

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

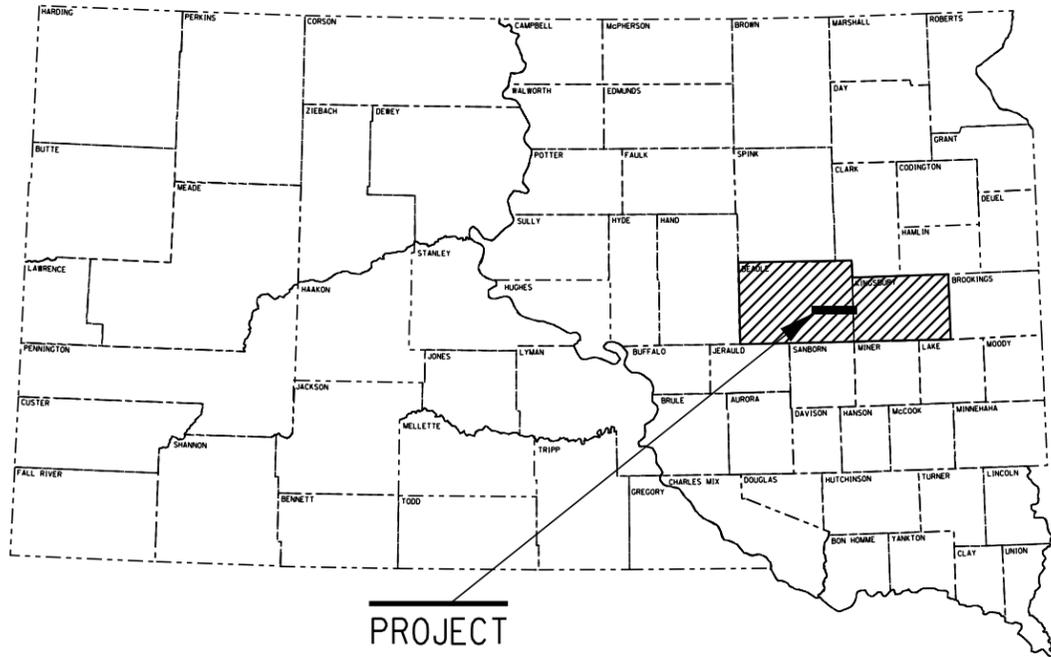
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	1	52
Plotting Date: 12/14/2014			

**PROJECT NH 0014(196)351**  
**US HIGHWAY 14**  
**BEADLE & KINGSBURY COUNTIES**

Cold Mill Asphalt Concrete,  
Asphalt Concrete Resurfacing  
PCN 04DY

INDEX OF SECTIONS

- Sheet 1: Title Sheet & Layout Map
- Sheet 2-3: Estimate of Quantities & Environmental Commitments
- Sheet 4-5: Typical Sections
- Sheet 6: Rates of Material & Asphalt Summary
- Sheet 7: Table of Additional Quantities
- Sheet 8: Table of Stationing & Quantities
- Sheet 9: Table of Guardrail Removal & Installation
- Sheet 10-15: Table of Permanent Signing
- Sheet 16-21: Plan Notes
- Sheet 22-28: Traffic Control
- Sheet 29-31: Pavement Marking Details
- Sheet 32-33: Guardrail Layout Details
- Sheet 34: Transition Details
- Sheet 35-44: Sign Design & Installation Details
- Sheet 45-52: Standard Plates



PROJECT

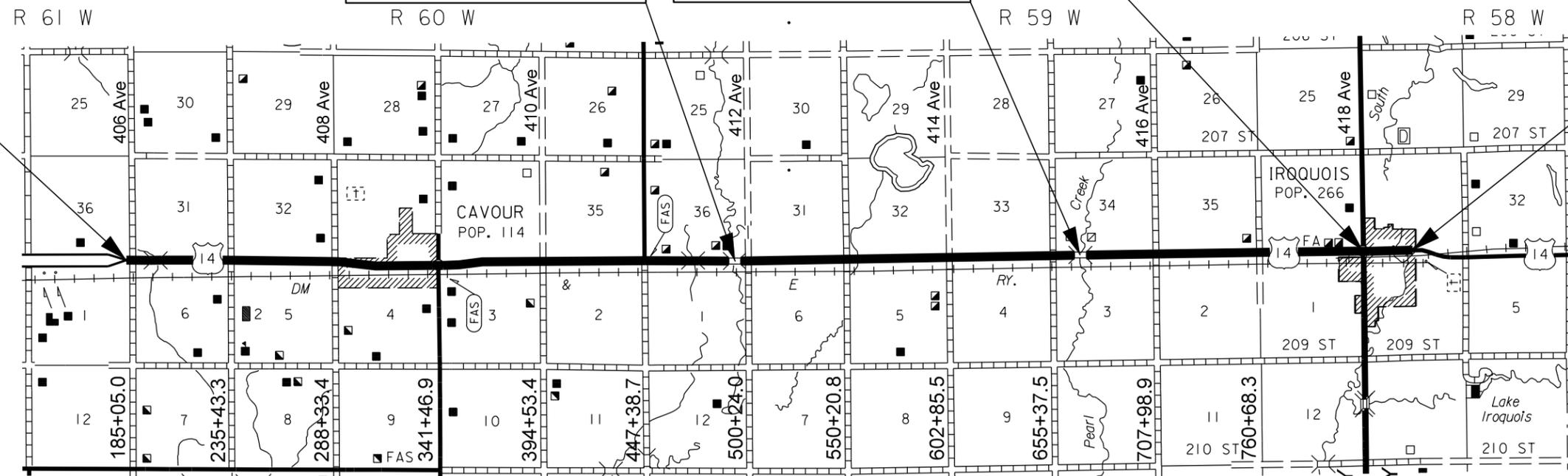
Begin Project  
NH 0014(196)351, PCN 04DY  
Sta. 183+86  
MRM 351.62+0.000

Str. No. 03-359-180  
Conc. Viaduct Bridge  
93' 3-3/4" = 0.018 Miles  
Sta. 492+93.35 to 493+86.66  
MRM 357.51

Str. No. 03-393-180  
Conc. Viaduct Bridge  
99' 6" = 0.019 Miles  
Sta. 668+50.25 to 669+49.75  
MRM 360.80

Equation  
Sta. 813+20.8 Bk.=  
Sta. 0+00.0 Ahd. (2nd)

End Project  
NH 0014(196)351, PCN 04DY  
Sta. 20+40 (2nd)  
MRM 363.87+0.090



DESIGN DESIGNATION

ADT (2013)	2147
ADT (2033)	2847
DHV	464.0
D	50%
T DHV	8.1%
T ADT	17.9%
V	

STORM WATER PERMIT

NONE REQUIRED

GROSS LENGTH	64974.8 FEET	12.306 MILES
LENGTH OF EXCEPTIONS	540.0 FEET	0.102 MILES
NET LENGTH	64782.0 FEET	12.204 MILES

BEADLE COUNTY  
KINGSBURY COUNTY



6

PLOT SCALE - 1:6864

PLOTTED FROM - TRAB12222

PLOT NAME -

FILE - ... \DESIGN\04DY\_TITLESHEET.DGN

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	2	52

Revised 01/23/2015 MW

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E4200	Construction Schedule, Category II	Lump Sum	LS
110E0130	Remove Traffic Sign	74	Each
110E0730	Remove Beam Guardrail	12.5	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	4	Each
110E6010	Remove 3 Cable Guardrail Anchor Assembly for Reset	2	Each
110E7150	Remove Sign for Reset	7	Each
120E0100	Unclassified Excavation, Dugouts	610	CuYd
260E1010	Base Course	1,580.0	Ton
260E1050	Base Course, Salvaged Asphalt Mix	1,220.4	Ton
* 270E0210	Haul and Stockpile Granular Material	3,624.0	Ton
320E0007	PG 64-28 Asphalt Binder	1,803.9	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	38,728.8	Ton
320E4000	Hydrated Lime	394.9	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	22.0	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	80.5	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	66.8	Ton
330E2000	Sand for Flush Seal	656.6	Ton
332E0010	Cold Milling Asphalt Concrete	228,900	SqYd
380E6510	Grinding PCC Pavement	667.0	SqYd
600E0300	Type III Field Laboratory	1	Each
629E0100	3 Cable Guardrail	116	Ft
629E0200	Reset 3 Cable Guardrail	152	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	4	Each
629E0420	3 Cable Guardrail Anchor Assembly w/New Anchor and Salvaged Hardware	2	Each
629E1102	3 Cable Guardrail Intermediate Post	12	Each
629E1114	3 Cable Guardrail J Hook Bolt	1	Each
629E1116	Steel Turnbuckle Cable End Assembly	3	Each
629E1120	W Beam to 3 Cable Transition Bracket	1	Each
630E1200	Straight Class A W Beam Rail	12.5	Ft
630E2155	End Terminal Hinged Breakaway Post	1	Each
632E1320	2.0"x2.0" Perforated Tube Post	754.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	26.0	Ft
632E2028	4" Tubular White Delineator with 1.12 Lb/Ft Post	7	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	293.8	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	224.7	SqFt
632E3500	Reset Sign	7	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	1	Each
633E1300	Pavement Marking Paint, White	430.0	Gal
633E1305	Pavement Marking Paint, Yellow	115.0	Gal
634E0010	Flagging	700	Hour
634E0020	Pilot Car	350	Hour
634E0100	Traffic Control	1,689	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
634E0630	Temporary Pavement Marking	36.6	Mile
900E0010	Refurbish Single Mailbox	2	Each
900E1980	Storage Unit	1	Each

\* - Denotes Non-Participating

## SPECIFICATIONS

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

## ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

#### COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

#### Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

### COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

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

#### Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

### COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

#### Action Taken/Required:

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

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	3	52

## COMMITMENT H: WASTE DISPOSAL SITE

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

### Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the 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 Project 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 and/or 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 and/or 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.

## COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

### Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

The Contractor shall provide ARC 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 artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

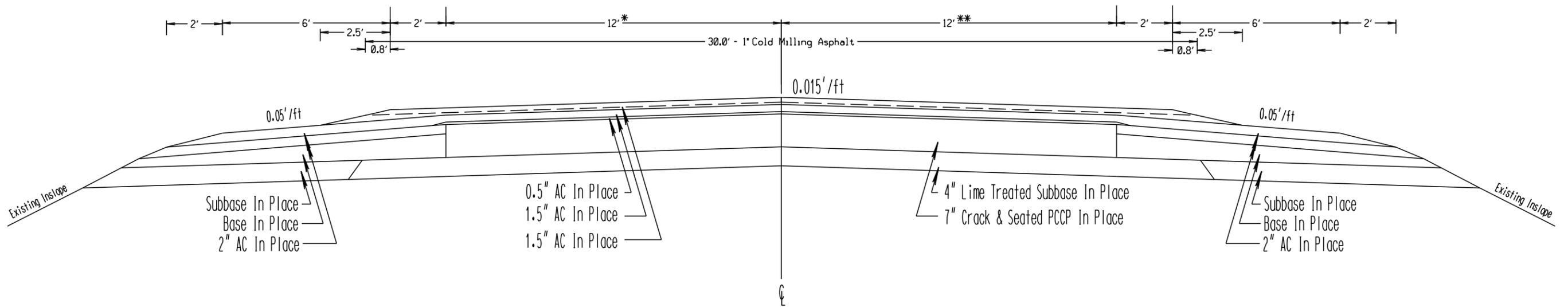
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	4	52
Plotting Date: 12/18/2014			

# TYPICAL RESURFACING SECTION

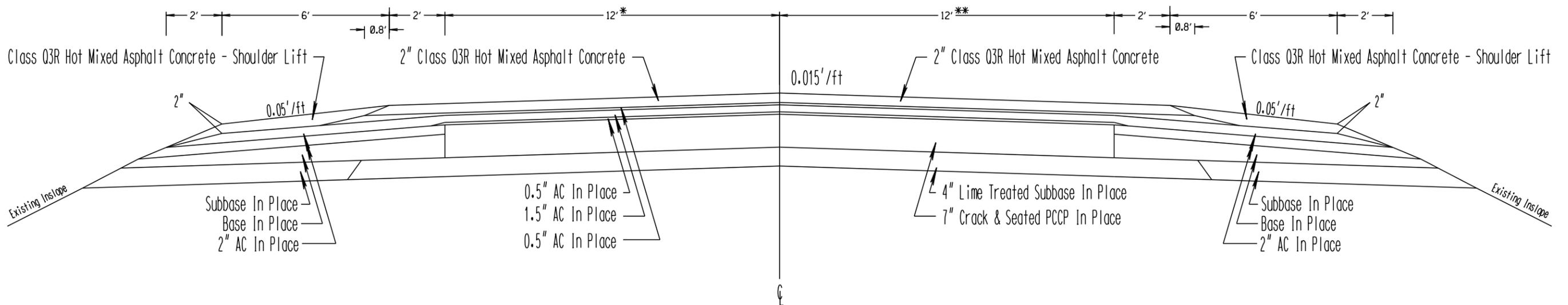
\* 24' Sta. 183+86 to Sta. 189+54  
 Sta. 441+00 to Sta. 452+30  
 Transition from 12' to 24'  
 Sta. 322+30 to Sta. 326+00  
 Sta. 437+52 to Sta. 441+00  
 Sta. 810+38 to Sta. 1+00 (2nd)  
 Transition from 24' to 12'  
 Sta. 189+54 to Sta. 194+69  
 Sta. 341+46.9 to Sta. 342+97  
 Sta. 452+30 to Sta. 455+90  
 Sta. 15+07 (2nd) to Sta. 16+70 (2nd)

Section 1  
 Sta 183+86 to Sta 326+00  
 Sta 341+46.9 to Sta 1+00 (2nd thru Equation)  
 Sta 15+07 (2nd) to Sta 20+40 (2nd)  
 In Place & Cold Milling Section

\*\* 24' Sta. 183+86 to Sta. 191+24  
 Sta. 444+30 to Sta. 453+77  
 Transition from 12' to 24'  
 Sta. 440+68 to Sta. 444+30  
 Transition from 24' to 12'  
 Sta. 191+24 to Sta. 198+55  
 Sta. 453+77 to Sta. 457+19



## Resurfacing Section



PLOT SCALE - 1:3.75

PLOTTED FROM - TRAB12222

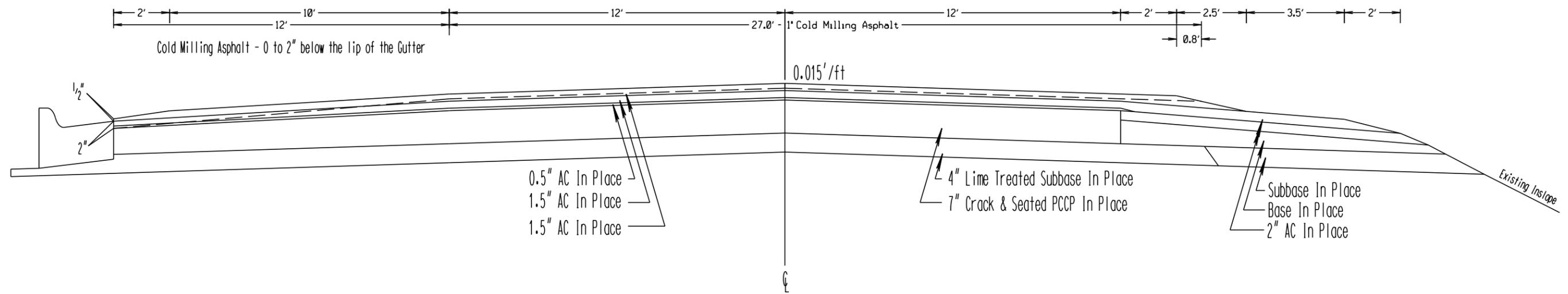
PLOT NAME - 10

FILE - ... \04DY\_TYPICAL SECTION (REVISED).DGN

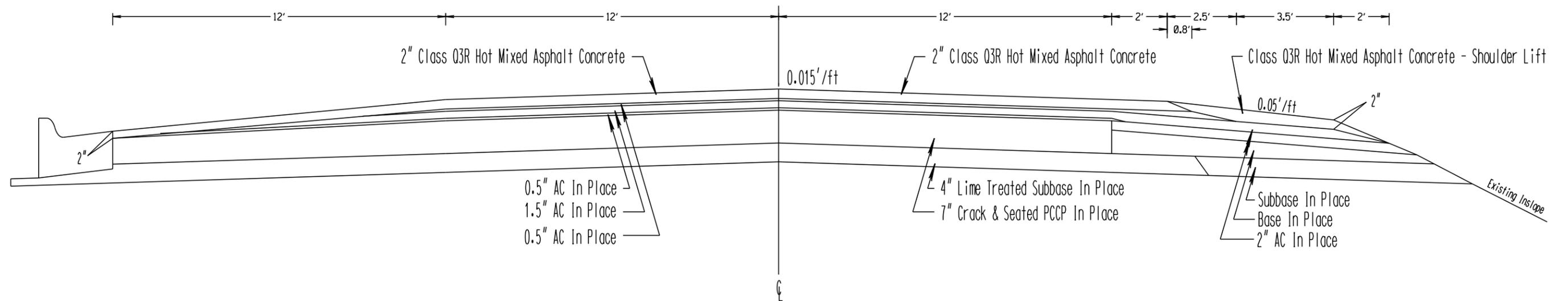
# TYPICAL RESURFACING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	5	52
Plotting Date: 12/12/2014			

Section 2  
 Sta 326+00 to Sta 341+46.9  
 Sta 1+00 (2nd) to Sta 15+07 (2nd)  
 In Place & Cold Milling Section



## Resurfacing Section



PLOT SCALE - 1:3.75

PLOTTED FROM - TRAB12222

PLOT NAME - 11

FILE - ... \04DY\_TYPICAL SECTION (REVISED).DGN

Revised 12/29/14 MW

**RATES OF MATERIALS**

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

**Section 1** Sta. 183+86 to Sta. 326+00  
Sta. 341+46.9 to Sta. 1+00 (2<sup>nd</sup>)(Thru Equation)  
Sta. 15+07 (2<sup>nd</sup>) to Sta 20+40 (2<sup>nd</sup>)

**CLASS Q3R HOT MIXED ASPHALT CONCRETE – 2” Mainline Lift**

Crushed Aggregate..... 1434 Tons  
Salvaged Asphalt Concrete..... 359 Tons  
PG 58-34 Asphalt Binder..... 88 Tons  
**Total without Lime 1881 Tons**  
Hydrated Lime..... 19 Tons  
**Total with Lime 1900 Tons**

The exact proportion of these materials will be determined on construction.

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **3.8** tons applied **31** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**Section 1:** Sta. 183+86 to Sta. 326+00  
Sta. 341+46.9 to Sta. 1+00 (2<sup>nd</sup>)(Thru Equation)  
Sta. 15+07 (2<sup>nd</sup>) to Sta 20+40 (2<sup>nd</sup>)

**Section 2:** Sta. 326+00 to Sta. 341+46.9 (Rt shoulder)  
Sta. 1+00 (2<sup>nd</sup>) to Sta 15+07 (2<sup>nd</sup>) (Rt shoulder)

**CLASS QR3 HOT MIXED ASPHALT CONCRETE – 2” Shoulder Lift (one shoulder only)**

Crushed Aggregate..... 353 Tons  
Salvaged Asphalt Concrete..... 88 Tons  
PG 58-34 Asphalt Binder..... 22 Tons  
**Total without Lime 463 Tons**  
Hydrated Lime..... 5 Tons  
**Total with Lime 468 Tons**

The exact proportion of these materials will be determined on construction.

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **1.1** tons applied **9** feet wide. (one shoulder only)  
(Rate = 0.05 Gal./Sq.Yd.)

**FLUSH SEAL**

**Section 1**

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **5.4** tons applied **44** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

Sand for Flush Seal at the rate of **52** tons applied **22** feet wide. (Rate = 8 Lb./Sq.Yd.)

The Estimate of Quantities is based on the following quantities of material per station.

**Section 2** Sta. 326+00 to Sta. 341+46.9  
Sta. 1+00 (2<sup>nd</sup>) to Sta 15+07 (2<sup>nd</sup>)

**CLASS Q3R HOT MIXED ASPHALT CONCRETE – 2” Mainline Lift**

Crushed Aggregate..... 34.84 Tons  
Salvaged Asphalt Concrete..... 8.71 Tons  
PG 58-34 Asphalt Binder..... 2.15 Tons  
**Total without Lime 45.70 Tons**  
Hydrated Lime..... 0.46 Tons  
**Total with Lime 46.16 Tons**

The exact proportion of these materials will be determined on construction.

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **0.09** tons applied **40** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**FLUSH SEAL**

**Section 2**

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **0.11** tons applied **46** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

Sand for Flush Seal at the rate of **1.47** tons applied **33** feet wide. (Rate = 8 Lb./Sq.Yd.)

**SUMMARY OF ASPHALT CONCRETE**

LOCATIONS:	Class Q3R Hot Mixed Asphalt Concrete with Specified Density Compaction	Class Q3R Hot Mixed Asphalt Concrete without Specified Density Compaction
	<u>Tons</u>	<u>Tons</u>
Section 1	18398.7	14624.0
Section 2	1326.0	299.4
Spot leveling, strengthening, and repair of existing surface	-	2440.7
Table of Additional Quantities	-	1640.0
<b>TOTAL</b>	<b>19724.7</b>	<b>19004.0</b>
<b>Total Class Q3R Hot Mixed Asphalt Concrete:</b>	<b>38728.8</b>	<b>Tons</b>

Revised 12/29/14 MW

## TABLE OF ADDITIONAL QUANTITIES

LOCATIONS:	BASE COURSE <u>Ton</u>	CLASS Q3R		HYDRATED LIME <u>Ton</u>	Salvaged		COLD MILLING ASPHALT CONCRETE <u>(SqYd)</u>	GRINDING PCC PAVEMENT <u>(SqYd)</u>
		HOT MIXED ASPHALT CONCRETE <u>Ton</u>	PG 58-34 ASPHALT BINDER <u>Ton</u>		Asphalt Concrete (RAP) N.A.B.I <u>Ton</u>	Virgin Aggregate N.A.B.I. <u>Ton</u>		
<b>Section 1</b>								
Begin Project at end of Divided Lanes (Cold Mill as detailed elsewhere in these plans)	-	-	-	-	-	-	712	-
East Bound extra lane and taper Sta.183+86 to Sta. 198+55	-	165	7.7	1.7	31.1	124.5	1471	-
West Bound extra lane and taper Sta. 183+86 to Sta. 194+69	-	125	5.8	1.3	23.6	94.3	1100	-
End Project at start of PCC Pavement Sta. 20+40 (2nd) to Sta. 22+40 (2nd) (Grinding as detailed elsewhere in these plans) (base course for shoulders)	75	75	3.5	0.8	14.1	56.6	-	667
<b>411 AVE</b>								
East Bound extra lane and taper Sta.440+68 to Sta. 457+19	-	200	9.3	2.0	37.7	151.0	1732	-
West Bound extra lane and taper Sta. 437+52 to Sta. 455+90	-	225	10.5	2.3	42.5	169.8	1979	-
Transition areas in West bound lane before and after Section 2 (4 tapers)	-	80	3.7	0.8	15.1	60.4	711	-
18 Section Line Roads Paved to Radius	450	430	20.0	4.3	81.1	324.6	-	-
4 Section Line Roads Paved to ROW	-	240	11.2	2.4	45.3	181.1	476	-
3 Section Line Roads Paved Shoulder only	75	-	-	-	-	-	-	-
1 Section Line Road with Concrete approach	-	-	-	-	-	-	-	-
40 Field / Farm / Residential / Commerical Entrances	620	10	0.5	0.1	1.9	7.5	-	-
Bridge ends (Str. # 03-359-180 and Str. # 03-393-180) (Cold Mill as detailed elsewhere in these plans)	-	-	-	-	-	-	2540	-
Asphalt Concrete for shoulders along side PCC Pavement	-	35	1.6	0.4	6.6	26.4	330	-
<b>Section 2</b>								
21 Intersectioning Roads / Residential / Commerical Entrances (with C&G and concrete approaches)	-	-	-	-	-	-	-	-
10 Intersectioning Roads / Residential / Commerical Entrances (paved to shoulder)	340	-	-	-	-	-	-	-
2 Intersection Roads Paved to ROW (Cold Mill as detailed elsewhere in these plans)	20	55	2.6	0.6	10.4	41.5	112	-
<b>TOTALS</b>	<b>1580</b>	<b>1640</b>	<b>76.3</b>	<b>16.5</b>	<b>309.4</b>	<b>1237.8</b>	<b>11163</b>	<b>667</b>

The tonnage shown in the Table of Additional Quantities for Class Q3R Hot Mix Asphalt Concrete is based on an average compacted thickness of 2 inches.

Included in the Estimate of Quantities are 1.4 tons of Asphalt for Tack SS-1H or CSS-1H for the intersecting roads and other areas throughout the project.

Included in the Estimate of Quantities are 0.8 tons of SS-1H or CSS-1H Asphalt for Flush Seal and 8 tons of Sand for Flush Seal for the pavement at the project limits.

Application shall be at the rate shown on the plans or as directed by the Engineer.

The above quantities are included in the Estimate of Quantities.

