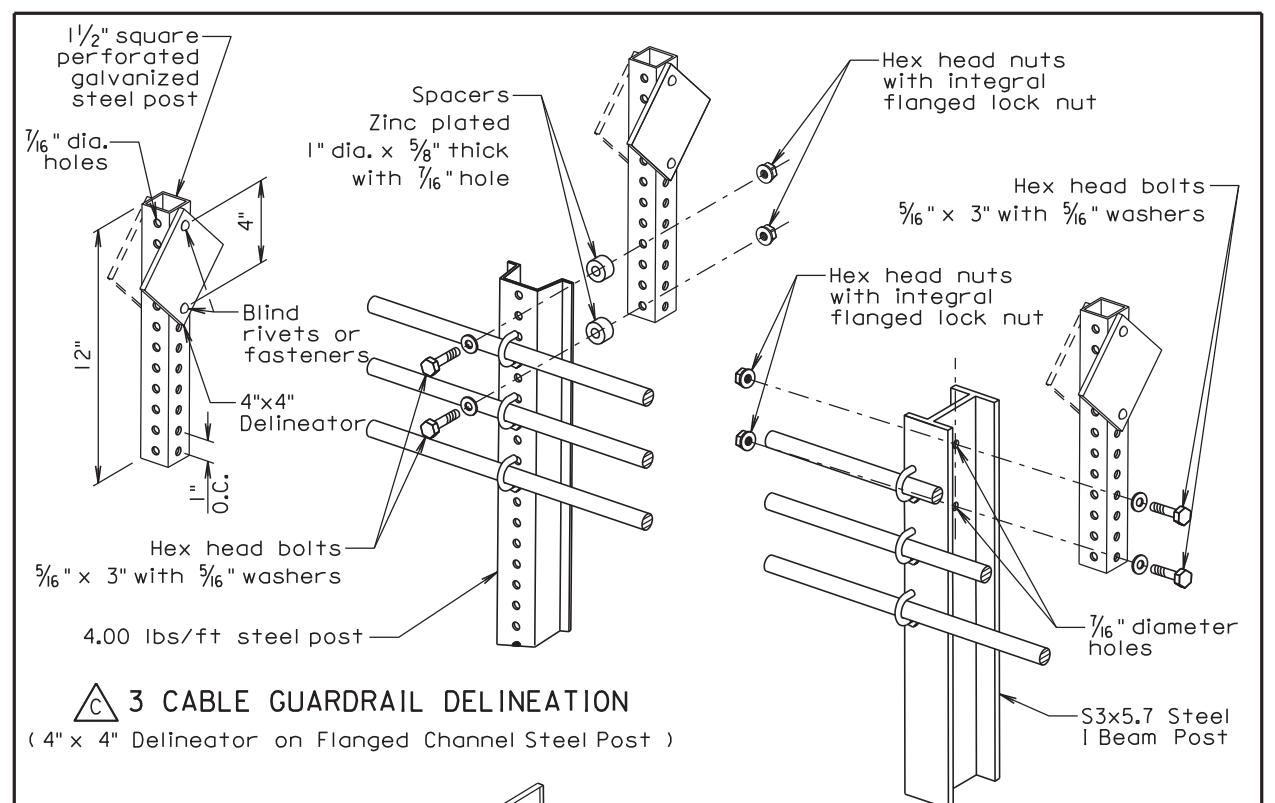


ADHESIVE OBJECT MARKER

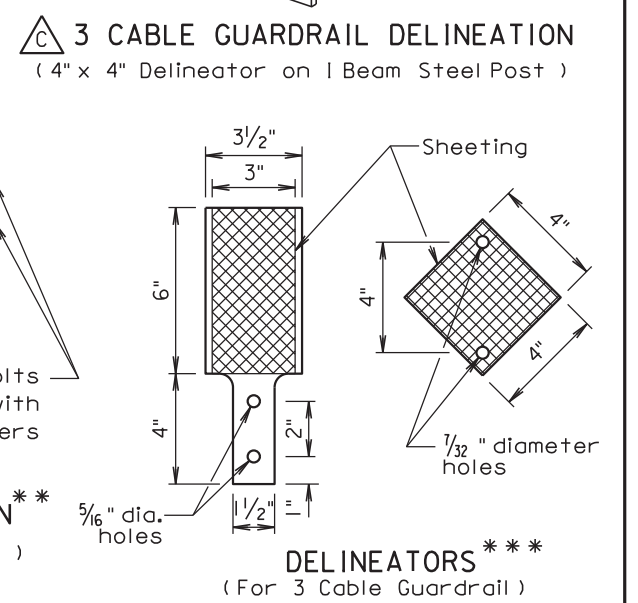
June 26, 2011

Published Date: 1st Qtr. 2012	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 2 of 4