Revised 12/29/14 MW

**TABLE OF PROJECT STATIONING**

SECTION	STATION	TO	STATION	LENGTH	GROSS SECTION LENGTH	GROSS SECTION LENGTH	NET SECTION LENGTH	NET SECTION LENGTH
				(Ft)	(Ft)	(Miles)	(Ft)	(Miles)
1	183+86.0	to	326+00.0	14214.0	62020.90	11.746	61480.90	11.644
	341+46.9	to	1+00.0 (2nd)	47273.9				
	15+07.0 (2nd)	to	(2nd)	533.0				
2	326+00.0	to	341+46.9	1546.9	2953.90	0.559	2953.90	0.559
	1+00.0 (2nd)	to	(2nd)	1407.0				
TOTAL:					64974.80	12.306	64434.80	12.204

**TABLE OF MATERIAL QUANTITIES**

SECTION	UNCLASSIFIED EXCAVATION, DIG OUTS	BASE COURSE	BASE COURSE, SALVAGED ASPHALT MIX (FOR BACKFILLING DIGOUTS)	COLD MILLING ASPHALT CONCRETE	<-----Spot Leveling----->					<-----Main Line----->					SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL
					CLASS Q3R HOT MIXED ASPHALT CONCRETE	HYDRATED LIME	PG 58-34 ASPHALT BINDER	SALVAGED ASPHALT CONCRETE (RAP) (NABI.)	VIRG. AGGR. (NABI.)	CLASS Q3R HOT MIXED ASPHALT CONCRETE	PG 58-34 ASPHALT BINDER	HYDRATED LIME	SALVAGED ASPHALT CONCRETE (RAP) (NABI.)	VIRG. AGGR. (NABI.)			
	CuYd	Ton	Ton	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	
1	582	-	1164.4	204936	2328.8	23.3	109.5	439.2	1756.9	33022.7	1537.0	337.7	6229.6	24918.4	69.9	62.9	605.5
2	28	-	55.9	12800	111.9	1.1	5.3	21.1	84.4	1625.3	75.8	16.4	306.5	1226.6	3.2	3.1	43.1
<b>Sub totals</b>	610	-	1220.4	217737	2440.7	24.4	114.7	460.3	1841.3	34648.0	1612.8	354.1	6536.1	26145.0	73.1	66.0	648.6
<b>Additional Quantities</b>	-	1580.0	-	11163	-	-	-	-	-	1640.0	76.3	16.5	309.4	1237.8	7.4	0.8	8.0
<b>Totals</b>	610	1580.0	1220.4	228900	2440.7	24.4	114.7	460.3	1841.3	36288.0	1689.1	370.5	6845.6	27382.8	80.5	66.8	656.6

**TABLE OF GUARDRAIL REMOVAL AND INSTALLATION**

Location		Remove Beam Guardrail (Ft)	Remove 3 Cable Guardrail Anchor Assembly (Each)	Remove 3 Cable Guardrail Anchor Assem. For Reset (Each)	3 Cable Guardrail (FT)	Reset 3 Cable Guardrail (FT)	3 Cable Guardrail Slip Base Anchor Assembly (Each)	3 Cable Guardrail Anchor W/new Anchor & Salv. Hard. (Each)	3 Cable Guardrail Intermediate Post (Each)	3 Cable Guardrail J Hook Bolt (Each)	Steel Turnbuckle Cable End Assembly (Each)	W Beam to 3 Cable Transition Bracket (Each)	Straight Class A W Beam Rail (Ft)	End Terminal Hinged Breakaway Post (Each)	Comments
<b>STR. NO. 03-359-180 MRM 357.51</b>	Begin Bridge Lt (NW)	12.5	-	-	-	-	-	-	-	-	-	-	12.5	1	The 12.5' of Beam Rail to be replaced is the last 12.5 of the Fleet 350 Flared End Terminal. Replace Steel Post #2 of Flared End Terminal. All other posts will remain undisturbed.
	Begin Bridge Rt (SW)	-	1	-	45	38	1	-	4	-	-	-	-	-	
	End Bridge Lt (NE)	-	1	-	45	38	1	-	4	-	-	-	-	-	
	End Bridge Rt (SE)	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>STR. NO. 03-393-180 MRM 360.80</b>	Begin Bridge Lt (NW)	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Begin Bridge Rt (SW)	-	1	1	13	38	1	1	2	1	-	1	-	-	Anchor Assembly to be reset is one nearest to the bridge.
	End Bridge Lt (NE)	-	1	1	13	38	1	1	2	-	3	-	-	-	Anchor Assembly to be reset and worked on is the one nearest to the bridge. Rods on current assembly are bent.
	End Bridge Rt (SE)	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>TOTAL</b>		<b>12.5</b>	<b>4</b>	<b>2</b>	<b>116</b>	<b>152</b>	<b>4</b>	<b>2</b>	<b>12</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>12.5</b>	<b>1</b>	
The above quantities are included in the Estimate of Quantities.															

US 14, NH 0014(196)351, PCN 04DY Permanent Sign Installation Table

Revised 12/29/14 MW

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum Sign, Nonremovable Copy High Intensity (SqFt)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SqFt)	2.0"x2.0" Perforated Tube Post 12 Ga. (Ft)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	4" Tubular White Delineator with 1.12 Lb/Ft Post (Each)	Remove Traffic Sign (Each)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
351.667	Lt.	Divided Highway Begin Symbol	W6-1	36	36		9.0	10		1			1				E	4" X 6" Wood	Replace New Sign on New Post
351.693	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
351.702	Rt.	Stop	R1-1	30	30		5.2	9		1			1				S	4" X 6" Wood	Replace New Sign on New Post
351.728	Rt.	Lane Reduction (Right)	W4-2R	36	36		9.0	10		1			1				W	4" X 6" Wood	Replace New Sign on New Post
351.808	Rt.	East	M3-2	24	12	2.0		10		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		US 14	M1-4	24	24	4.0						W		Replace New Sign on New Post					
351.878	Rt.	No Driving On Shoulder											1				W	U-Channel	Remove
352.037	Rt.	No Passing Pennant	W14-3	48X48X36			5.6	11		1			1				E	4" X 6" Wood	Replace New Sign on New Post
352.817	Rt.	Adopt a Highway	ADO-5	36	36			11		1							W	4" X 6" Wood	Reset on New Post
		Advance America	ADO-1	36	12								1	1	W	Reset on New Post			
		Litter Crew Ahead	ADO-6	30	30										W	Reset on New Post			
353.562	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
353.571	Rt.	Stop	R1-1	30	30		5.2	9		1			1				S	4" X 6" Wood	Replace New Sign on New Post
354.285	Lt.	Street Sign																	Do Not Disturb
354.003	Lt.	No Driving On Shoulder											1				E	U-Channel	Remove
354.019	Rt.	Dynamic Engine Breaking Prohibited		30	30	6.3		10		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		By City Ordinance		30	12	2.5						W		Replace New Sign on New Post					
354.077	Lt.	West	M3-4	24	12	2.0		10		1			1				E	4" X 6" Wood	Replace New Sign on New Post
		US 14	M1-4	24	24	4.0						E		Replace New Sign on New Post					
354.109	Rt.	Speed Reduction Symbol 45mph	W3-5	48	48		16.0	22		2			1				W	4" X 6" Wood	Replace New Sign on New Post
354.168	Rt.	Cavour Town Board	D1-1D					10		1					1	1	W	4" X 6" Wood	Reset on New Post
354.199	Rt.	Medal of Honor											1				W	4" X 6" Wood	Remove
354.203	Lt.	No Passing Pennant	W14-3	48X48X36			5.6	11		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		Huron 7	D2-1	60	24	10.0		20		2				E	Replace New Sign on New Post At MRM 354.208				
354.239	Lt.	Speed Limit 65mph	R2-1	24	30	5.0		9		1			1				E	4" X 6" Wood	Replace New Sign on New Post
354.241	Rt.	Speed Limit 45mph	R2-1	24	30	5.0		9		1			1				W	4" X 6" Wood	Replace New Sign on New Post
354.270	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
354.290	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post

US 14, NH 0014(196)351, PCN 04DY Permanent Sign Installation Table

Revised 12/29/14 MW

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum Sign, Nonremovable Copy High Intensity (SqFt)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SqFt)	2.0"x2.0" Perforated Tube Post 12 Ga. (Ft)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	4" Tubular White Delineator with 1.12 Lb/Ft Post (Each)	Remove Traffic Sign (Each)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
354.331	Lt.	Speed Limit 45mph	R2-1	24	30	5.0		12		1			1				E	U-Channel	Replace New Sign on New Post
		No Parking Symbol	R8-3	24	24	4.0								E	Replace New Sign on New Post				
354.358	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
354.367	Lt.	Street Sign																	Do Not Disturb
354.407	Rt.	Speed Limit 45mph	R2-1	24	30	5.0		9		1			1				W	4" X 6" Wood	Replace New Sign on New Post
354.428	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post
354.440	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
354.449	Lt.	Street Sign																	Do Not Disturb
354.455	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post
354.522	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
354.532	Lt.	Street Sign																	Do Not Disturb
354.552	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post
354.558	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
354.569	Lt.	Street Sign																	Do Not Disturb
354.569	Rt.	Stop	R1-1	36	36		7.5	10		1			1				S	4" X 6" Wood	Replace New Sign on New Post
354.578	Lt.	Speed Limit 45mph	R2-1	24	30	5.0		9		1			1				E	U-Channel	Replace New Sign on New Post
354.586	Rt.	Speed Limit 65mph	R2-1	24	30	5.0		9		1			1				W	4" X 6" Wood	Replace New Sign On New Post At MRM 354.586
		No Passing Pennant	W14-3	48X48X36			5.6	11		1				E	Replace New Sign On New Post At MRM 354.588				
354.613	Lt.	Medal Of Honor											1				E	4" X 6" Wood	Remove
354.651	Rt.	Iroquois 9	D2-1	72	24	12.0		20		2			1				W	4" X 6" Wood	Replace New Sign on New Post
354.651	Lt.	Cavour Town Board															E	Telespar	Do Not Disturb
354.706	Rt.	East	M3-2	24	12	2.0		10		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		US 14	M1-4	24	24	4.0					W			Replace New Sign on New Post					
354.718	Lt.	Speed Reduction Symbol 45mph	W3-5	48	48		16.0	22		2			1				E	4" X 6" Wood	Replace New Sign on New Post
354.806	Rt.	Adopt a Highway	ADO-5	36	36	9.0		11		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		Richland 4-H Club	ADO-1	36	12	3.0					W			Replace New Sign on New Post					
		Litter Crew Ahead	ADO-6	30	30	6.3					W			Replace New Sign on New Post					

US 14, NH 0014(196)351, PCN 04DY Permanent Sign Installation Table

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum Sign, Nonremovable Copy High Intensity (SqFt)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SqFt)	2.0"x2.0" Perforated Tube Post 12 Ga. (Ft)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	4" Tubular White Delineator with 1.12 Lb/Ft Post (Each)	Remove Traffic Sign (Each)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks	
354.806	Lt.	Adopt a Highway	ADO-5	36	36			11		1					1	1	E	4" X 6" Wood	Reset on New Post	
		Advance America	ADO-1	36	12												E		Reset on New Post	
		Litter Crew Ahead	ADO-6	30	30												E		Reset on New Post	
354.875	Rt.	No Driving On Shoulder											1				W	4" X 6" Wood	Remove	
355.594	Rt.	Stop	R1-1	30	30		5.2	9		1			1					S	4" X 6" Wood	Replace New Sign on New Post
356.347	Lt.	No Passing Pennant	W14-3	48X48X36			5.6	11		1			1					W	4" X 6" Wood	Replace New Sign on New Post
		No Driving On Shoulder																E		Remove
356.461	Rt.	<--- Yale 4	D1-1AL	72	24	12.0		20		2			1					W	4" X 6" Wood	Replace New Sign on New Post
356.542	Lt.	West	M3-4	24	12	2.0		10		1			1					E	4" X 6" Wood	Replace New Sign on New Post
		US 14	M1-4	24	24	4.0	E											Replace New Sign on New Post		
356.575	Lt.	Yield	R1-2	36X36X36			3.9	10		1			1					N	4" X 6" Wood	Replace New Sign on New Post
		Do Not Enter	R5-1	30	30		6.3	10		1								S		Replace New Sign on New Post at MRM 356.574
356.582	Lt.	Stop	R1-1															N	Telespar	Do Not Disturb
356.582	Lt.	Delineators on Island Surrounding Above Stop Sign										7								Remove Delineators in Island and Replace
356.589	Rt.	Stop	R1-1	30	30		5.2	9		1			1					S	4" X 6" Wood	Replace New Sign on New Post
356.739	Lt.	Yale 4 --->	D1-1AR	72	24	12.0		20		2			1					E	4" X 6" Wood	Replace New Sign on New Post
356.785	Lt.	Adopt a Highway	ADO-5	36	36	9.0		11		1			1					E	4" X 6" Wood	Replace New Sign on New Post
		Richland 4-H Club	ADO-1	36	12	3.0	E											Replace New Sign on New Post		
		Litter Crew Ahead	ADO-6	30	30	6.3	E											Replace New Sign on New Post		
356.803	Rt.	No Passing Pennant	W14-3	48X48X36			5.6	11		1			1					E	U-Channel	Replace New Sign on New Post
357.438	Rt.	Pearl Creek						8		1					1	1		W	U-Channel	Reset on New Post
357.468	Lt.	Pearl Creek						8		1					1	1		E	4" X 6" Wood	Reset on New Post
357.578	Rt.	Railroad Advance Warning	W10-1	36	36		9.0	10		1			1					N	4" X 6" Wood	Replace New Sign on New Post
357.590	Rt.	Stop	R1-1	30	30		5.2	9		1			1					S	4" X 6" Wood	Replace New Sign on New Post
358.545	Lt.	Stop	R1-1	30	30		5.2	9		1			1					N	4" X 6" Wood	Replace New Sign on New Post
358.554	Rt.	Stop	R1-1	30	30		5.2	9		1			1					S	4" X 6" Wood	Replace New Sign on New Post
359.194	Rt.	No Driving On Shoulder											1					W	U-Channel	Remove
359.194	Lt.	No Driving On Shoulder											1					E	U-Channel	Remove
359.538	Lt.	Stop	R1-1	30	30		5.2	9		1			1					N	4" X 6" Wood	Replace New Sign on New Post
359.547	Rt.	Stop	R1-1	30	30		5.2	9		1			1					S	4" X 6" Wood	Replace New Sign on New Post

US 14, NH 0014(196)351, PCN 04DY Permanent Sign Installation Table

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum Sign, Nonremovable Copy High Intensity (SqFt)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SqFt)	2.0"x2.0" Perforated Tube Post 12 Ga. (Ft)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	4" Tubular White Delineator with 1.12 Lb/Ft Post (Each)	Remove Traffic Sign (Each)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
360.532	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
360.541	Rt.	Stop	R1-1	30	30		5.2	9		1			1				S	4" X 6" Wood	Replace New Sign on New Post
361.529	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	4" X 6" Wood	Replace New Sign on New Post
361.537	Rt.	Stop	R1-1	30	30		5.2	9		1			1				S	U-Channel	Replace New Sign on New Post
361.555	Rt.	Adopt a Highway	ADO-5	36	36	9.0		11		1			1				W	4" X 6" Wood	Replace New Sign on New Post
		Blue/Keating Families	ADO-1	36	24	6.0					W			Replace New Sign on New Post					
		Litter Crew Ahead	ADO-6	30	30	6.3					W			Replace New Sign on New Post					
362.524	Lt.	Stop	R1-1	30	30		5.2	9		1			1				N	U-Channel	Replace New Sign on New Post
362.531	Rt.	Stop	R1-1	30	30		5.2	9		1			1				S	U-Channel	Replace New Sign on New Post
363.151	Lt.	No Driving On Shoulder											1				E	4" X 6" Wood	Remove
363.331	Rt.	Speed Reduction Symbol 45mph	W3-5														W	Telespar	Do Not Disturb
363.386	Rt.	Iroquois Pop. 278															W	Telespar	Do Not Disturb
		125th														W	Do Not Disturb		
363.386	Lt.	Cavour 9 / Huron17															E	Telespar	Do Not Disturb
363.424	Lt.	Adopt a Highway	ADO-5	36	36	9.0								1			E	Telespar	Replace New Sign on Existing Post And Relocate To MRM 363.443
		Blue/Keating Families	ADO-1	36	24	6.0									E	Replace New Sign on Existing Post And Relocate To MRM 363.443			
		Litter Crew Ahead	ADO-6	30	30	6.3									E	Replace New Sign on Existing Post And Relocate To MRM 363.443			
363.424	Lt.	East	M3-2	24	12	2.0							1				E	Telespar	Replace New Sign on Existing Post
		US 14	M1-4	24	24	4.0									E	Replace New Sign on Existing Post			
		No Passing Pennant	W14-3	48X48X36			5.6	11		1					W	Replace New Sign on New Post At MRM 363.422			
363.461	Rt.	Speed Limit 45mph	R2-1														W	Telespar	Do Not Disturb
363.464	Lt.	Speed Limit 65mph	R2-1														E	Telespar	Do Not Disturb
363.498	Lt.	Beadle County	I-1	36	24	6.0							1				E	Telespar	Replace New Sign on Existing Post
363.514	Lt.	Stop	R1-1														N	Telespar	Do Not Disturb
363.523	Rt.	Stop	R1-1														S	Telespar	Do Not Disturb
363.555	Lt.	No Parking Symbol	R8-3	24	24	4.0							1				E	Telespar	Replace New Sign on Existing Post
363.559	Rt.	Kingsbury County	I-1	48	24	8.0							1				W	Telespar	Replace New Sign on Existing Post
363.617	Rt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				W	U-Channel	Replace New Sign on New Post
363.629	Lt.	Stop	R1-1														N	Telespar	Do Not Disturb
363.664	Rt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				W	U-Channel	Replace New Sign on New Post

**US 14, NH 0014(196)351, PCN 04DY Permanent Sign Installation Table**

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum Sign, Nonremovable Copy High Intensity (SqFt)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SqFt)	2.0"x2.0" Perforated Tube Post 12 Ga. (Ft)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	4" Tubular White Delineator with 1.12 Lb/Ft Post (Each)	Remove Traffic Sign (Each)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
363.687	Rt.	City Park --->		36	36	9.0							1				W	Telespar	Replace New Sign on Existing Post
363.707	Rt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				W	U-Channel	Replace New Sign on New Post
363.722	Lt.	Stop	R1-1														N	Telespar	Do Not Disturb
363.730	Rt.	Stop	R1-1														S	Telespar	Do Not Disturb
363.736	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post
363.766	Lt.	<--- City Park		36	36	9.0							1				E	Telespar	Replace New Sign on Existing Post
363.779	Lt.	No Parking Symbol	R8-3	24	24	4.0		9		1			1				E	U-Channel	Replace New Sign on New Post
363.785	Lt.	Stop	R1-1														N	Telespar	Do Not Disturb
363.799	Lt.	Speed Limit 45mph	R2-1														E	Telespar	Do Not Disturb
363.802	Rt.	Speed Limit 65mph	R2-1														W	Telespar	Do Not Disturb
		No Passing Pennant	W14-3					11		1				1	1	E	Reset on New Post at MRM 363.804		
363.864	Lt.	Iroquois Pop. 278						26		2					1	1	E	4" X 6" Wood	Reset on New Post
		125th															E		Reset on New Post
363.866	Rt.	DeSmet 14 / Brookings 52	D2-2	96	36	24.0			26		2		1				W	4" X 6" Wood	Replace New Sign on New Post
363.954	Lt.	Speed Reduction Symbol 45mph	W3-5														E	Telespar	Do Not Disturb
						TOTAL	293.8	224.7	754.0	26.0	77.0	2.0	7.0	74.0	1.0	7.0			

All Costs Associated With Delineator Removal at MRM 356.582 Shall be Incidental to the Contract Unit Price per Each 4" Tubular White Delineator with 1.12 Lb/Ft Post.

## Sign Summary US 14

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	Quantity	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super or Very High Intensity (SQFT)	Text / Background
ADO-5	Adopt a Highway	36	36	9.0	4	36.0		Blue Legend, White Background, Red Border
ADO-1	Blue/Keating Families	36	24	6.0	2	12.0		Blue Legend, White Background, Red Border
ADO-1	Richland 4-H Club	36	12	3.0	2	6.0		Blue Legend, White Background, Red Border
ADO-6	Liter Crew Ahead	30	30	6.3	4	25.0		Black on Orange
D1-1 A	Yale --->/<---	72	24	12.0	2	24.0		White on Green
D2-1	Huron 7	60	24	10.0	1	10.0		White on Green
D2-2	DeSmet 14 Brookings 52	96	36	24.0	1	24.0		White on Green
D2-1	Iroquois 9	72	24	12.0	1	12.0		White on Green
I-1	Beadle County	36	24	6.0	1	6.0		White on Green
I-1	Kingsbury County	48	24	8.0	1	8.0		White on Green
	City Park --->/<---	36	36	9.0	2	18.0		White on Blue
	Dynamic Engine Breaking Prohibited	30	30	6.3	1	6.3		Black on White
	By City Ordinance	30	12	2.5	1	2.5		Black on White
M1-4	US 14	24	24	4.0	5	20.0		Black on White
M3-2	East	24	12	2.0	3	6.0		Black on White
M3-4	West	24	12	2.0	2	4.0		Black on White
R1-1	Stop	30	30	5.2	22		114.4	White on Red
R1-1	Stop	36	36	7.5	1		7.5	White on Red
R1-2	Yield	36X36X36		3.9	1		3.9	White on Red
R2-1	Speed Limit 65mph	24	30	5.0	2	10.0		Black on White
R2-1	Speed Limit 45mph	24	30	5.0	4	20.0		Black on White
R5-1	Do Not Enter	30	30	6.3	1		6.3	White on Red
R8-3	No Parking Symbol	24	24	4.0	11	44.0		Black and Red on White
W10-1	Railroad Advance Warning	36	36	9.0	1		9.0	Black on Fluorescent Yellow
W14-3	No Passing Pennant	48X48X36		5.6	6		33.6	Black on Fluorescent Yellow
W3-5	Speed Reduction Symbol 45mph	48	48	16.0	2		32.0	Black on White and Fluorescent Yellow
W4-2R	Lane Reduction (Right)	36	36	9.0	1		9.0	Black on Fluorescent Yellow
W6-1	Divided Highway Symbol	36	36	9.0	1		9.0	Black on Fluorescent Yellow
<b>Totals</b>						<b>293.8</b>	<b>224.7</b>	

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	16	52

**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 quantities may be varied to achieve the required elevation.

**SCOPE OF WORK**

Work on this project involves Cold Millings of Asphalt Concrete, placement of 2" Asphalt Concrete pavement, rumble strips, guardrail repair, pavement markings and permanent signing.

**SEQUENCE OF OPERATIONS**

The following sequence of operations shall be adhered to. Any changes must be approved in writing by the Area Engineer prior to changes being made.

1. Install Fixed Location Signing Prior to Start of Work.
2. Complete Cold Milling Operations.
3. Complete Unclassified Excavation for Digouts and Backfill Operations.
4. Complete All Asphalt Concrete Strengthening and Leveling.
5. Complete Gravel Placement Operations on Approaches & Intersecting Roads.
6. Knockdown Gravel to Allow Access on Approaches & Intersecting Roads.
7. Complete Asphalt Concrete Mainline, Shoulder, & Auxiliary Asphalt Paving.
8. Shape Approach Gravel.
9. Complete Guardrail Repairs.
10. Grind Rumble Strips.
11. Place Flush Seal if Required.
12. Install Permanent Pavement Markings and Permanent Signing.
13. Refurbish Mailboxes.
14. Remove Project Signing.
15. Mow Project Inslopes and Complete any Remaining Project Cleanup.

**GENERAL NOTES**

The Contractor shall be required to mow the inslopes with a rotary mower to a height of 6 inches for a distance of 14 feet from the edge of the roadway (or shoulder) for the length of the project. This work will be completed to the satisfaction of the Engineer after all construction activities are completed. All costs associated with this work shall be incidental to the various contract items.

**PROJECT BROOMING**

All material shall be broomed off of bridges and curb & gutter areas adjacent to the bridges. No material shall be broomed under the guardrail, including the 3 cable guardrail or into the drop inlets. This material from the curb & gutter areas of the bridges, the guardrail areas of the bridges and the drop inlets shall be disposed of in a manner satisfactory to the Engineer.

No material shall be broomed into the ditches or on the boulevards in residential and commercial areas where the adjacent landowner conducts the mowing of the right-of-way. This material shall be disposed of in a manner satisfactory to the Engineer.

Any loose material at the following locations in the table below shall be removed by the Contractor by means of a pickup broom having integral mounted self-contained storage using water to control dust as directed by the Engineer. At no time before, during, or after any work on the project will a broom without working integral mounted self-contained storage using water (in working condition) be used in the areas listed or in any curb and gutter sections. Removed material shall be disposed of at sites provided by the Contractor and approved by the Engineer.

**Description**

US 14 City Limits of Cavour

US 14 City Limits of Iroquois

This list may not be complete. Additional areas may need attention as directed by the Engineer.

Brooming will be incidental to the contract for COLD MILLING ASPHALT CONCRETE, CLASS Q3R HOT MIXED ASPHALT CONCRETE, and GRIND 12" RUMBLE STRIP OR STRIPE IN ASPHALT CONCRETE.

**TRAFFIC CONTROL**

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost of this work shall be incidental to the various contract items unless otherwise specified in the plans. 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 line 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.

Work activities during non-daylight hours, including coring operations are subject to prior approval.

Work zones for the various construction operations that utilize a pilot car shall not exceed 3 miles in length.

Traffic approaching the project from intersecting roadways, streets, and approaches must be adequately accommodated. Major intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

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.

An Advisory Speed Plate displaying 30 M.P.H shall be attached to all "Bump" signs used on the project. These speed plates are included in the table of Itemized List for Traffic Control in these plans.

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.

Traffic Control units, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

**STORAGE UNIT**

The Contractor shall provide a storage unit such as a portable storage container or a semi-trailer meeting the minimum size requirements from the table below:

Project Total Asphalt Concrete Tonnage	Minimum Internal Size (Cu Ft)	Minimum External Size (L x W x H)
Less than 50,000 ton	1,166	20' x 8' x 8.6' std
More than 50,000 ton	2,360	40' x 8' x 8.6' std
All Gyratory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

The storage unit is intended for use only by the Engineer for the duration of the project. The QC lab personnel or the Contractor will not be allowed to use the storage container while it is on the project, without permission of the Engineer.

The storage unit shall be on site and operational prior to asphalt concrete production. Upon completion of asphalt concrete production, the Engineer will notify the Contractor when the storage unit can be removed from the project. The storage unit use will not exceed 30 calendar days from the completion of asphalt concrete production. The storage unit will remain the property of the Contractor.

The storage unit shall be weather proof and shall be set in a level position. The storage unit shall be able to be locked with a padlock.

The storage unit shall be placed adjacent to the QA lab, as approved by the Engineer.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	17	52

Revised 12/29/14 MW

**STORAGE UNIT (CONTINUED)**

The following shall apply when the storage unit provided on the project is a portable storage container:

1. The portable storage container shall be constructed of steel.
2. The portable storage container shall be set such that it is raised above the surrounding ground level to keep water from ponding under or around the storage container.

The following shall apply when the storage unit provided on the project is a semi-trailer:

1. A set of steps and hand railings shall be provided at the exterior door.
2. If the floor of the semi-trailer is 18 inches or more above the ground, a landing shall be constructed at the exterior door. The minimum dimensions for the landing shall be 4 feet by 5 feet. The top of the landing shall be level with the threshold or opening of the doorway.
3. The semi-trailer may be connected to the QA lab by a stable elevated walkway. The walkway shall be a minimum of 48 inches wide and contain handrails installed at 32 inches above the deck of the walkway. The walkway shall be constructed such that it is stable and the deck does not deform during use and allows for proper door operation. Walkway construction shall be approved by the Engineer.

All cost for furnishing, maintaining, and removing the storage unit including labor, equipment, and materials including any necessary walkways, landings, stairways, and handrails shall be included in the contract unit price per each for "STORAGE UNIT".

**TYPE III FIELD LABORATORY**

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

**SHOULDER PREPARATION**

Vegetation and accumulated material adjacent to the existing surface edge shall be removed to the satisfaction of the Engineer prior to placement of mainline surfacing. Any remaining windrow of accumulated material shall be re-spread evenly on the inslope adjacent to the asphalt shoulder to the satisfaction of the Engineer prior to the application of the flush seal.

This shoulder work shall be incidental to other contract items. Separate measurement and payment will not be made.

Prior to construction, State Maintenance Forces will spray the shoulders to kill existing vegetation. It will be the Contractor's responsibility to notify the State at least 30 days in advance of when he plans to begin work on the surface of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

**INTERSECTING ROADS AND ENTRANCES**

Intersecting roads and entrances shall be satisfactorily cleared of vegetation, shaped, and compacted prior to placement of mainline surfacing. This work will be considered incidental to other contract items. Separate measurement and payment will not be made.

**EXCAVATION OF UNSTABLE MATERIAL**

Included in the Estimate of Quantities are **50** Cubic Yards of Unclassified Excavation, Dugouts per mile for the necessary removal of unstable material.

Backfill shall be Base Course, Salvaged Asphalt Mix paid for at the contract unit price per ton.

The digout shall be extended to the shoulder and the granular material backfill shall daylight to the inslope to allow water to escape the subgrade.

A copy of the surfacing/subgrade investigation for this project is available from the Huron Area and the Aberdeen Region offices.

**BASE COURSE, SALVAGED ASPHALT MIX**

Base Course, Salvaged Asphalt Mix shall be obtained from the cold millings produced on this project and may be used without further testing beyond the requirements in Section 332.2.

All other requirements of the specifications for Base Course shall apply.

Included in the Estimate of Quantities are **100** tons of Base Course, Salvaged Asphalt Mix per mile for backfill of Unclassified Excavation, Dugouts. Density shall be to the satisfaction of the Engineer.

**WATER FOR COMPACTION OF GRANULAR MATERIALS**

Cost of water for compaction of the granular material shall be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

**COLD MILLING ASPHALT CONCRETE**

The placement of asphalt concrete shall begin within **5** working days after completion of cold milling of mainline asphalt concrete.

Cold Milling Asphalt shall be completed according to the typical sections. In areas where maintenance patches have raised and/or widened the road, additional asphalt concrete shall be milled to provide a uniform typical section from centerline to the edge of the finished shoulder. These areas also include farm, residential, field entrances and intersecting roads where additional milling may be required to create room for the new asphalt to be placed. Milling shall be daylighted to the outside edge of the roadway. There are approximately 36,120 feet of maintenance patches that will require additional depth of milling (up to 2" or more) to create a more uniform section. Any additional costs associated with this additional cold milling shall be incidental to the contract unit price per square yard for COLD MILLING ASPHALT CONCRETE.

The depth of milling may need to be adjusted due to rutting, roadway irregularities, or transitions onto or off maintenance patches. Any additional cost associated with this additional cold milling shall be incidental to the contract unit price per square yard for COLD MILLING ASPHALT CONCRETE. No adjustments in quantity or price will be made.

Cold Milling of Asphalt shall consist of removing the in place asphalt to an average depth of **1"**. This material is to be removed at a constant slope of **0.015 FT/FT**. from the in place shoulder elevation to centerline of the roadway.

Intermediate stockpiling of the salvaged asphalt concrete material shall not be allowed. The salvaged asphalt concrete material shall be hauled either directly to the plant site or to the Huron DOT East Yard Stockpile site. The Contractor will be responsible for excessive material lost at plant site stockpile location due to bad stockpile management practices as deemed by the Engineer and will be required to compensate the State by providing similar material.

Cold Milling Asphalt Concrete for smaller areas as listed in the tables of additional quantities for driveways, entrances, and other areas deemed necessary by the Engineer shall be accomplished with a cold planer attachment for a skid steer or similar equipment to prevent damage to the surfacing. Cold Milling Asphalt Concrete in these areas shall be paid at the contract unit price per square yard for COLD MILLING ASPHALT CONCRETE and no additional payment shall be made.

The bid item HAUL AND STOCKPILE GRANULAR MATERIAL shall include all costs to haul the milled material to the RAP stockpile site, haul material to the Huron DOT East Yard and Stockpile, and weigh the material.

The Los Angeles Abrasion Loss value on the aggregate used for the in place asphalt concrete was 15 percent. These values were obtained from testing during construction of the in place asphalt concrete.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	18	52

Revised 12/29/14 MW

**COLD MILLING ASPHALT CONCRETE (CONTINUED)**

Cold milling asphalt is estimated to produce **12,150** tons of salvaged asphalt concrete material. An estimated **7,306** tons of salvaged asphalt concrete will be used on this project in the Class Q3R Hot Mixed Asphalt Concrete mixture. An estimated **1,220** tons of asphalt salvaged asphalt concrete will be used as Base Course, Salvaged Asphalt Mix. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q3R Hot Mixed Asphalt Concrete. The remaining salvaged asphalt concrete will be hauled to the Huron DOT East Yard (SEC 5 T110N R61W) and will be paid per the contract unit price per ton for HAUL AND STOCKPILE GRANULAR MATERIAL.

The Contractor has ultimate responsibility for ensuring enough salvaged asphalt concrete salvage material is available for the Class Q3R Hot Mixed Asphalt Concrete.

Cold Milling Asphalt Concrete will be paid for at the contract unit price per square yard, inclusive of all costs for cold milling existing asphalt concrete (including areas that may require additional effort). Plans quantity will be the basis of payment for COLD MILLING ASPHALT CONCRETE and no further measurement will be made.

The State is only supplying the stockpile location and all costs associated with maintaining the stockpile site (due to rain or other conditions) to allow equipment and trucks to move freely shall be the responsibility of the Contractor. No major difficulties are anticipated but it is the responsibility of the Contractor to inspect the stockpile site prior to letting. Contact Brad Letcher with Huron Area DOT for more information 1-605-353-7140.

Prior to incorporation into the stockpile, cold milled asphalt material shall be processed over a 1 1/2" screen. Material screened off shall be crushed and reincorporated.

The salvaged material shall be stockpiled with a stacking conveyor. Equipment will not be allowed on the stockpile.

The Contractor shall restore the stockpile site to its previous condition to the satisfaction of the Engineer upon completion of stockpiling. Costs associated with restoring the stockpile site shall be incidental to the contract unit price for HAUL AND STOCKPILE GRANULAR MATERIAL.

**PCC PAVEMENT GRINDING**

The aggregate in the PCC Pavement being ground is Quartzite.

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue shall not be permitted to flow across lanes being used by public traffic or into gutters or drainage facilities. Residue shall be disposed of in a manner that will prevent residue, whether in solid or slurry form, from entering any waterway in a concentrated state.

Residue may continuously flow on adjacent vegetated roadway slopes or ditches within the right-of-way. A flexible drag hose shall be attached to the discharge end of the slurry pipe to minimize splashing of slurry placed on roadway slopes or ditches.

If the Engineer determines that the slurry may enter a waterway, drainage facility, or curb & gutter section, the slurry shall be placed in storage tanks and deposited in settling basins, spread over flat vegetated areas, or filtered by other means approved by the Engineer at no additional cost.

**ASPHALT FOR TACK**

Included in the Estimate of Quantities are **6** tons of SS-1h or CSS-1h Asphalt for Tack for surface repair, strengthening, and spot leveling areas throughout the project. (Rate = 0.05 Gal./ Sq.Yd.).

**CLASS Q3R HOT MIXED ASPHALT CONCRETE**

Asphalt concrete aggregates shall consist of salvaged asphalt concrete mix material (RAP) and virgin aggregate.

Virgin mineral aggregate shall be furnished by the Contractor.

Virgin mineral aggregate for Class Q3R Hot Mixed Asphalt Concrete shall conform to the requirements of the Special Provision for Gyrotory Controlled Quality Control/Quality Assurance Hot Mixed Asphalt Concrete Pavement for a Class Q3 except for the following:

Mix Design Criteria:

Gyrotory Compactive Effort:

	N <sub>initial</sub>	N <sub>design</sub>	N <sub>maximum</sub>
Class Q3R	6	50	75

Salvaged asphalt concrete material shall be obtained from the material produced by cold milling on this project and may be used without further testing. The salvaged asphalt concrete mix material shall be crushed so that the maximum particle size in the cold feed will not exceed 1-1/2 inches.

Screening or scalping of the RAP stockpile(s) will not be allowed.

The Class Q3R Asphalt Concrete shall include 20 percent salvaged asphalt concrete (RAP) in the mixture. Job mix formula tolerances for the RAP shall be ± 5 % from the target value.

All remaining requirements of the Special Provision for Class Q3 Hot Mixed Asphalt Concrete shall apply.

The asphalt concrete on the shoulders will not be compacted to a specified density. The shoulders shall be compacted using the same rolling pattern used on the mainline asphalt concrete or as directed by the Engineer.

**ADDITIONAL QUANTITIES:**

Included in the Estimate of Quantities are **200** tons of Class **Q3R** Hot Mixed Asphalt Concrete and, **2.0** tons of Hydrated Lime of Asphalt concrete and **9.4** tons of PG **58-34** Asphalt Binder, per mile for spot leveling, strengthening, and repair of the existing surface. This material shall be placed where and as directed by the Engineer.

**FLEXIBLE PAVEMENT SMOOTHNESS SPECIAL PROVISION**

The following informational smoothness data for this project was collected on December 5<sup>th</sup>, 2014:

Lane Location:	Westbound Lane	Eastbound Lane
Max. 1/10 mile IRI (in/mi):	192	172
Min. 1/10 mile IRI (in/mi):	77	79
Average IRI (in/mi):	116	115
Standard Deviation (in/mi):	21	20

For more information, please contact: Shea Lemmel  
Pavement Engineer  
Phone: (605)773-2730  
Email: [Shea.Lemmel@state.sd.us](mailto:Shea.Lemmel@state.sd.us)

**FLUSH SEAL**

Application of Flush Seal shall be completed within 10 working days following completion of the asphalt concrete surfacing.

For each working day that the Flush Seal remains uncompleted after the 10 working day limitation, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

The liquidated damages shall apply only up to the Contract Completion Date, as extended. After the Contract Completion Date, liquidated damages will be assessed in accordance with the schedule set forth in section 8.7 of the specifications.

Application of Flush Seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer shall notify the Contractor as soon as possible that the Flush Seal is unnecessary.

**SAND FOR FLUSH SEAL**

The sand application shall be placed 11' wide in each lane, leaving 12" on center line and 6" on each edge line free of sand.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	19	52

Revised 12/29/14 MW

**REFURBISH MAILBOXES**

Existing mailboxes shall be removed and mailboxes reset on new posts with the necessary support hardware for single or double mailbox assemblies (See Standard Plate No's. 900.02 and 900.03). The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor shall coordinate with the Engineer on the proper postal representative to contact.

**TABLE OF REFURBISH MAILBOXES**

Location		SINGLE MAILBOX EACH	COMMENTS
<u>MRM</u>	<u>SIDE</u>		
356.00+0.767	Rt.	1	
363.00+0.274	Rt.	1	w/ newspaper box
TOTALS		2	

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware shall be incidental to the contract unit price per each for REFURBISH SINGLE MAILBOX

**RUMBLE STRIPS**

Rumble Strips installation shall be completed prior to application of the Flush Seal and Permanent Pavement Markings. Rumble Strips shall not be installed on the concrete approaches and bridge decks. In the event the Flush Seal is eliminated from the contract, the Contractor will still be required to apply a Flush Seal to the newly installed 12" Rumble Strips at a width of 1.5' and at the same rate as specified in this plan set. No adjustment in the contract unit price will be made and SS-1h or CSS-1h will be paid at the contract unit price per ton.

The Contractor shall be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be broomed to the edge of shoulders and it shall be the Contractor's responsibility to ensure the loose material does not enter any vegetated areas and/or waterways.

All costs associated with the work shall be incidental to the contract unit price per mile for GRIND 12" RUMBLE STRIP OR STRIPE IN ASPHALT CONCRETE.

**TABLE OF 12" RUMBLE STRIPS**

Station to Station	Length (Ft)	Length (Miles)
Sta. 183+86 to Sta. 321+55	27,538.0	5.2
Sta. 343+85 to Sta. 436+50	18,530.0	3.5
Sta. 457+20 to Sta. 808+05	70,170.0	13.3
Total	116,238.0	22.0

**RESET 3 CABLE GUARDRAIL**

All 3 Cable Guardrail designated for reset shall be installed using new steel posts. All hardware used to reinstall reset 3 Cable Guardrail shall be new. All reset cable shall be in good condition. The ends of the existing 3 Cable Guardrail shall be cut back so as to have a good end. Approximately 4 L.F. per bridge end of the existing 3 Cable Guardrail is estimated to not be reset for this purpose.

**REMOVE 3 CABLE GUARDRAIL ANCHOR ASSEMBLY**

Posts for the 3 Cable Guardrail Anchor Section shall be removed from the project. Removal of these posts shall be incidental to the contract unit price per each for REMOVE 3 CABLE GUARDRAIL.

**TEMPORARY AND PERMANENT PAVEMENT MARKINGS**

Maintaining size, shape, and dimension of existing pavement markings shall be the responsibility of the Contractor for both temporary and permanent pavement marking applications.

Temporary road markers shall be used to mark dashed centerline, No Passing Zones and applicable lane lines. Paint will not be allowed for Temporary Pavement Marking on the Asphalt Concrete Class Q3R Hot Mixed Asphalt Concrete wear course or after application of the Flush Seal.

**TEMPORARY PAVEMENT MARKINGS**

The total length of no passing zone on this project is estimated to be **3.3** miles.

The number of no passing zones for this project is **8**.

- Quantities of Temporary Pavement Markings consist of:
- One pass on top of the Cold Milled Asphalt Concrete.
  - One pass on top of the Class Q3R Hot Mixed Asphalt Concrete.
  - One pass on top of the Flush Seal.

If the Flush Seal is eliminated, the application of the Temporary Pavement Marking on top of the Flush Seal will be eliminated. No adjustment in the contract unit price for Temporary Pavement Marking will be made because of a variation in quantities.

Temporary Road Markers (tabs) may be used as detailed in the specifications. Covers on the tabs shall be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers shall be properly disposed. The Contractor shall remove and properly dispose of the tabs after Permanent Pavement Marking is applied. Method of removal shall be nondestructive to the road surface and shall be accomplished within one week of completion of the Permanent Pavement Marking.

Any tabs with covers removed before the flush seal shall be replaced prior to Flush Seal application.

Cost for furnishing, applying, removing and disposing of the Temporary Road Markers shall be included in the contract unit price per mile for TEMPORARY PAVEMENT MARKING.

Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights shall be positioned on the roadway shoulder in advance of workers for both directions of traffic during the installation of temporary road markers. The traffic control device used shall be moved to provide proper warning of the work operation. A Workers symbol sign (W21-1) shall be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work shall be approved by the Engineer.

**PERMANENT PAVEMENT MARKING**

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.

All materials shall be applied as per manufacturer's recommendations.

Glass beads shall be applied on the wet paint line at a minimum of eight pounds of glass beads per gallon of paint.

The Contractor shall advise the Engineer a minimum of 2 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones. All materials shall be applied as per manufacturer's recommendations.

The application of Permanent Pavement Marking paint may not begin until 7 calendar days following completion of final surfacing (including Flush Seal if applied) and shall be completed within 14 calendar days following completion of the final surfacing.

For each working day the application of permanent pavement marking paint remains uncompleted beyond the time limits described in the preceding paragraph, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

The liquidated damages shall apply up to the Contract Completion Date, as extended. After the completion date, liquidated damages will be assessed in accordance with section 8.7 of the specifications, until the permanent pavement marking is completed, even though the project may be open to traffic.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	20	52

Revised 12/29/14 MW

**COLD WEATHER, WATERBORNE PAINT**

Waterborne paint applied after October 15 shall be formulated as cold weather, waterborne paint, and shall be applied in accordance with manufacturer's recommendations, including minimum temperature requirements.

There shall be no adjustment in the contract unit prices should cold weather formulated paint be required.

Cold weather, waterborne paint shall conform to section 980 of the specifications except for the following:

980.1 A - Resin Binder shall be Fastrack XSR manufactured by Dow, or approved equal.

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. for white: 41.5 and yellow: 41.5 when tested in accordance with FTMS 141c (method 4051.1).

**SAWING IN EXISTING SURFACING**

Where new Asphalt Concrete Pavement is placed adjacent to existing asphalt concrete the existing asphalt concrete shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

**GENERAL PERMANENT SIGNING NOTES**

Permanent sign locations shall be staked in the field by the Contractor and checked by the Engineer. The Contractor shall give the Engineer a minimum of one week to check staked locations prior to sign/post installation.

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. The height of the post shall not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off.

**REMOVE EXISTING SIGNS**

Existing signs within the project limits are summarized in the Sign Table. This table provides the approximate MRM location for each sign. Existing signs in the table are indicated to be removed and not reused.

All existing signs and hardware listed to be removed shall become the property of the Contractor.

Holes remaining from the removal of 4"x6" wood 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, hardware, and backfilled holes shall be incidental to the contract unit price per each for REMOVE TRAFFIC SIGN.

All existing sign posts and/or sign bases shall be removed in their entirety.

**DATE DECALS**

The Contractor shall furnish and affix a date decal to each new sign installed.

Date decals shall be self-adhesive weather resistant stickers with removable paper backing, approximately 2" X 2" in size. The date decal shall display the last two digits of the year the sign was manufactured with black numerals on a white background.

One decal shall be placed in the extreme lower left corner of the front of each extruded aluminum panel sign, or the extreme lower left corner of the back of each flat aluminum sign.

Sign supports or other obstructions shall not block the view of the date decal upon completion of the sign installation.

All costs to furnish and install date decals on new signs 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.

**NEW PERMANENT SIGNING**

New signs for installation are summarized in the Sign Table.

**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 Special Sign Design sheets.

All sign material shall comply with Section 982 of the 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 Special Sign Design sheets.

The Contractor shall furnish the Aberdeen Region Traffic Engineer (P.O. Box 1767; Aberdeen, SD 57402) with a detailed sign layout sheet for each sign shown. These detailed sign layouts 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 IV) or Super/Very High Intensity (ASTM D4956 Type XI) reflective sheeting as summarized in the US 14 Permanent Sign Installation Tables.

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, and with 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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	21	52

**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).

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" x 2.5" perforated tube post (10 Gauge) shall be sleeved with a 2 3/16" x 2 3/16" x 4' perforated tube post (10 Gauge).

**WINGED SLIP BASE ANCHOR**

The Contractor shall furnish and install new winged slip base anchor as required per the plans.

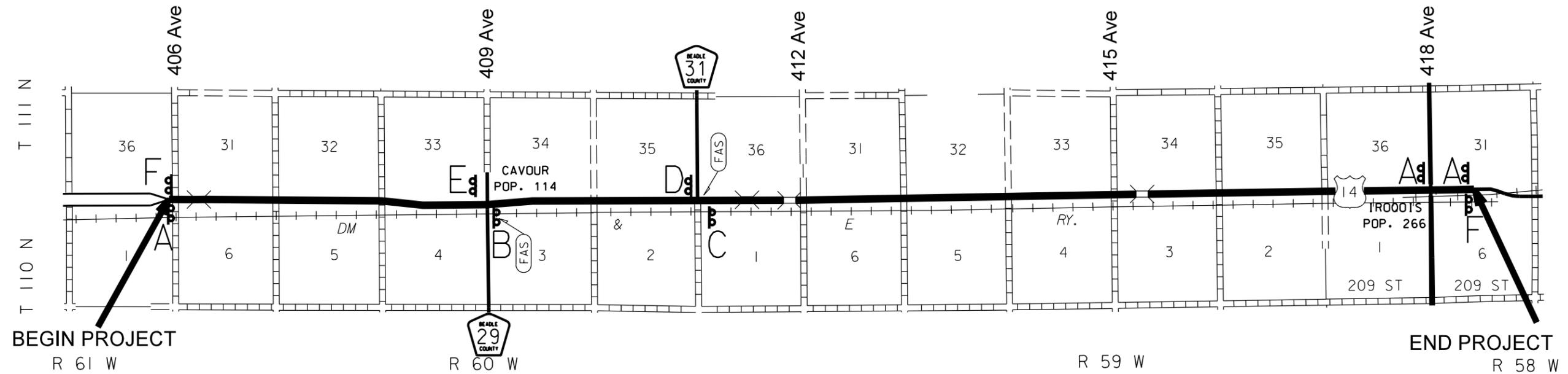
Winged slip base anchor shall be installed using direct drive method.

Winged slip base anchor shall consist of a slip base (upper), 48 inch long winged anchor (lower), and hardware kit.

**MILEAGE REFERENCE MARKERS**

MRMs (Mileage Reference Markers) are not to be disturbed. If an MRM is attached to a sign listed for replacement it shall be salvaged and reattached to the new sign in the same location. Payment for this work shall be incidental to the various signing contract items.

# FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS



A  
ROAD WORK  
NEXT 12 MILES  
G20-1

B  
ROAD WORK  
NEXT 9 MILES  
G20-1

C  
ROAD WORK  
NEXT 7 MILES  
G20-1

D  
ROAD WORK  
NEXT 5 MILES  
G20-1

E  
ROAD WORK  
NEXT 3 MILES  
G20-1

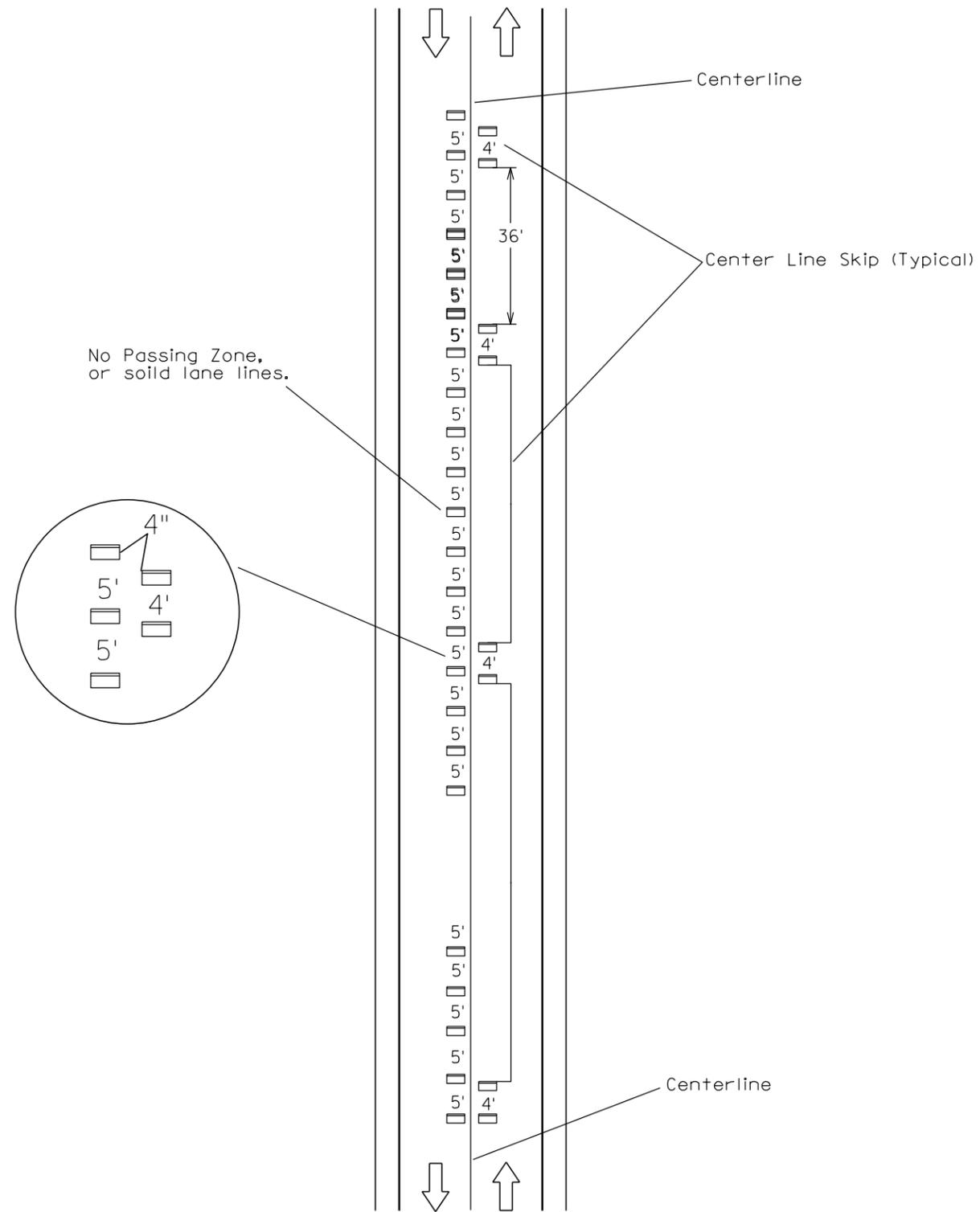
F  
END  
ROAD WORK  
G20-2



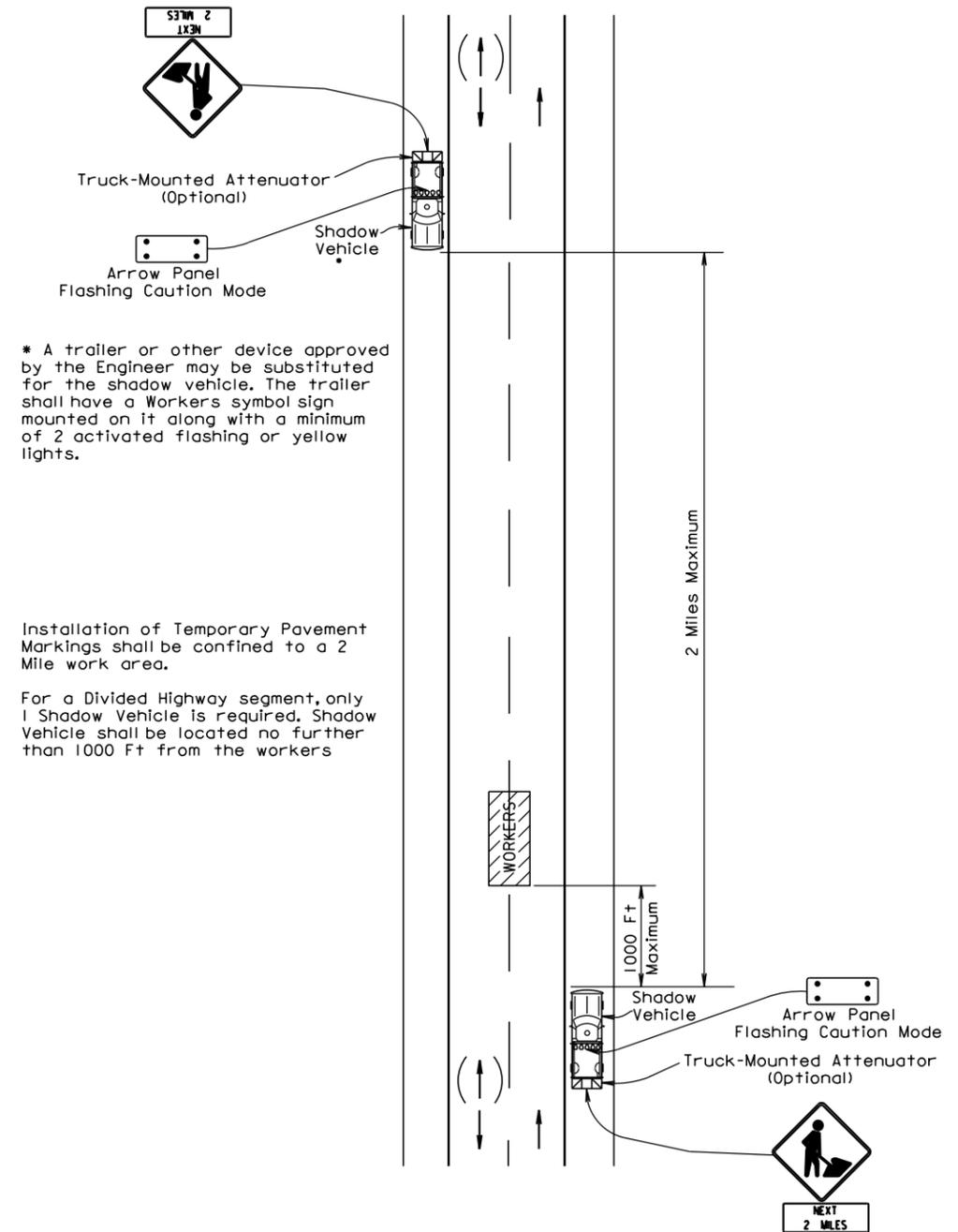
W20-1 ROAD WORK AHEAD signs along rural US14 shall be mounted on portable supports, and shall be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs shall be moved as necessary to keep current with the work activities.

EXACT LOCATION OF SIGNS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

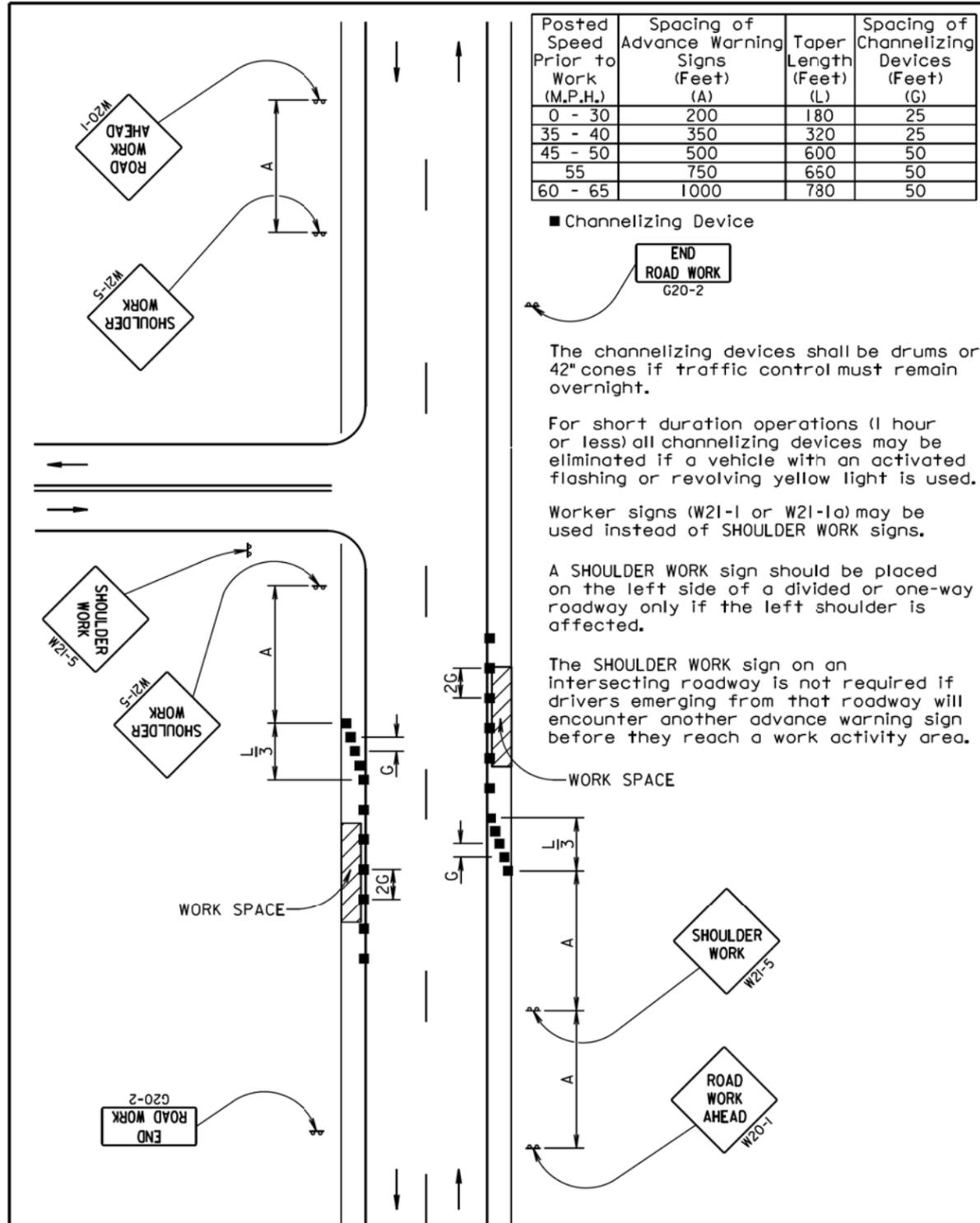
### GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD MARKER INSTALLATION



### GUIDES FOR TRAFFIC CONTROL DEVICES APPLICATION OF TEMPORARY PAVEMENT MARKING TABS



PLOT SCALE - 1:200

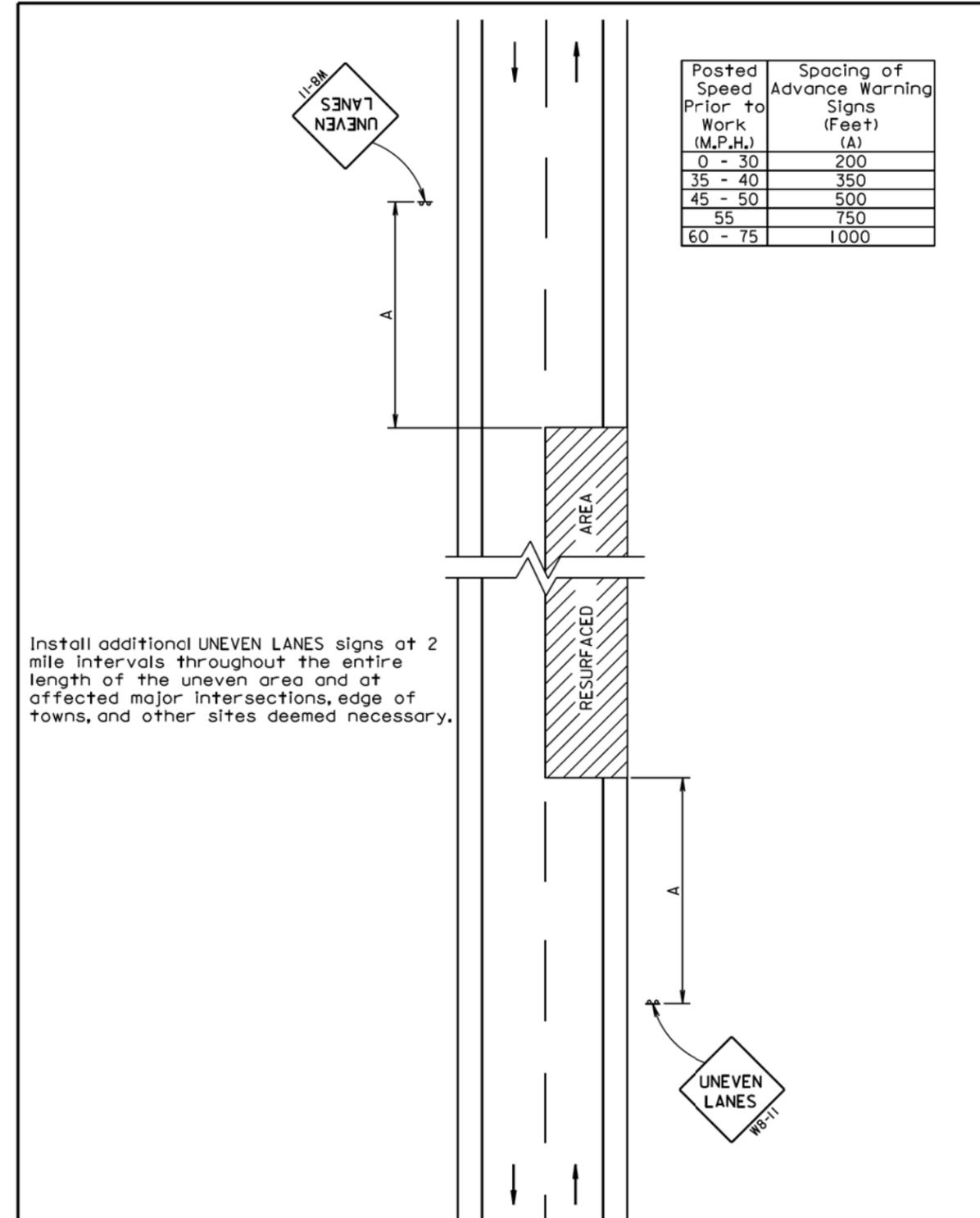


September 22, 2014

Published Date: 4th Qtr. 2014	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

PLOTTED FROM - TRAB12222

PLOT NAME - 1



July 1, 2005

Published Date: 4th Qtr. 2014	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
			Sheet 1 of 1

FILE - ... \STANDARD PLATES\04DY\_21\_TC.DGN

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

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

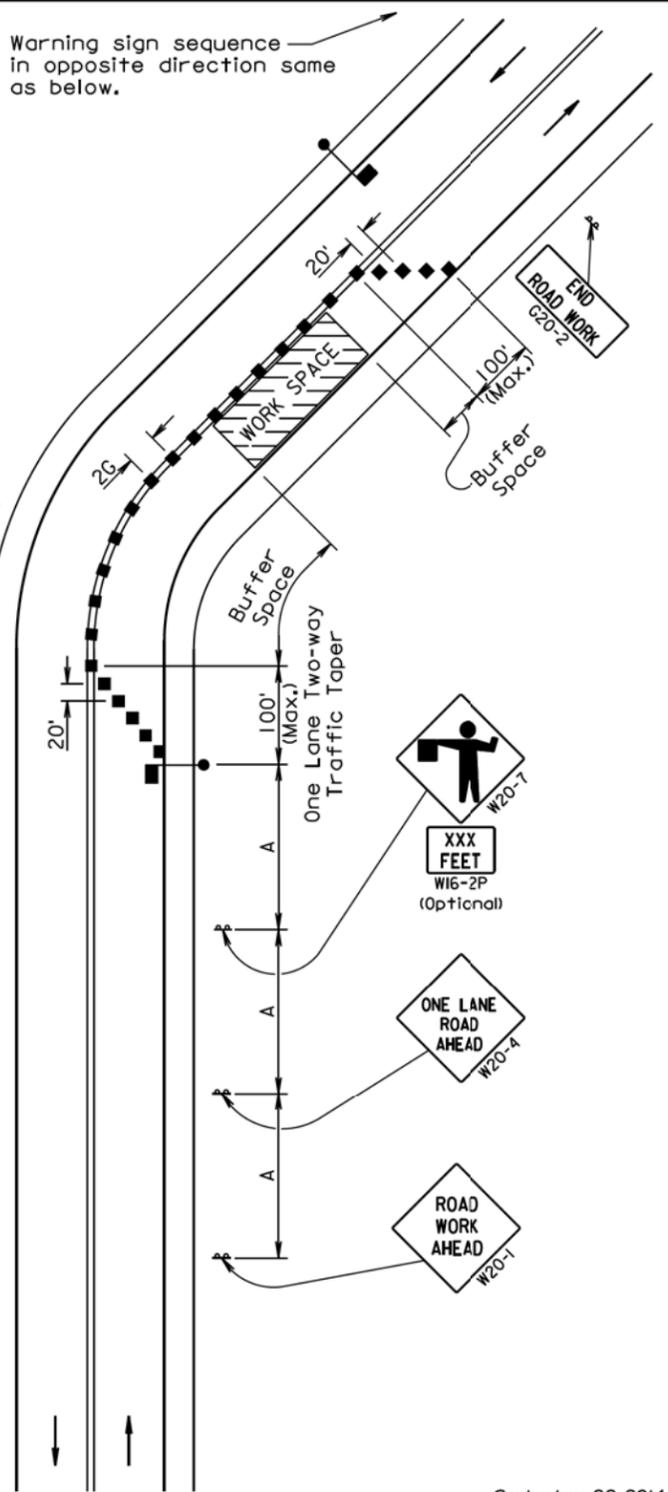
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK G20-2

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

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.



September 22, 2014

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

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

\* Spacing to be every 40' for 42" cones.

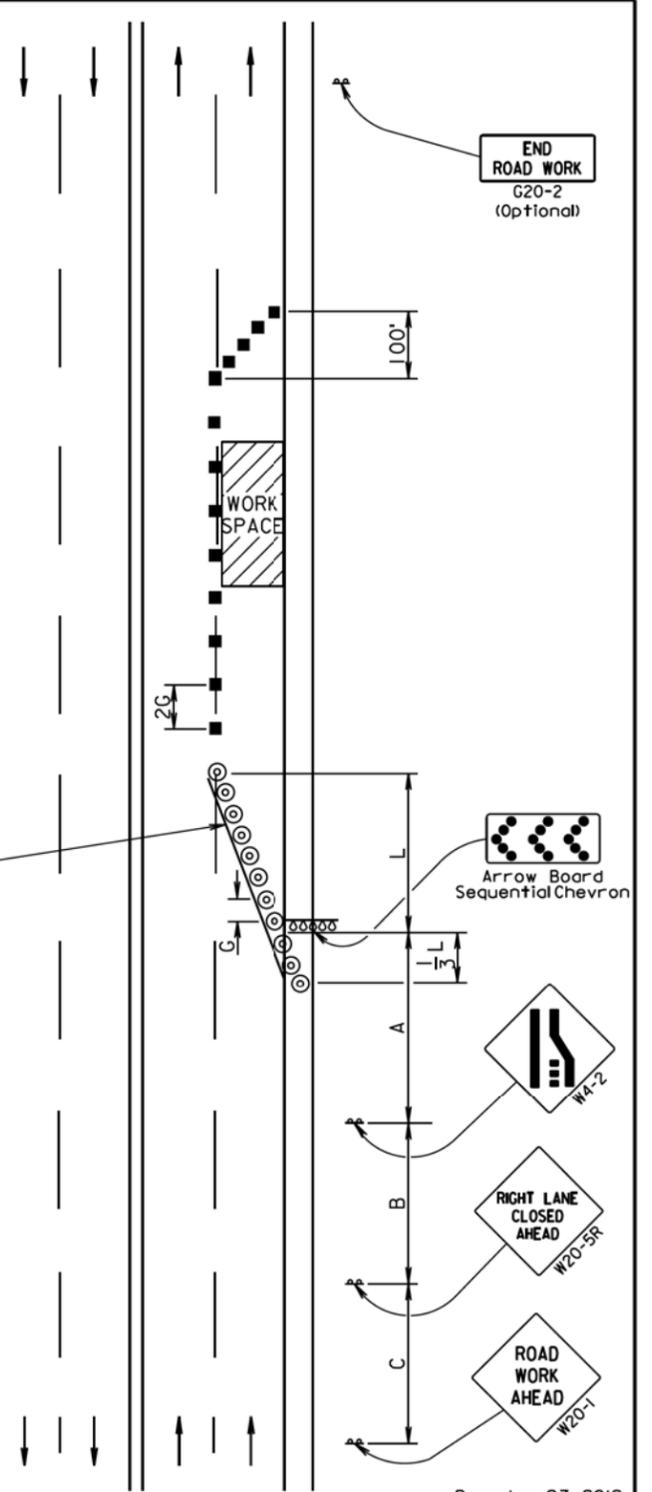
⊙ Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums

42" cones may be used in place of the drums shown in the taper if setup will not be used during any night time hours.

4" white temporary pavement marking shall be used for overnight and long term operations.

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



December 23, 2012

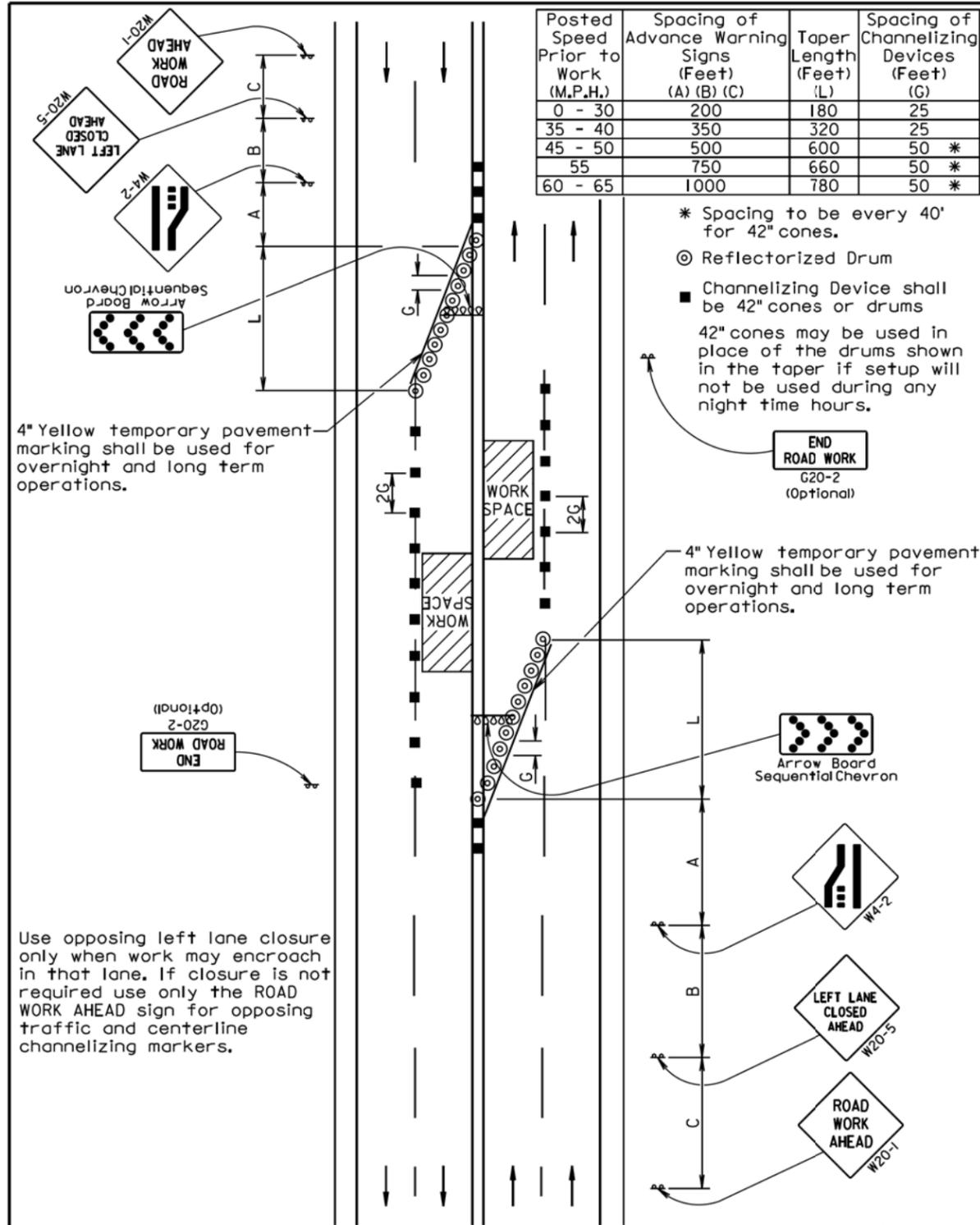
<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED</b>	PLATE NUMBER <b>634.47</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRAB12222