PLOT SCALE - 1:210



△ 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on Flanged Channel Steel Post)



△ 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on I Beam Steel Post)

△ 3 CABLE GUARDRAIL DELINEATION**
(Flexible 3" x 6" Delineator on I Beam Post)

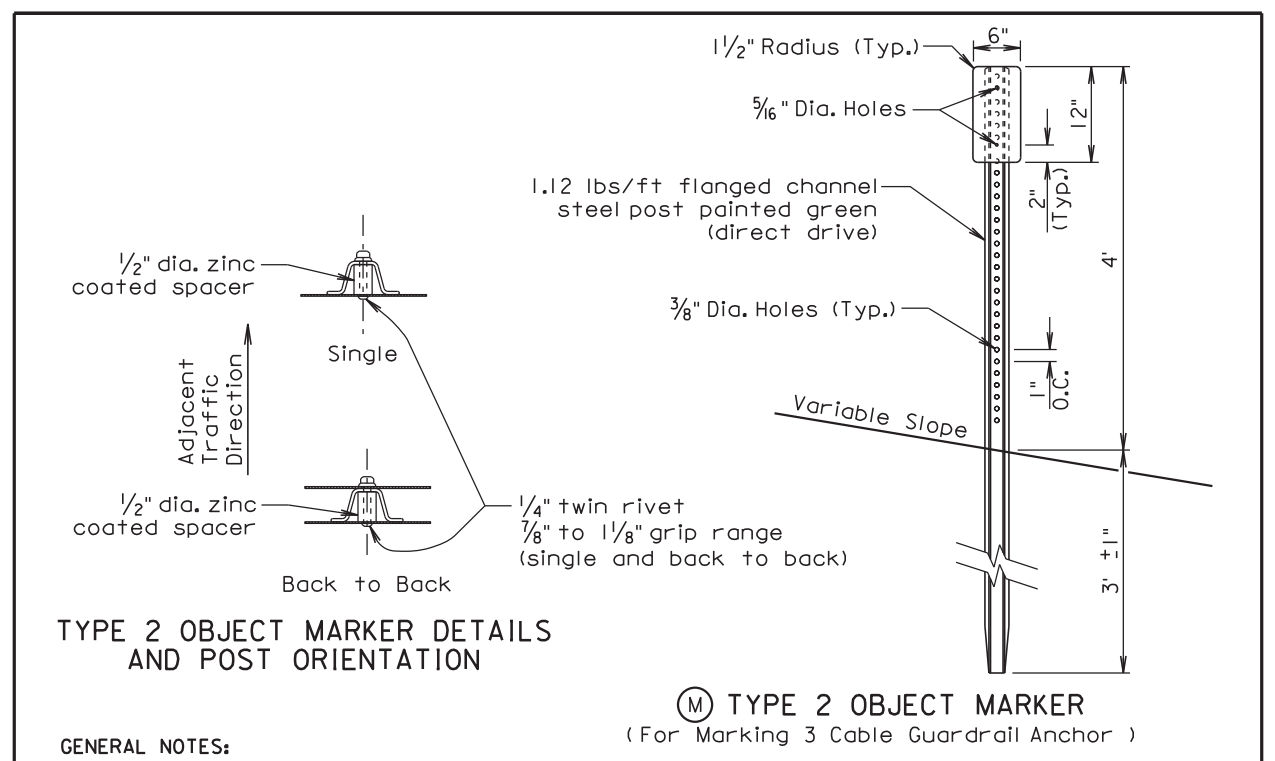
DELINEATORS***
(For 3 Cable Guardrail)

** Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.

*** Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

Published Date: 1st Qtr. 2012	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 3 of 4



TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

Ⓜ TYPE 2 OBJECT MARKER
(For Marking 3 Cable Guardrail Anchor)

GENERAL NOTES:

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

June 26, 2011

Published Date: 1st Qtr. 2012	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 4 of 4

PLOTTED FROM - TRAB12222

PLOT NAME - 2

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