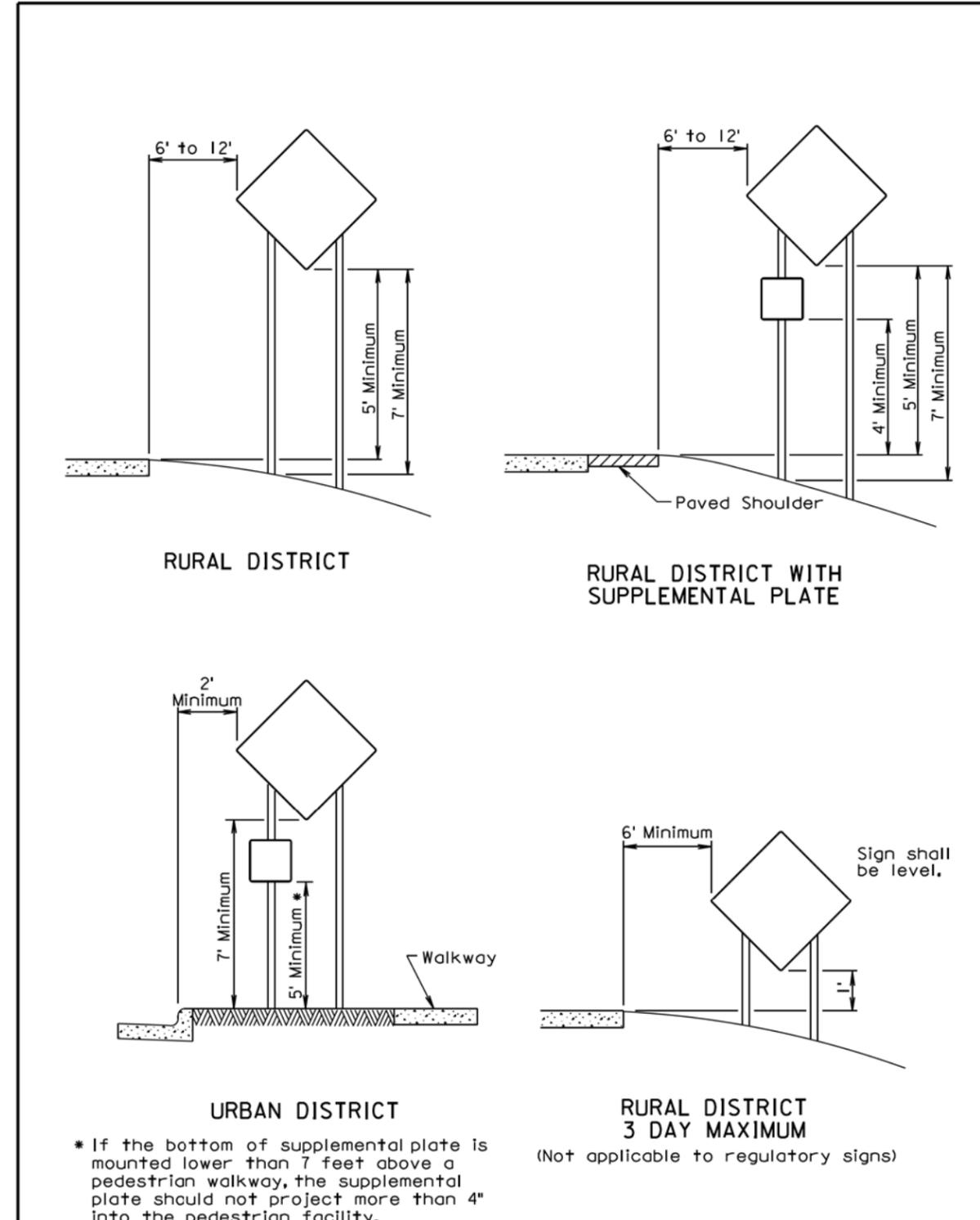
PLOT NAME - 2

FILE - ... \STANDARD PLATES\04DY\_22-TC.DGN



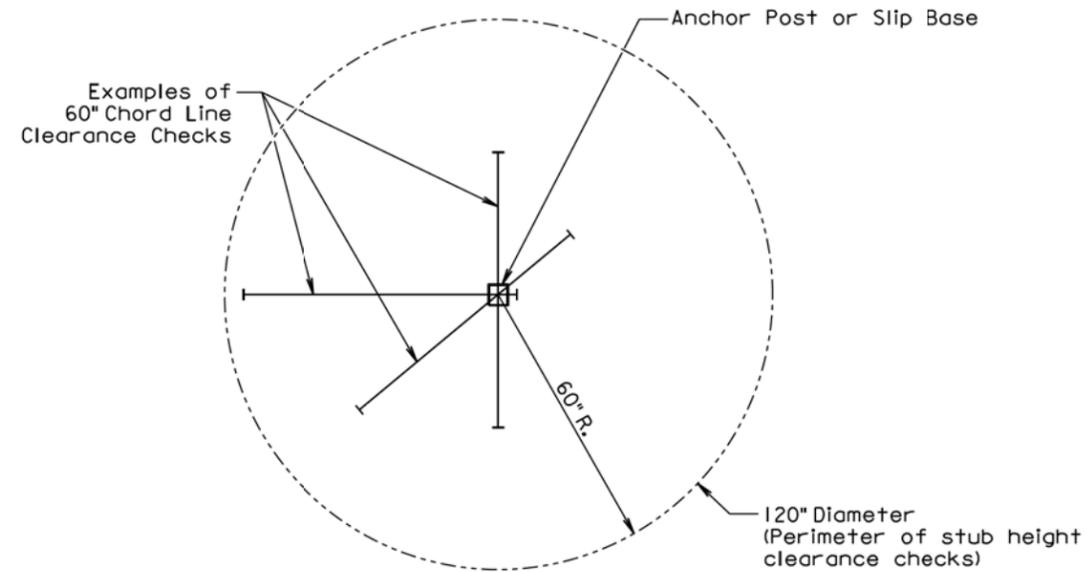
December 23, 2012

Published Date: 4th Qtr. 2014	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, LEFT LANE CLOSED	PLATE NUMBER 634.48
			Sheet 1 of 1

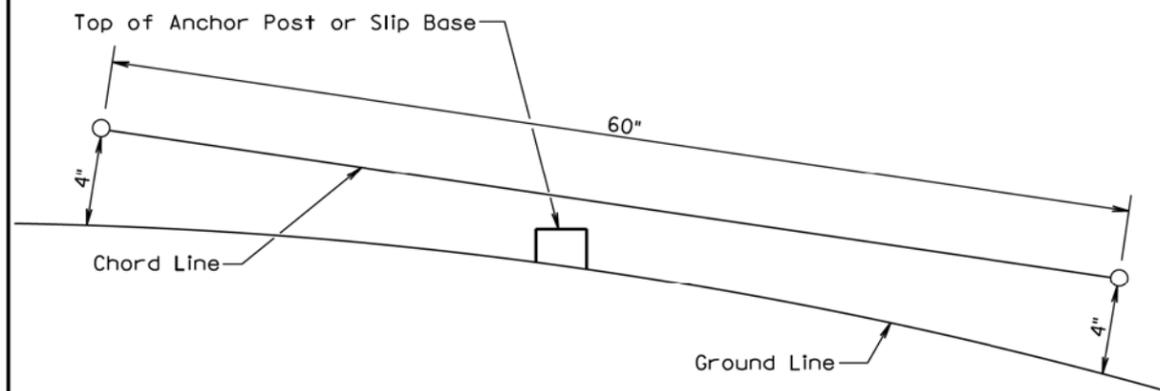


September 22, 2014

Published Date: 4th Qtr. 2014	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

<i>Published Date: 4th Qtr. 2014</i>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
			Sheet 1 of 1

## ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	UNITS PER SIGN	UNITS
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	34	34
W8-1	BUMP	10	48" x 48"	34	340
W8-6	TRUCK CROSSING	4	48" x 48"	34	136
W8-11	UNEVEN LANES	6	48" x 48"	34	204
W8-17	SHOULDER DROP-OFF (symbol)	7	48" x 48"	34	238
W13-1P	ADVISORY SPEED (plaque)	10	30" x 30"	21	210
W20-1	ROAD WORK AHEAD	6	48" x 48"	34	204
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	34	68
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	34	34
W20-7	FLAGGER (symbol)	2	48" x 48"	34	68
W21-5	SHOULDER WORK	2	48" x 48"	34	68
G20-1	ROAD WORK NEXT ___ MILES	7	36" x 18"	17	119
G20-2	END ROAD WORK	2	36" x 18"	17	34
<b>TOTAL UNITS</b>					<b>1757</b>

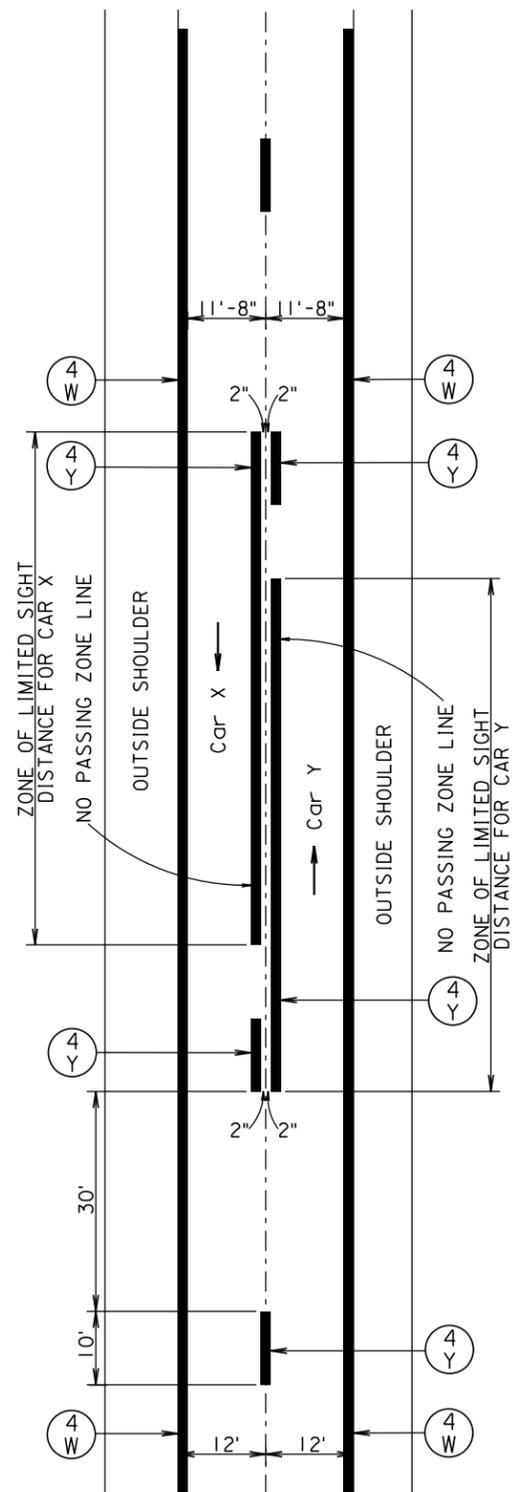
If a sign is required on this project and is not listed in the itemized list inventory, the units per sign will be determined as follow:

Signs 36" X 36" will be measured at 27 units each and signs 48" X 48" will be measured at 34 units each, otherwise:

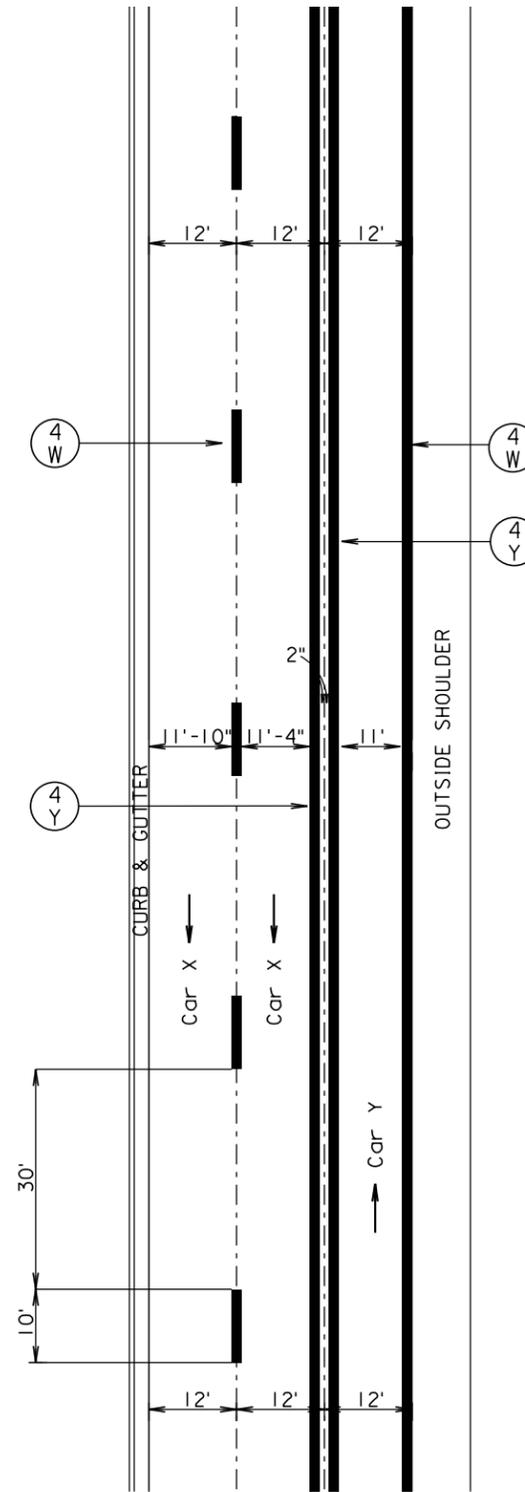
If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (SqFt) X 3.

If a sign measures less than 23H" and 37H" the units per sign will be computed as sign size (SqFt) X 1.2 + 15.

**TWO LANE  
UNDIVIDED ROADWAY**



**THREE LANE ROADWAY  
THROUGH CAVOUR AND IROQUOIS  
WITH NO PASSING ZONE**



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow

**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

- The pavement marking paint and glass beads will be furnished and applied by the Contractor. Material shall meet the requirements of Section 980 and 981 of the Specifications.
- Construction requirements, methods of measurement, and basis of payment shall conform to the requirements of Section 633 of the Specifications.
- The approximate paint application rates shall be as follows:
  - Undivided Roadway
    - 4" Yellow Centerline  
12± Gallons/Pass-Mile  
(Includes No-passing lines)
    - 4" Yellow Centerline  
4.6 Gallons/Pass-Mile  
(Dashed Line)
    - 4" White Edgeline  
16.9 Gallons/Pass-Mile  
(Solid Line)
    - 4" White Centerline  
4.6 Gallons/Pass-Mile  
(Dashed Line)
- The typical pavement markings as shown on the following sheet shall be applied throughout the entire length of the project.
- Exact location of the NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending NO PASSING ZONE lines.
- Traffic Control shall be incidental to the cost of application. The striping and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.
- Glass beads shall be applied on the wet paint line at a minimum of eight pounds of glass beads per gallon of paint.

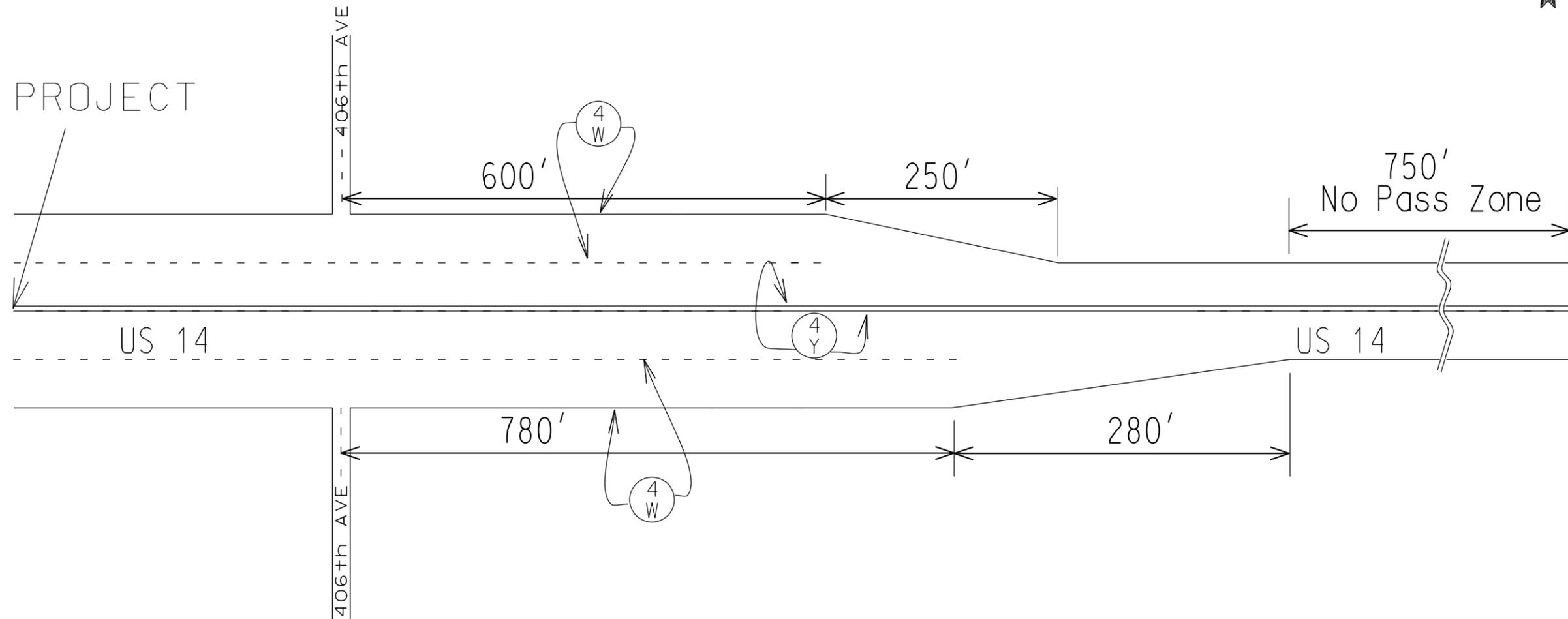
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	30	52
Plotting Date: 12/14/2014			

# PAVEMENT MARKING LAYOUT

US 14, 4 lane to 2 lane transition  
at beginning of project



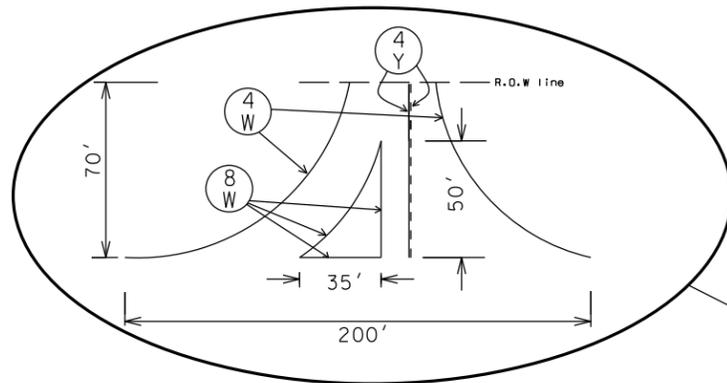
BEGIN PROJECT



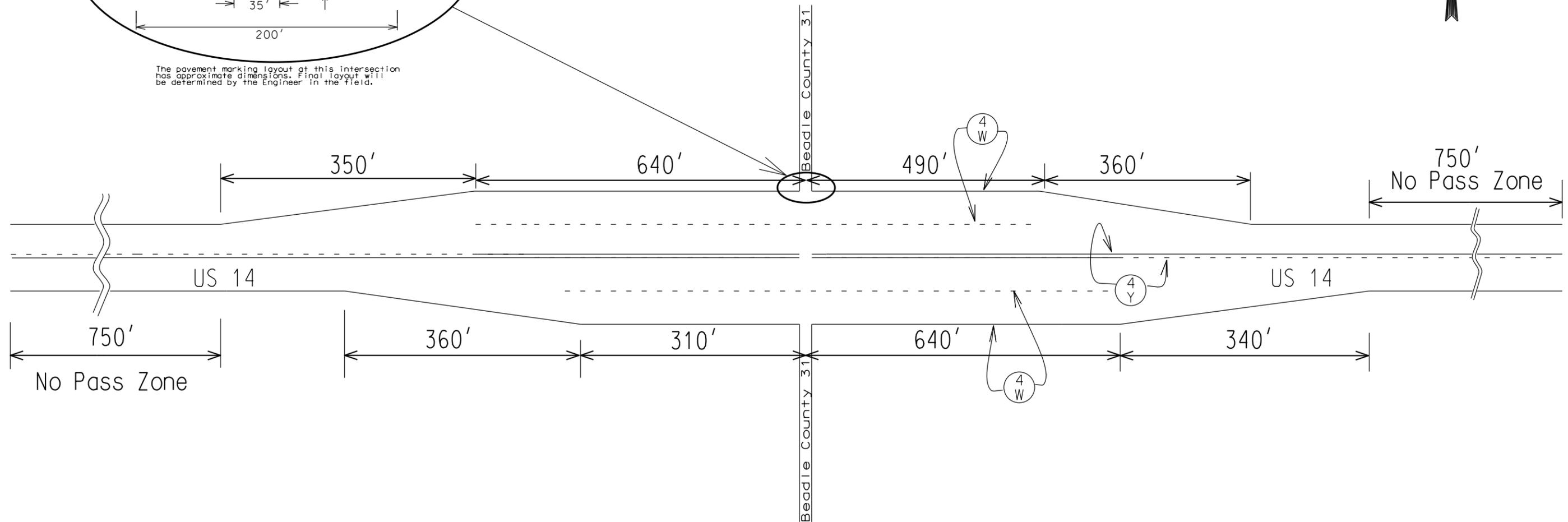
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	31	52
Plotting Date: 12/12/2014			

# PAVEMENT MARKING LAYOUT

## Jct US 14 & 411 AVE (COUNTY ROAD 31)



The pavement marking layout at this intersection has approximate dimensions. Final layout will be determined by the Engineer in the field.



PLOT SCALE - 1:200

PLOTTED FROM - TRAB1222

PLOT NAME - 6

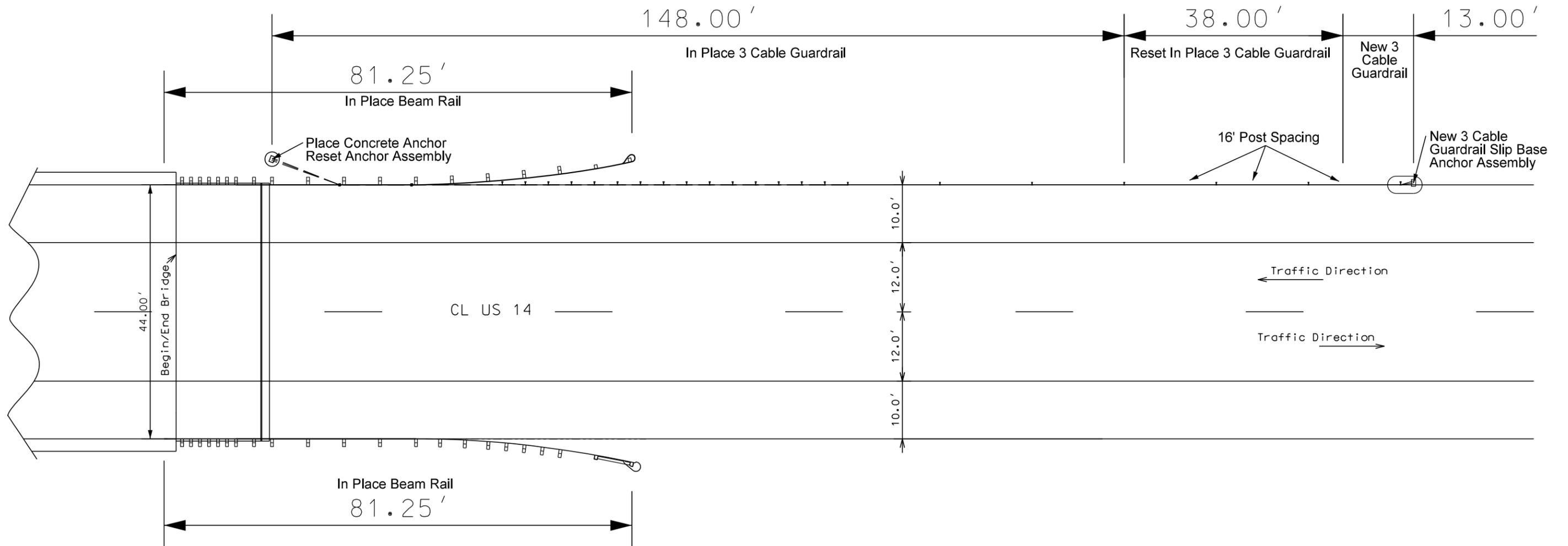
FILE - ... \DESIGN\04DY\_INTERSECTION.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	32	52
Plotting Date: 12/12/2014			

# GUARDRAIL LAYOUT

## Str. No 03-393-180

Guardrail layout identical at other end of structure



PLOT SCALE - 1:17.5

PLOTTED FROM - TRAB1222

PLOT NAME - 8

FILE - ... \04DY\_BRIDGE\_GUARDRAIL\_CHECK.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	33	52
Plotting Date: 12/14/2014			

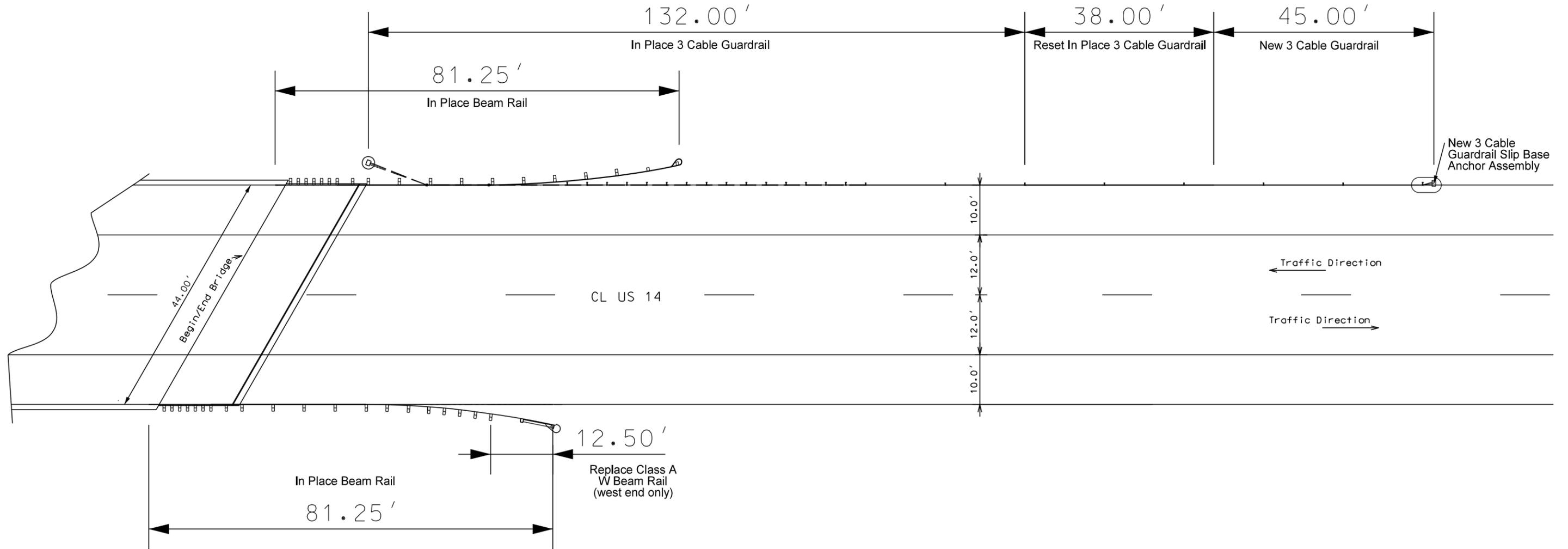
# GUARDRAIL LAYOUT

## Str. No 03-359-180

Guardrail layout identical at other end of structure

PLOT SCALE - 1:20

PLOT NAME - 9



PLOTTED FROM - TRAB12222

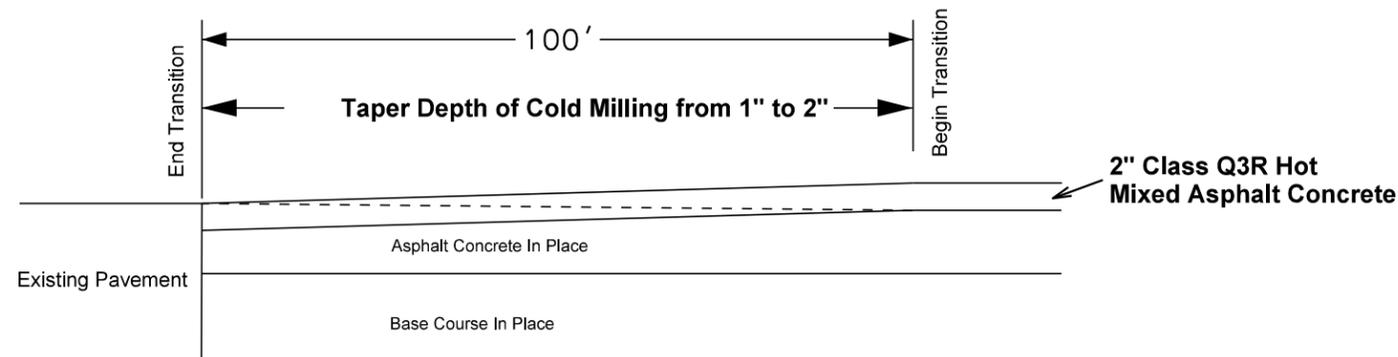
FILE - ... \04DY\_BRIDGE\_GUARDRAIL\_CHECK.DGN

# TRANSITION DETAILS FOR PROJECT LIMITS, BRIDGE ENDS AND INTERSECTING ROADS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	34	52
Plotting Date: 12/18/2014			

## TRANSITION SECTION

### Begin Resurfacing Project

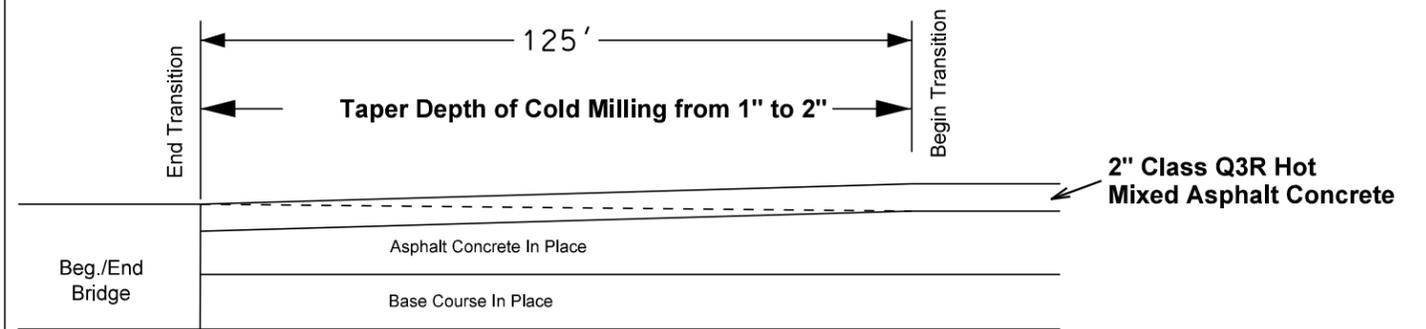


Note: Width of Cold Milling Asphalt Concrete at beginning of project is approximately 64 feet wide.

Cost for tapering the width and depth of cold milling shall be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete, unless otherwise indicated.

## TRANSITION SECTION

### Begin & End of Bridge Str. # 03-359-180 Str. # 03-393-180



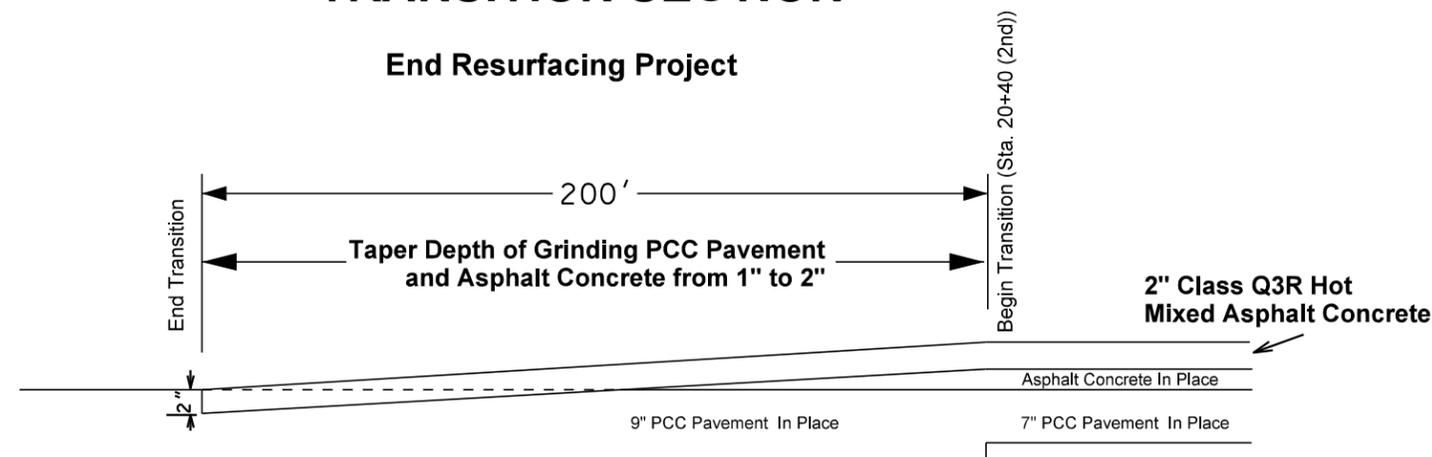
Note: Width of Cold Milling Asphalt Concrete at beg. & end of bridges is approximately 42 feet wide.

Cost for tapering the width and depth of cold milling shall be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete, unless otherwise indicated.

Transition Ends for the Shoulders and Mainline are at Different locations.

## TRANSITION SECTION

### End Resurfacing Project

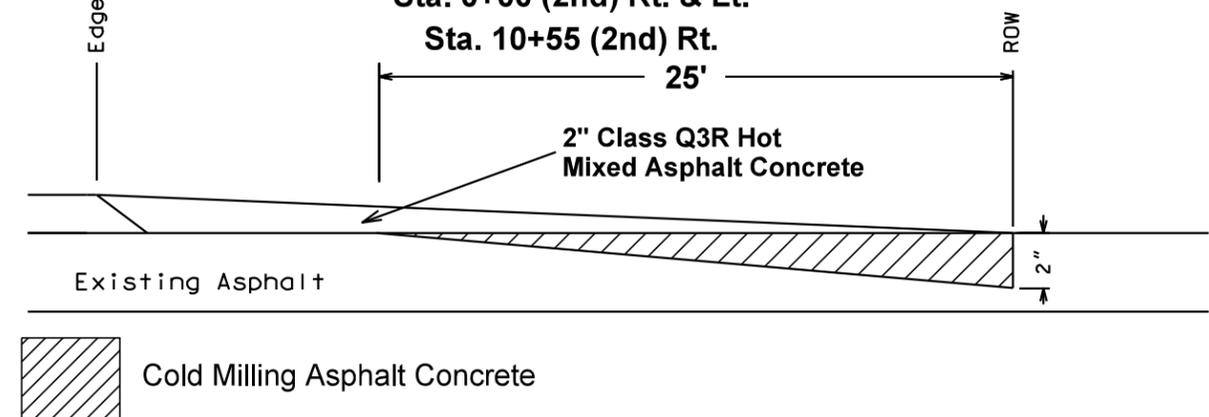


Note: Width of PCC Pavement at End of project is approximately 30 feet wide. Shoulders at End of project are gravel with a approximate width of 8 feet on each side of roadway.

Cost for tapering the width and depth of Grinding PCC Pavement and Asphalt Concrete shall be incidental to the contract unit price per square yard for Grinding PCC Pavement, unless otherwise indicated.

## TRANSITION SECTION

### Intersecting Roads Sta. 341+46.9 Rt. Sta. 447+38.7 Lt. Sta. 0+00 (2nd) Rt. & Lt. Sta. 10+55 (2nd) Rt.



Note: Width of Cold Milling Asphalt Concrete shall match adjacent surfacing width

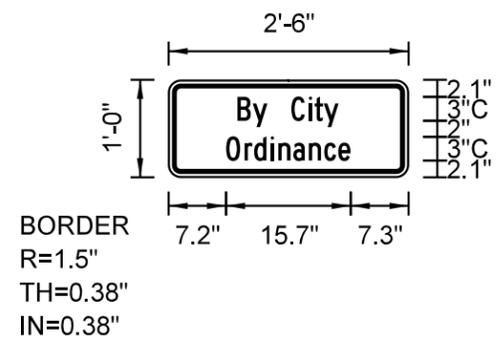
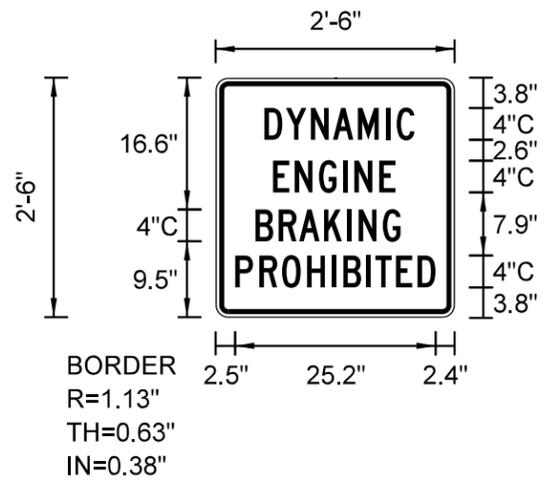
Included in the Table of Additional Quantities for these Intersecting Roads is 588 sq. yds. of Cold Milling Asphalt Concrete. Basis of payment shall be plans quantity regardless of width of the Intersecting Roads.

# SPECIAL SIGN DESIGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (196) 351	35	52
Plotting Date: 12/12/2014			

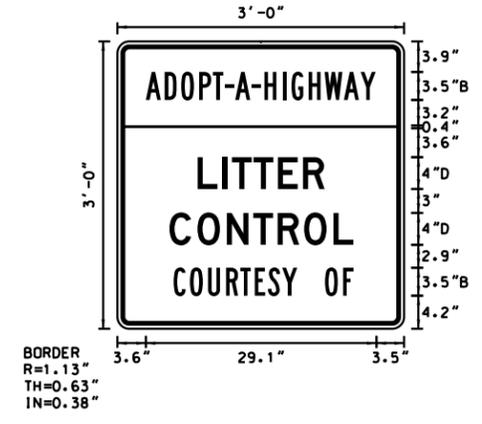
PLOT SCALE - 1:1.91888

PLOT NAME - 1

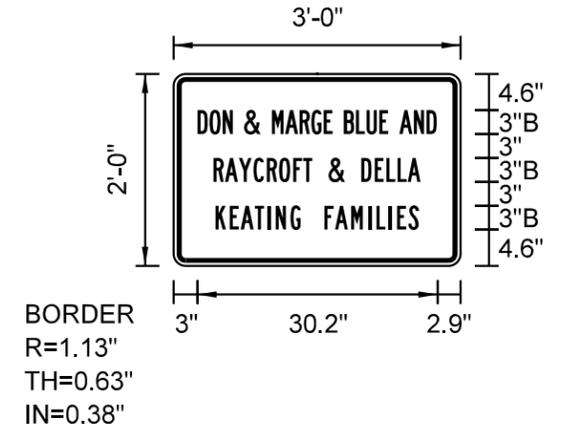
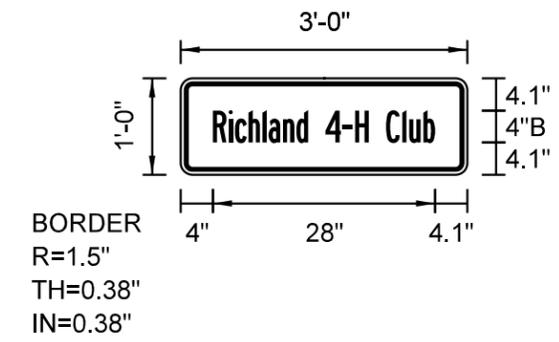


The above signs shall have a white background with white legend and white border

Border - Red  
Background - White  
Legend - Blue

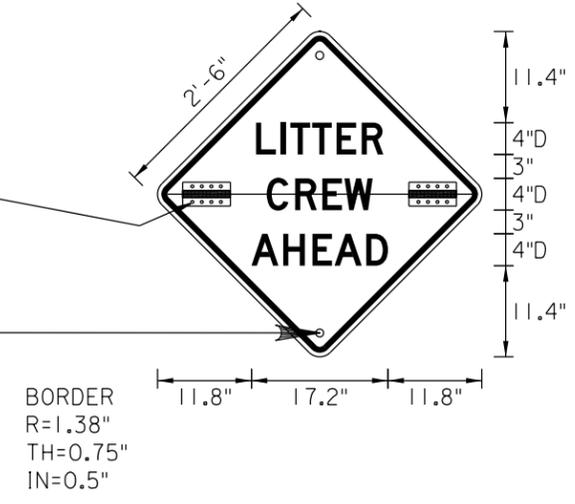


Border - Red  
Background - White  
Legend - Blue



Stainless Steel Piano Hinge  
3" H x 6" L

3/8" x 3" Stainless Steel Bolt with Wing Nut. (secure folded sign in place)



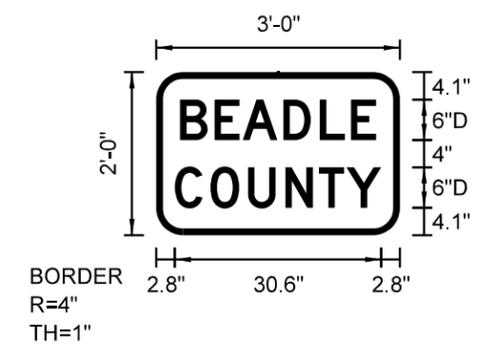
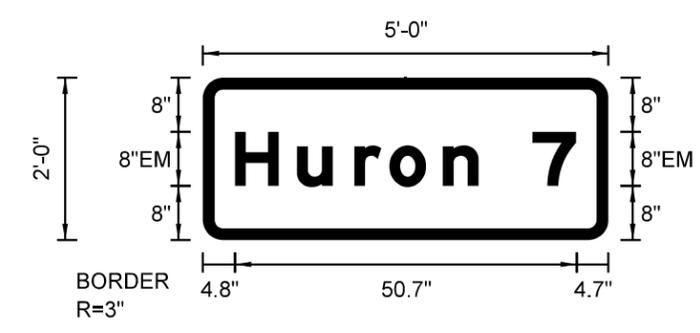
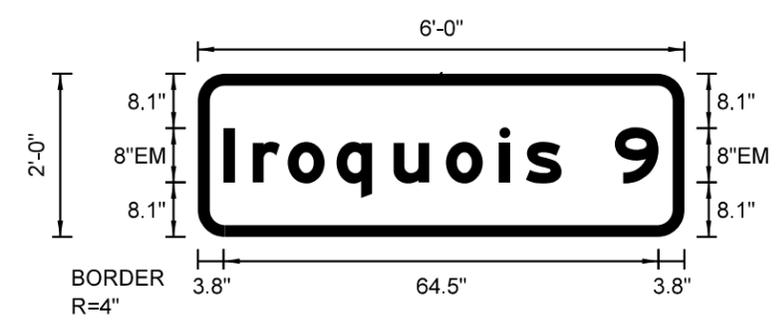
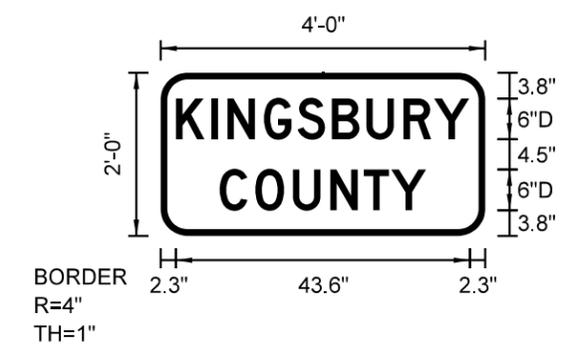
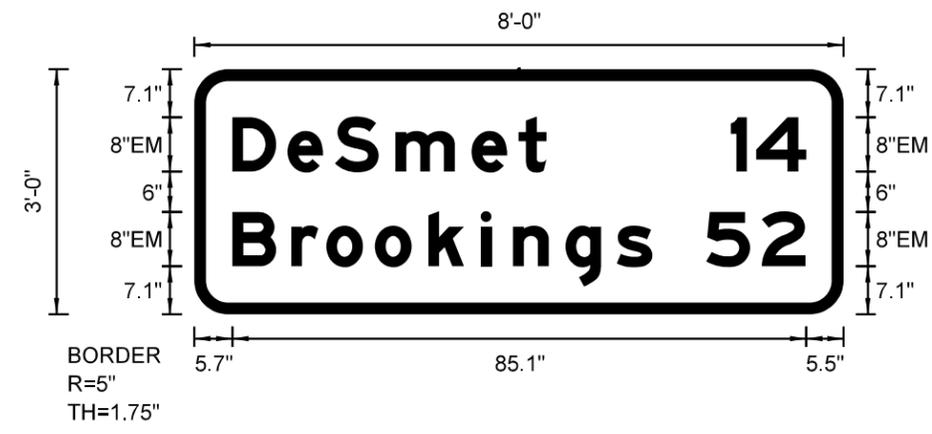
Border - Black  
Background - Orange  
Legend - Black

PLOTTED FROM - TRAB10100

FILE - ... \SIGN DESIGN.DGN

# SPECIAL SIGN DESIGN

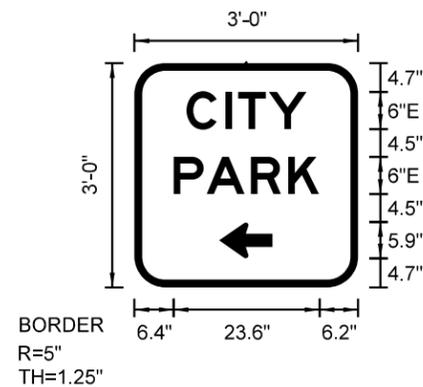
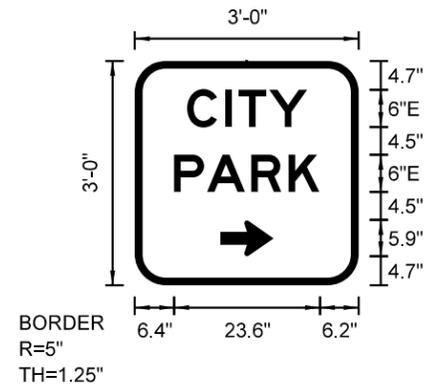
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (196) 351	36	52
Plotting Date: 12/12/2014			



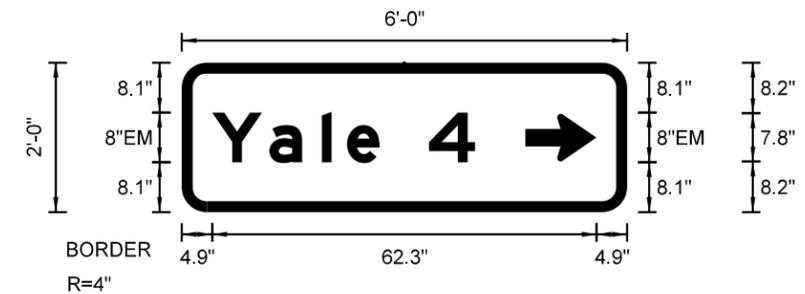
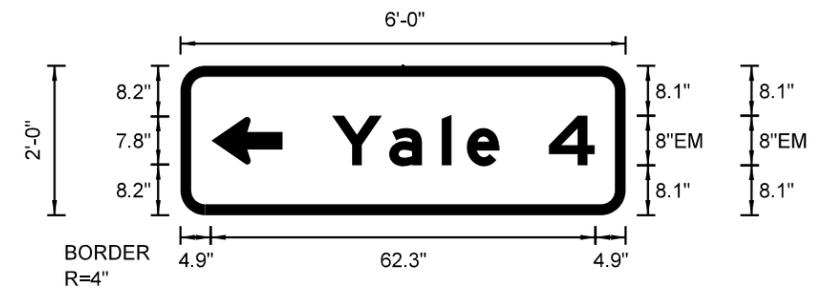
The above signs shall have a green background with white legend and white border

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	37	52
Plotting Date: 12/12/2014			

# SPECIAL SIGN DESIGN



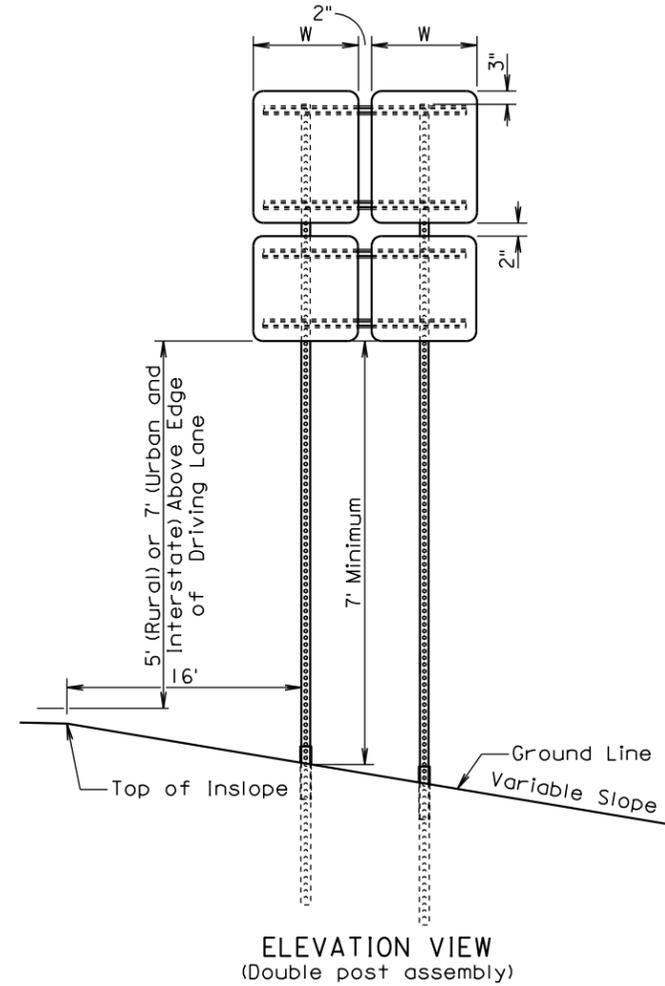
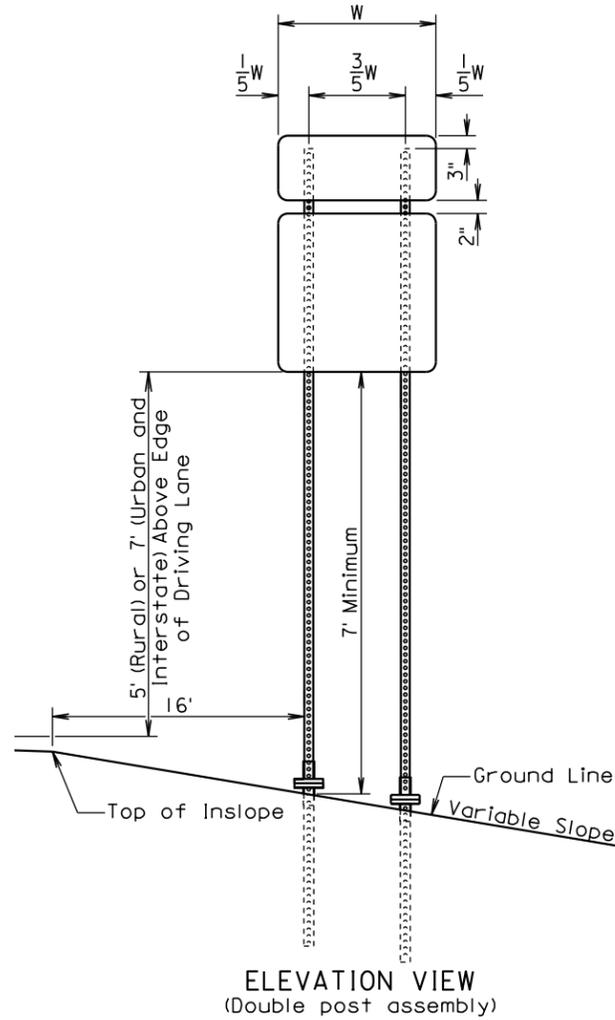
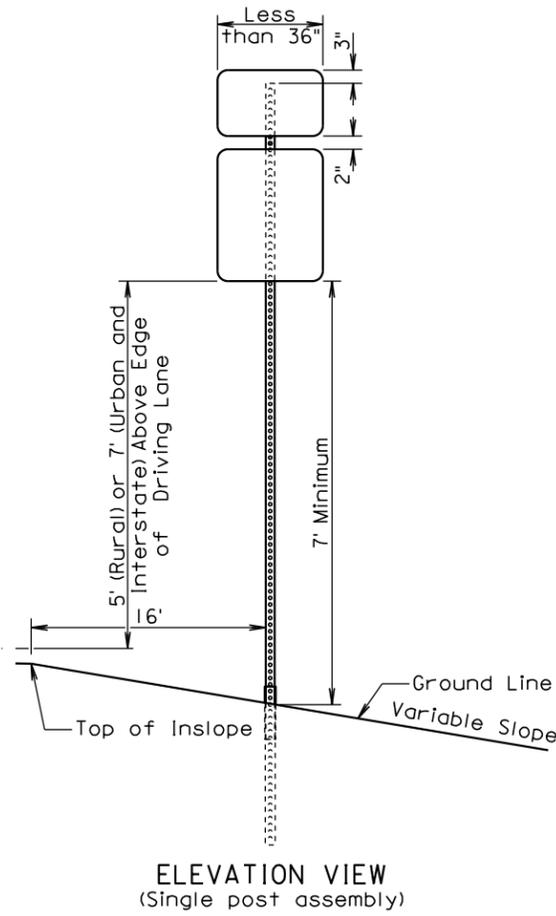
The above signs shall have a blue background with white legend and white border



The above signs shall have a green background with white legend and white border

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (196) 351	38	52
Plotting Date: 11/19/2014			

# INSTALLATION DETAILS FOR MULTIPLE SIGN ASSEMBLIES



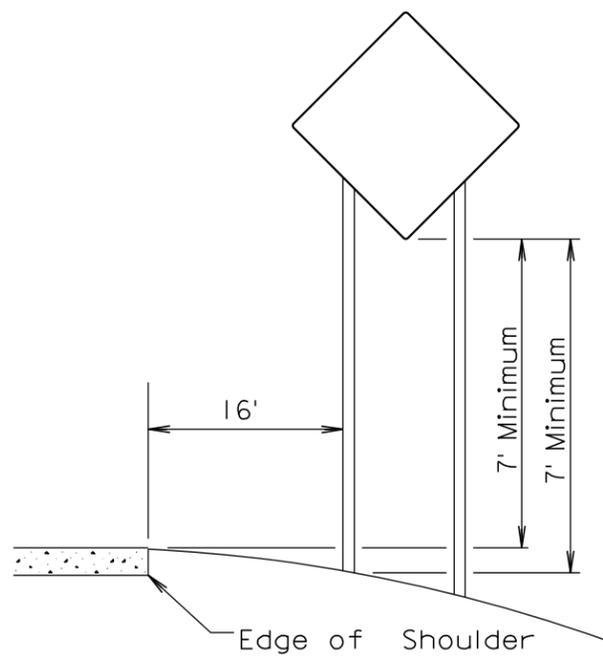
## GENERAL NOTES:

The sign posts and bases shown are for illustrative purpose. The post type required shall be the type specified in the plans.

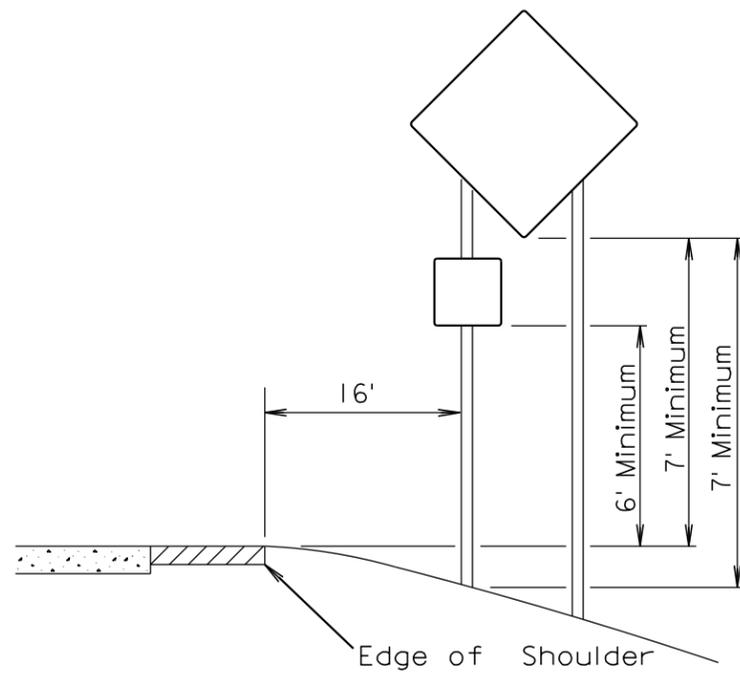
All breakaway sign supports shall comply with NCHRP 350 or MASH crash testing requirements and FHWA requirements. The Contractor shall provide post installation details at the preconstruction meeting for all breakaway sign support assemblies.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	39	52
Plotting Date: 11/19/2014			

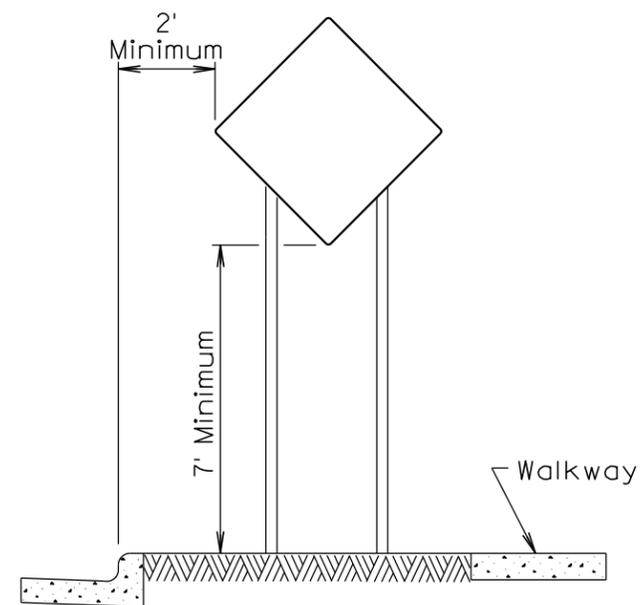
# SIGN SUPPORTS (Lateral Off-Sets)



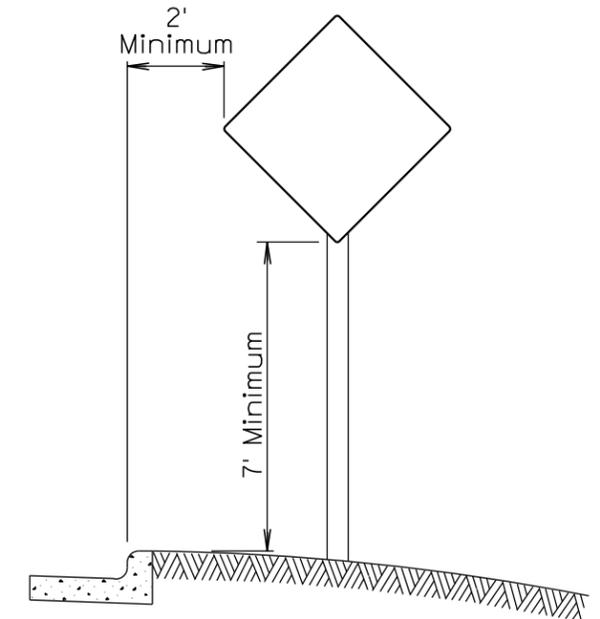
RURAL DISTRICT



RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



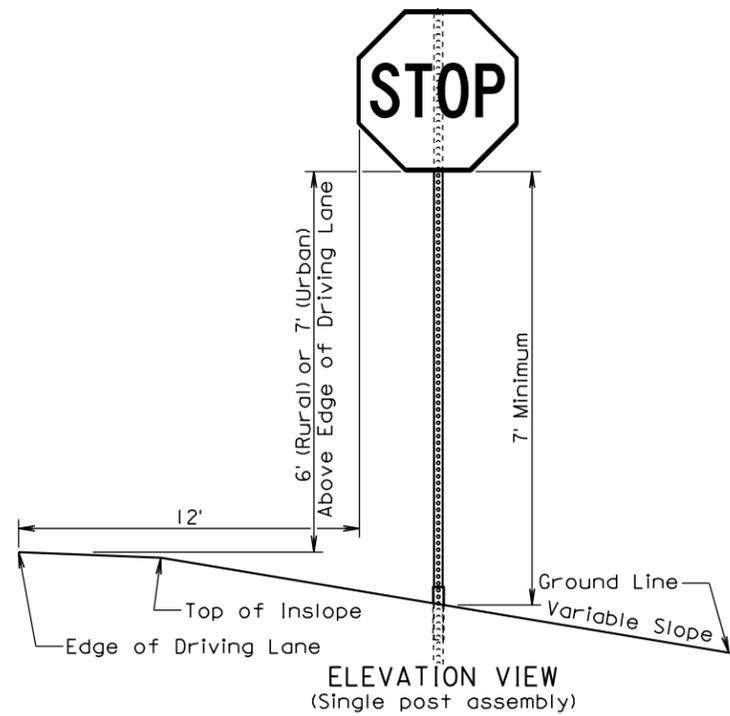
URBAN DISTRICT



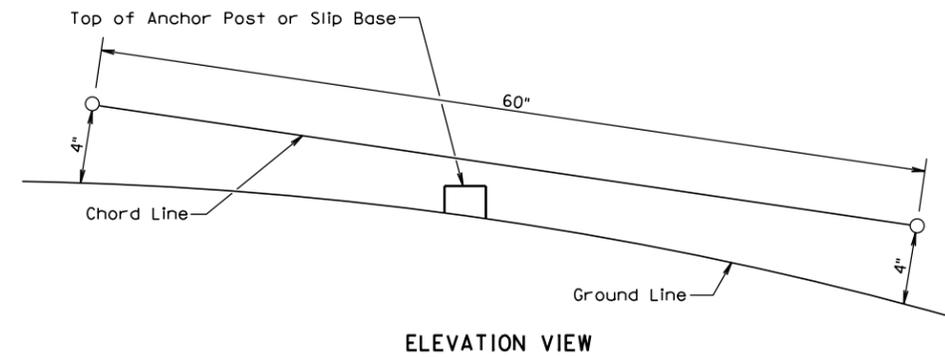
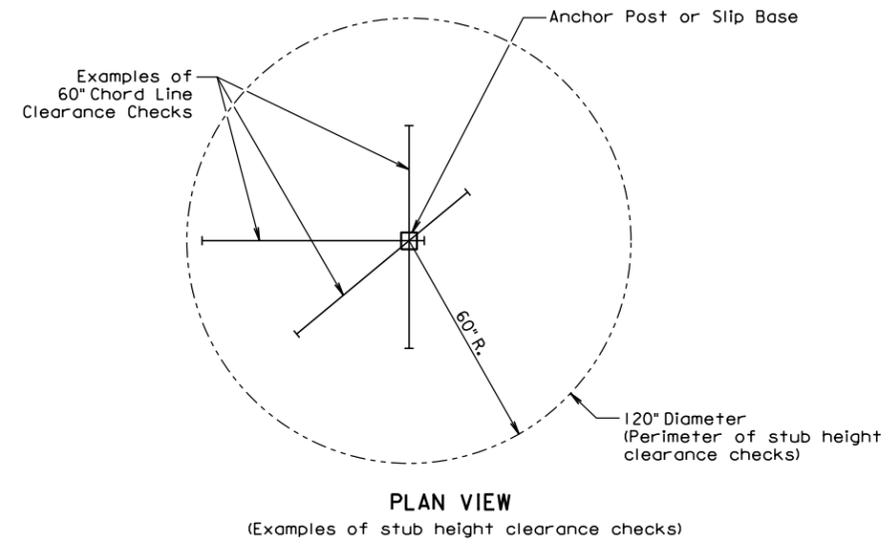
URBAN DISTRICT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (196) 351	40	52
Plotting Date: 11/19/2014			

# INSTALLATION DETAILS FOR STOP SIGNS



# BREAKAWAY SUPPORT STUB CLEARANCE



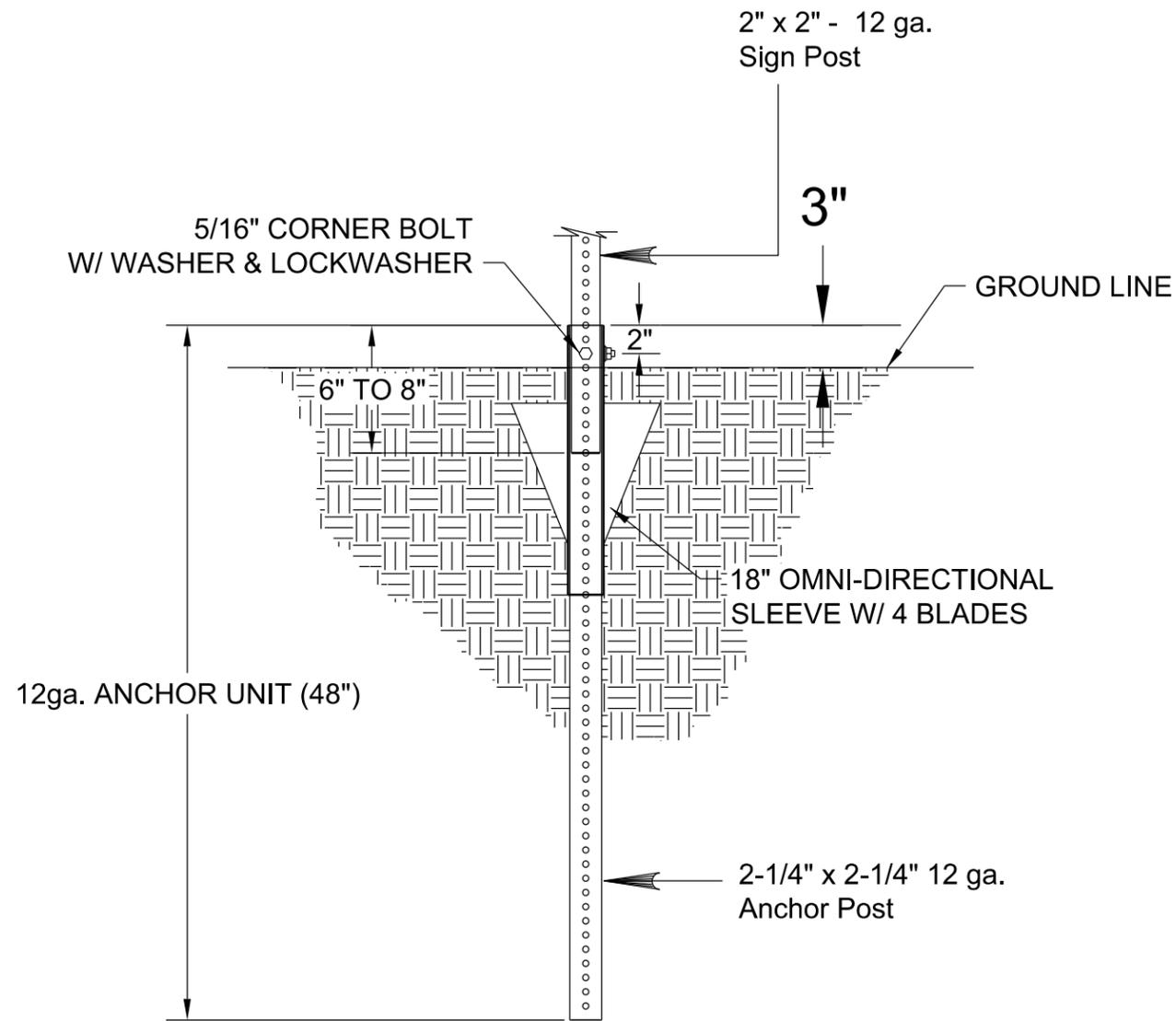
**GENERAL NOTES:**

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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (196) 351	41	52
Plotting Date: 11/19/2014			

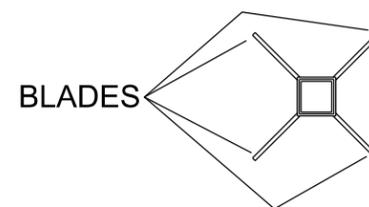
# SQUARE TUBE 4 BLADE ANCHOR DETAIL



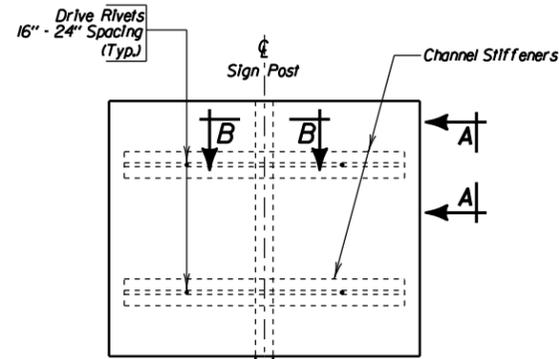
2-1/2" x 18" OMNI-ANCHOR SLEEVE  
FOR SOIL STABILIZATION.

ANCHOR SLEEVE  
TOP VIEW

2-1/2" x 18" 12 ga. Omni-Sleeve



# ONE POST BREAKAWAY SIGN SUPPORTS

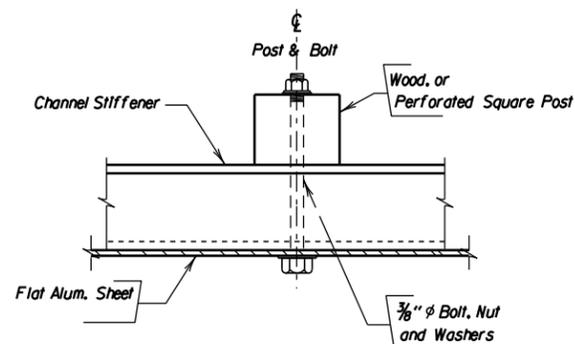
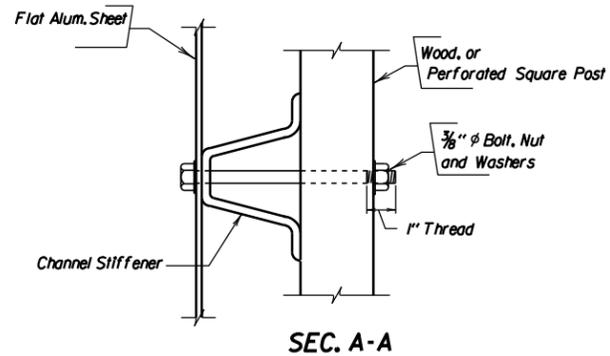
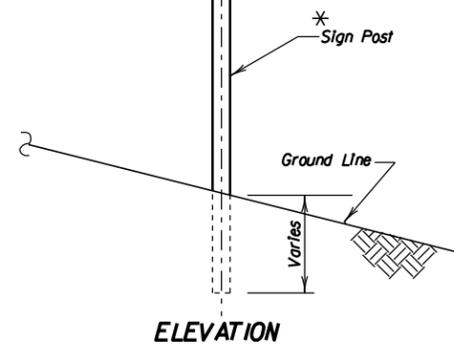


∅ A plastic washer, as recommended by the sheeting manufacturer, shall be installed between the sign face and the metal washer shown.

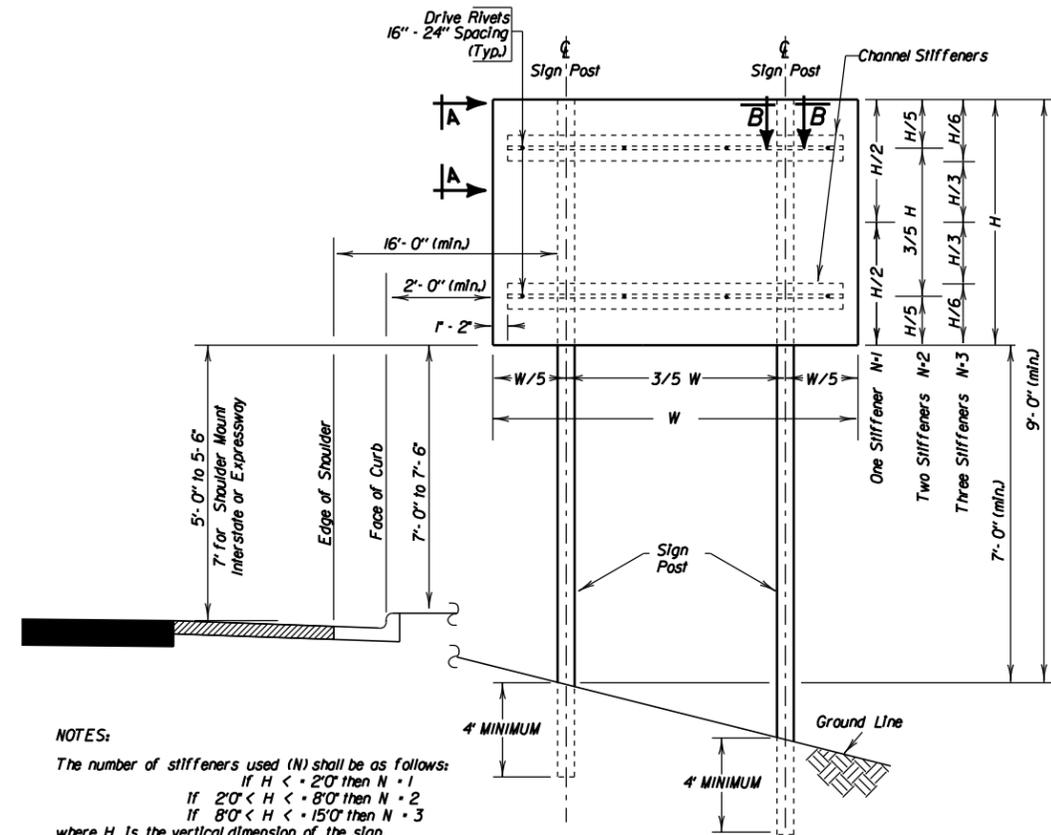
Height and lateral distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

\* Single post installation shown. (See applicable Details or Standard Plates shown in these plans for multiple post spacing requirements.)

## (Typical Sign and Stiffener Details)



# TWO POST BREAKAWAY SIGN SUPPORTS



NOTES:

The number of stiffeners used (N) shall be as follows:

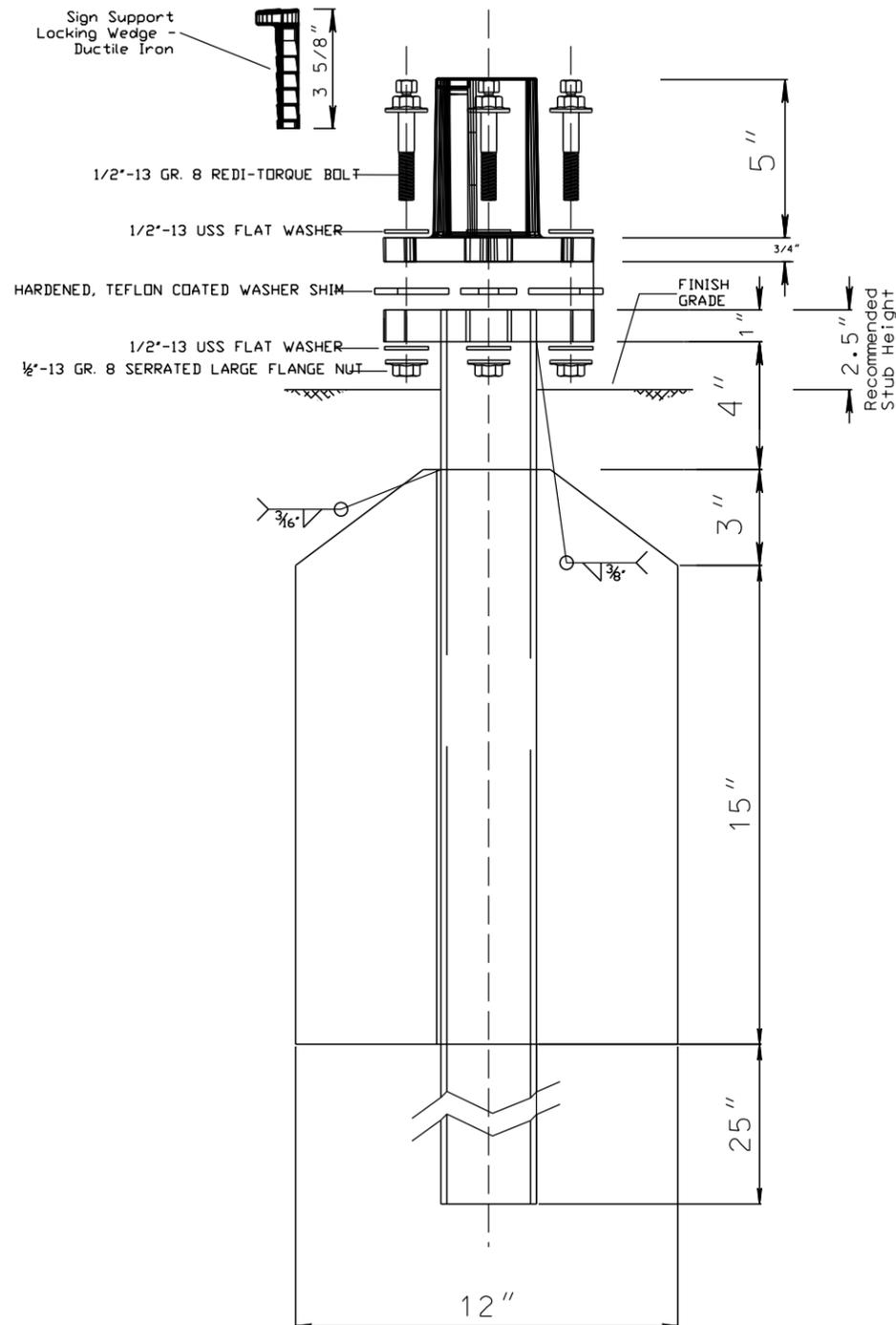
- If  $H < 2'0"$  then  $N = 1$
- If  $2'0" < H < 8'0"$  then  $N = 2$
- If  $8'0" < H < 15'0"$  then  $N = 3$

where H is the vertical dimension of the sign.

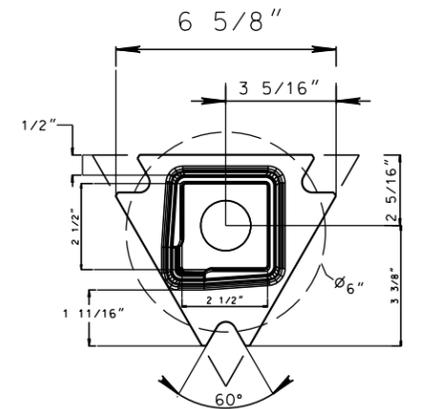
A minimum of two bolts shall be required to fasten the sign to each post.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	43	52
Plotting Date: 11/19/2014			

# 48" WINGED ANCHOR SLIP BASE

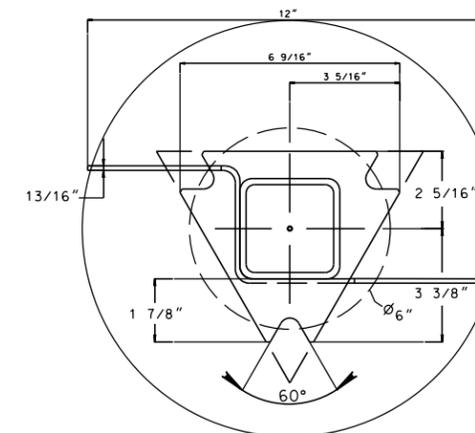


TOP POST RECEIVER  
for 2-1/2" SQUARE POST



MATERIAL:  
DUCTILE IRON CASTING, CLASS 65-45-12

BOTTOM UNIBASE  
SOIL STUB

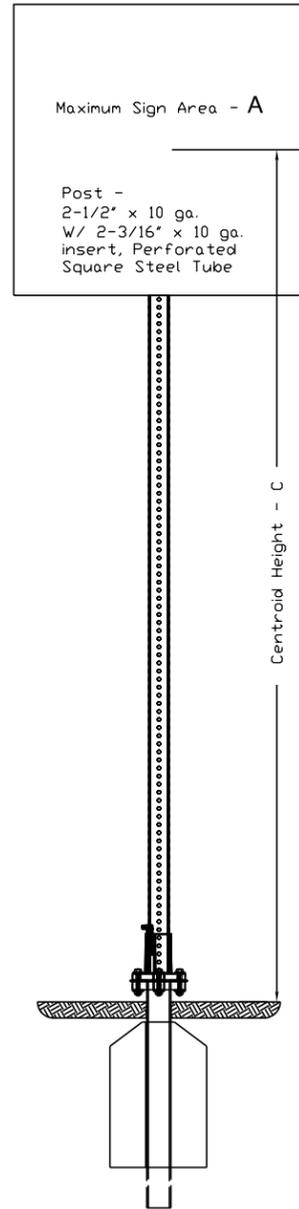


MATERIALS:  
Tube - 3" x 3" x 7 ga. ASTM A500 Grade B tube  
Stabilizing Wing - 7 ga. H.R.P.D. ASTM A 569  
Plate - ASTM A572 grade 50

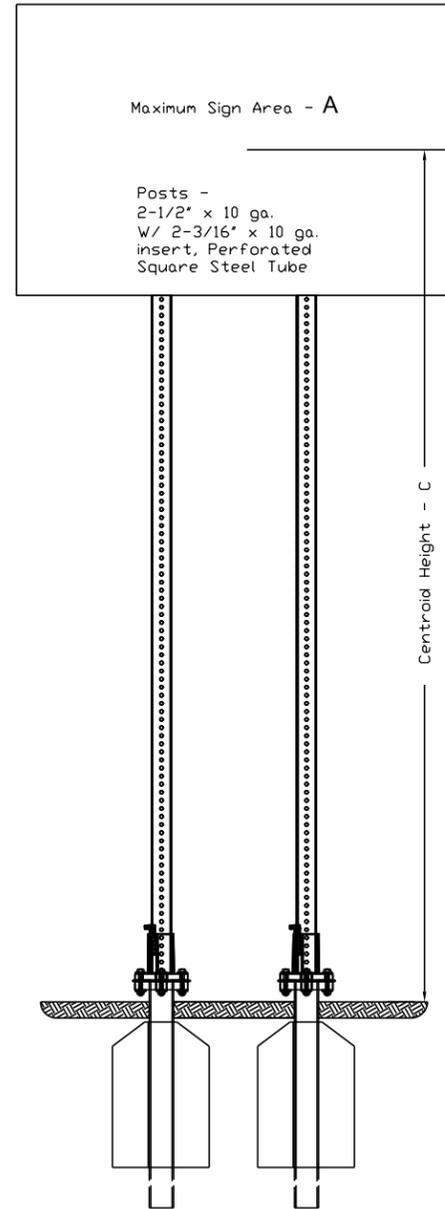


# 48" WINGED SLIP BASE

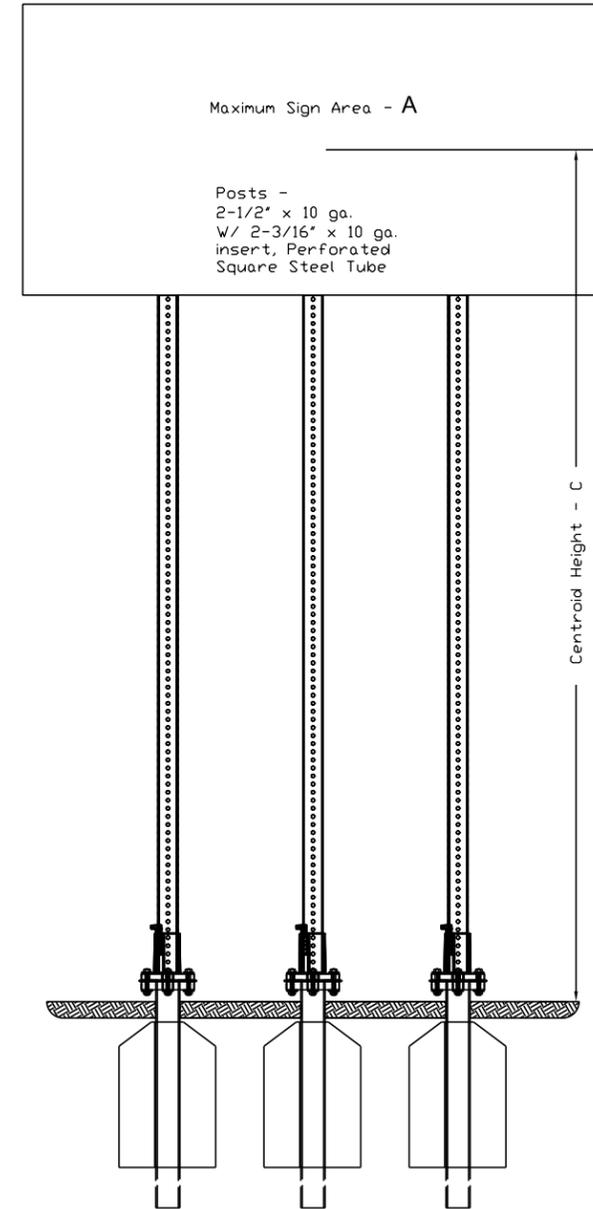
## Post and Wind Load Information



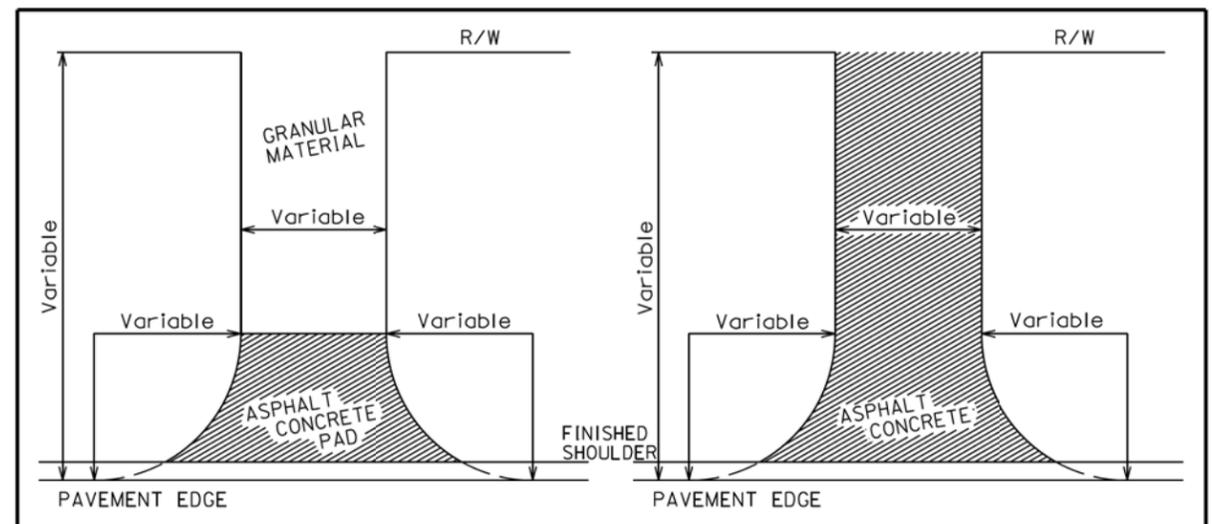
centroid - C	Maximum Sign Area - A
8 ft.	42 ft <sup>2</sup>
9 ft.	38 ft <sup>2</sup>
10 ft.	34 ft <sup>2</sup>
11 ft.	30 ft <sup>2</sup>
12 ft.	28 ft <sup>2</sup>
13 ft.	26 ft <sup>2</sup>
14 ft.	24 ft <sup>2</sup>
15 ft.	22 ft <sup>2</sup>
16 ft.	20 ft <sup>2</sup>



centroid - C	Maximum Sign Area - A
8 ft.	84 ft <sup>2</sup>
9 ft.	76 ft <sup>2</sup>
10 ft.	68 ft <sup>2</sup>
11 ft.	60 ft <sup>2</sup>
12 ft.	56 ft <sup>2</sup>
13 ft.	52 ft <sup>2</sup>
14 ft.	48 ft <sup>2</sup>
15 ft.	44 ft <sup>2</sup>
16 ft.	40 ft <sup>2</sup>

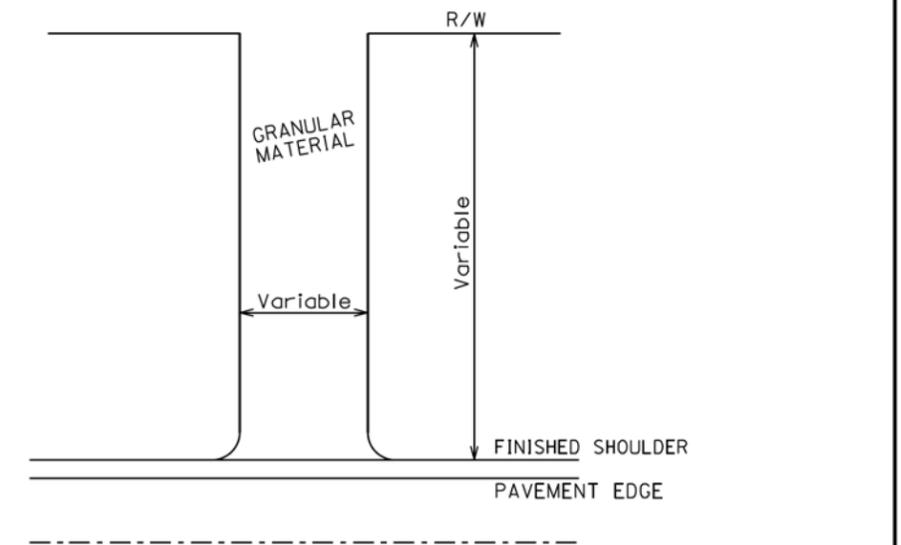


centroid - C	Maximum Sign Area - A
8 ft.	126 ft <sup>2</sup>
9 ft.	114 ft <sup>2</sup>
10 ft.	102 ft <sup>2</sup>
11 ft.	90 ft <sup>2</sup>
12 ft.	84 ft <sup>2</sup>
13 ft.	78 ft <sup>2</sup>
14 ft.	72 ft <sup>2</sup>
15 ft.	66 ft <sup>2</sup>
16 ft.	60 ft <sup>2</sup>



INTERSECTING ROAD  
NO ASPHALT CONCRETE SURFACING  
BEYOND R/W

INTERSECTING ROAD  
ASPHALT CONCRETE SURFACING  
BEYOND R/W



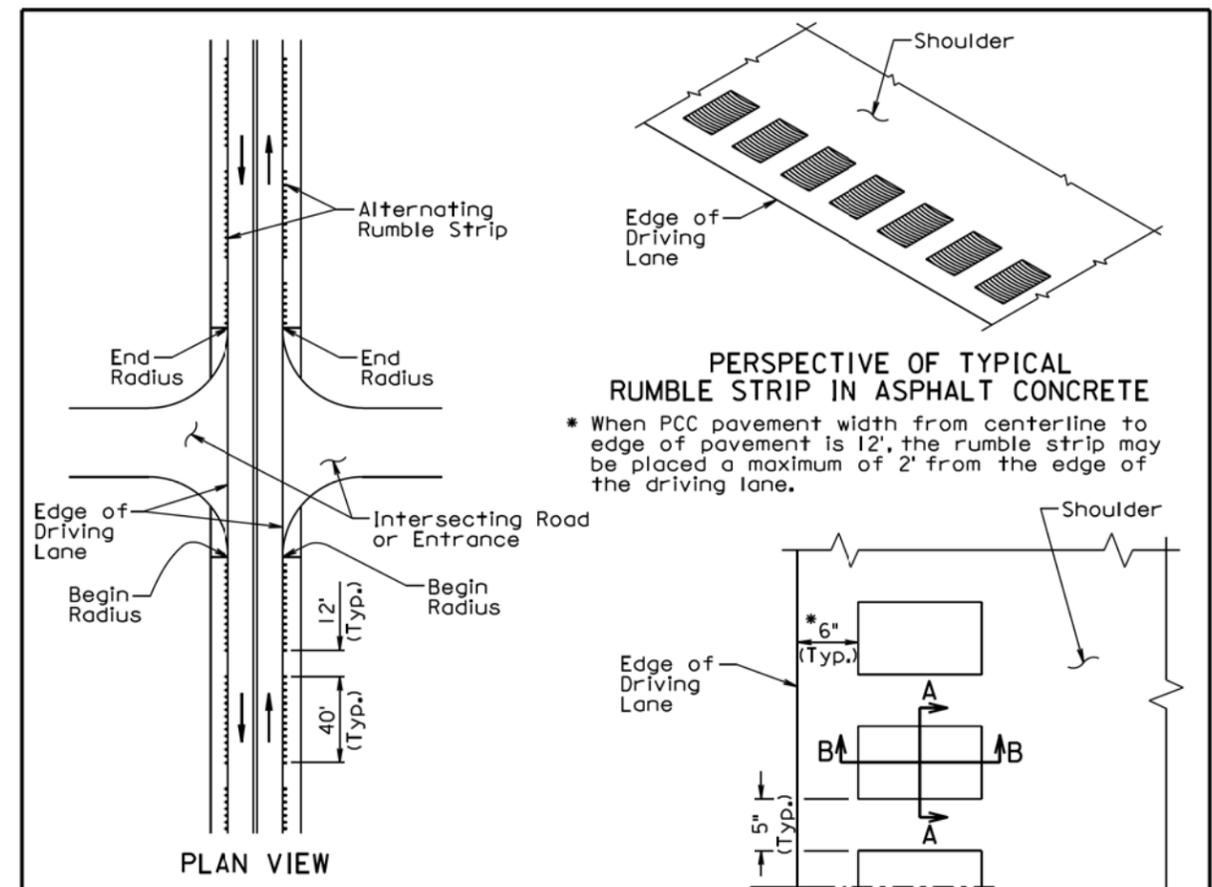
**ENTRANCE**

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: 4th Qtr. 2014	S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1



**PERSPECTIVE OF TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE**

\* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.

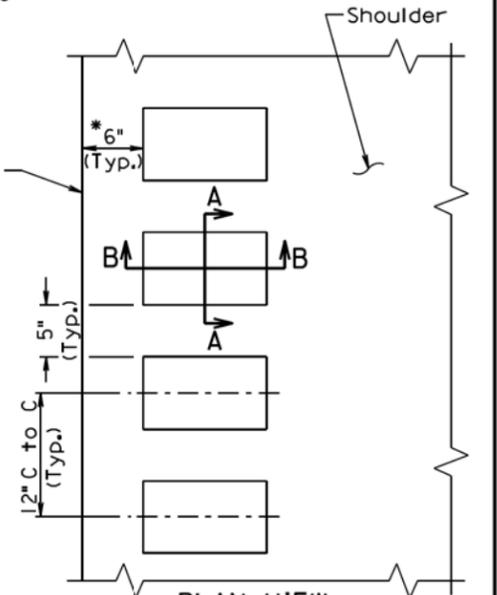
**GENERAL NOTES:**

A rumble strip shall be constructed on all of the asphalt concrete 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.

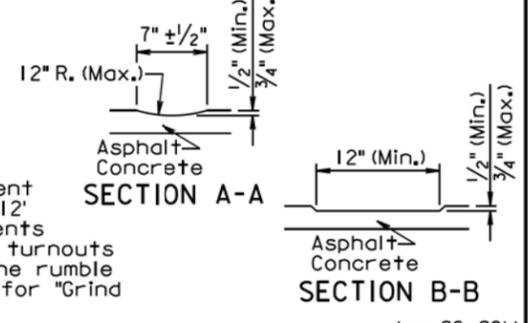
A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

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 shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip shall include the 12' long segments without rumble strips and the segments adjacent to the intersecting roads, entrances, and turnouts 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".



**PLAN VIEW TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE**



June 26, 2011

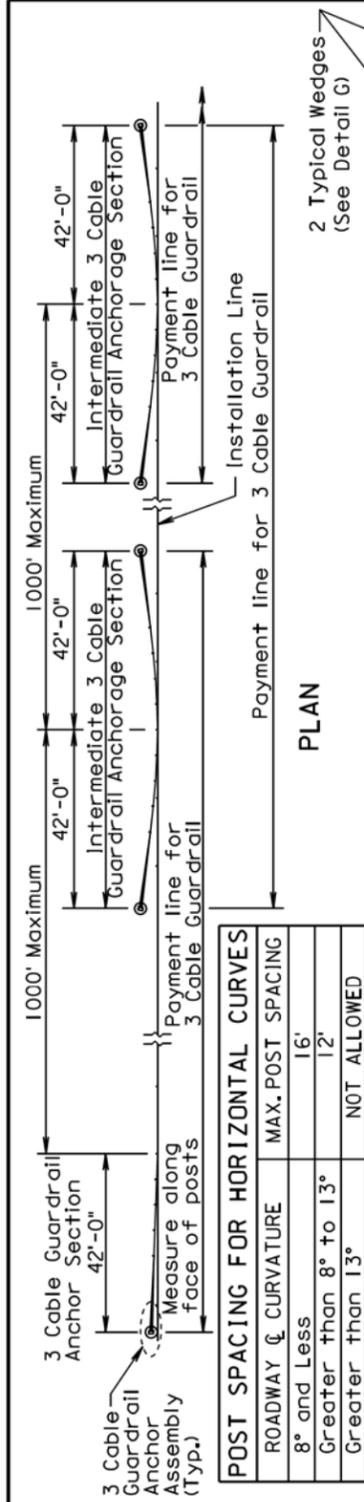
Published Date: 4th Qtr. 2014	S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRAB12222

PLOT NAME - 5

FILE - ... \04DY\_01\_ASPHALT.DGN



**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	89 to 80	79 to 70	69 to 60	59 to 50	49 to 40	39 to 30	29 to 20	19 to 10	9 to 0	-1 to -10	-11 to -20
Spring Compression (In.)	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4

December 23, 2010

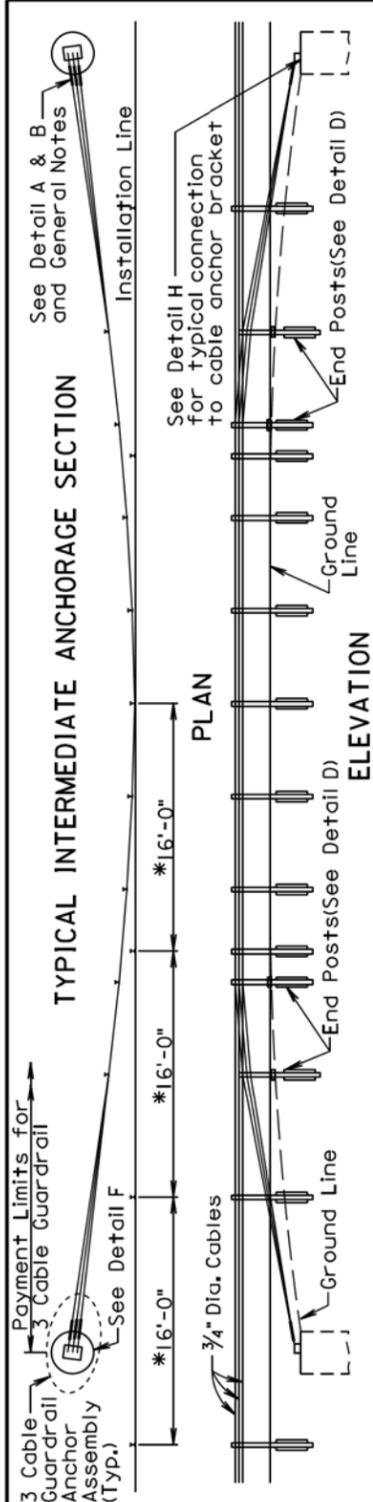
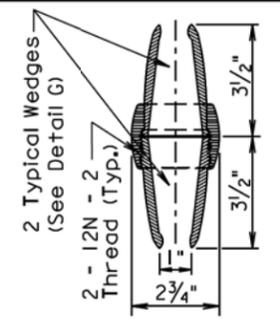
Published Date: 4th Qtr. 2014

**TODD**

**3 CABLE GUARDRAIL**

PLATE NUMBER  
629.01

Sheet 1 of 6



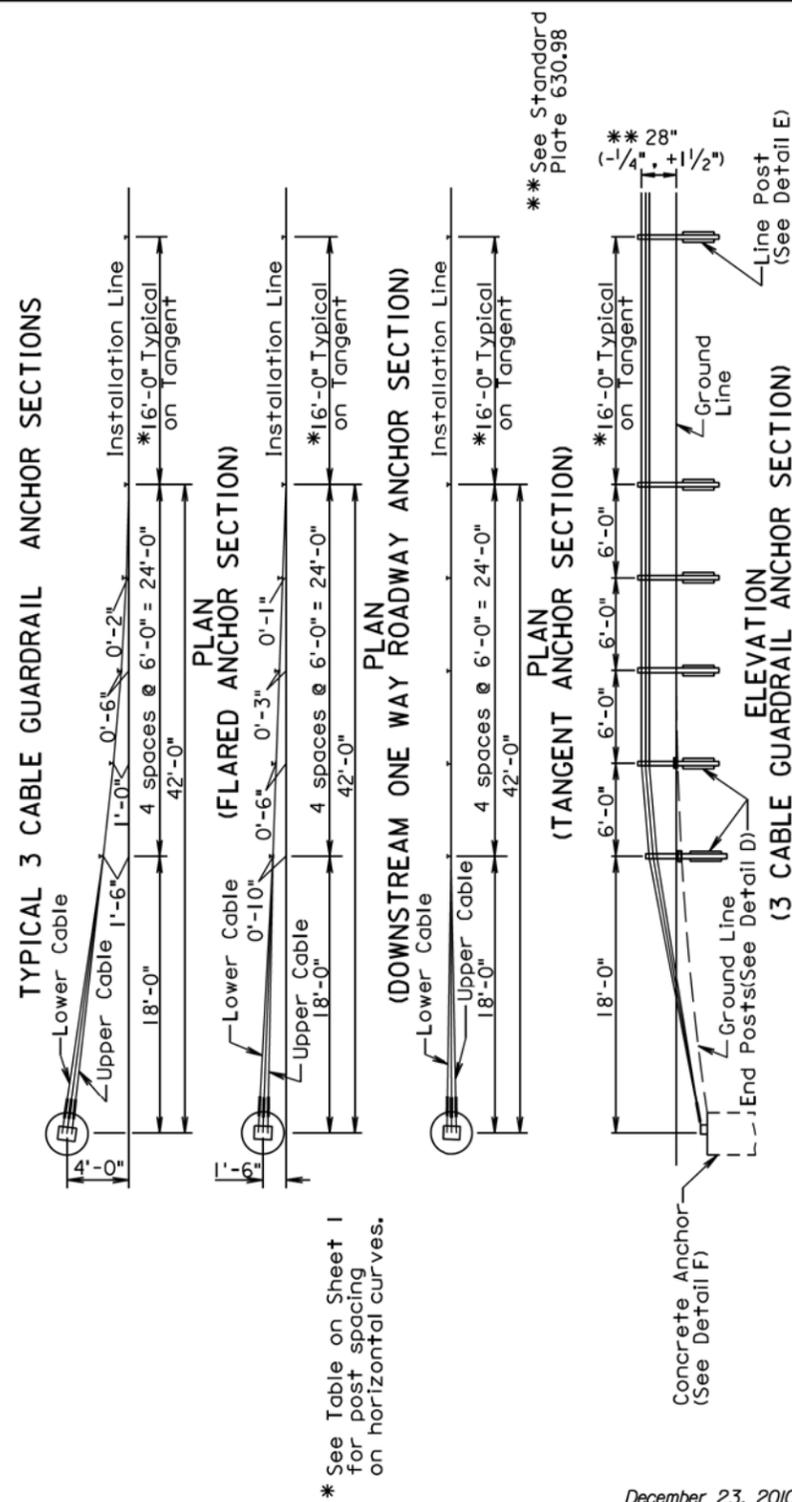
Published Date: 4th Qtr. 2014

**TODD**

**3 CABLE GUARDRAIL**

PLATE NUMBER  
629.01

Sheet 2 of 6



\* See Table on Sheet 1 for post spacing on horizontal curves.

December 23, 2010

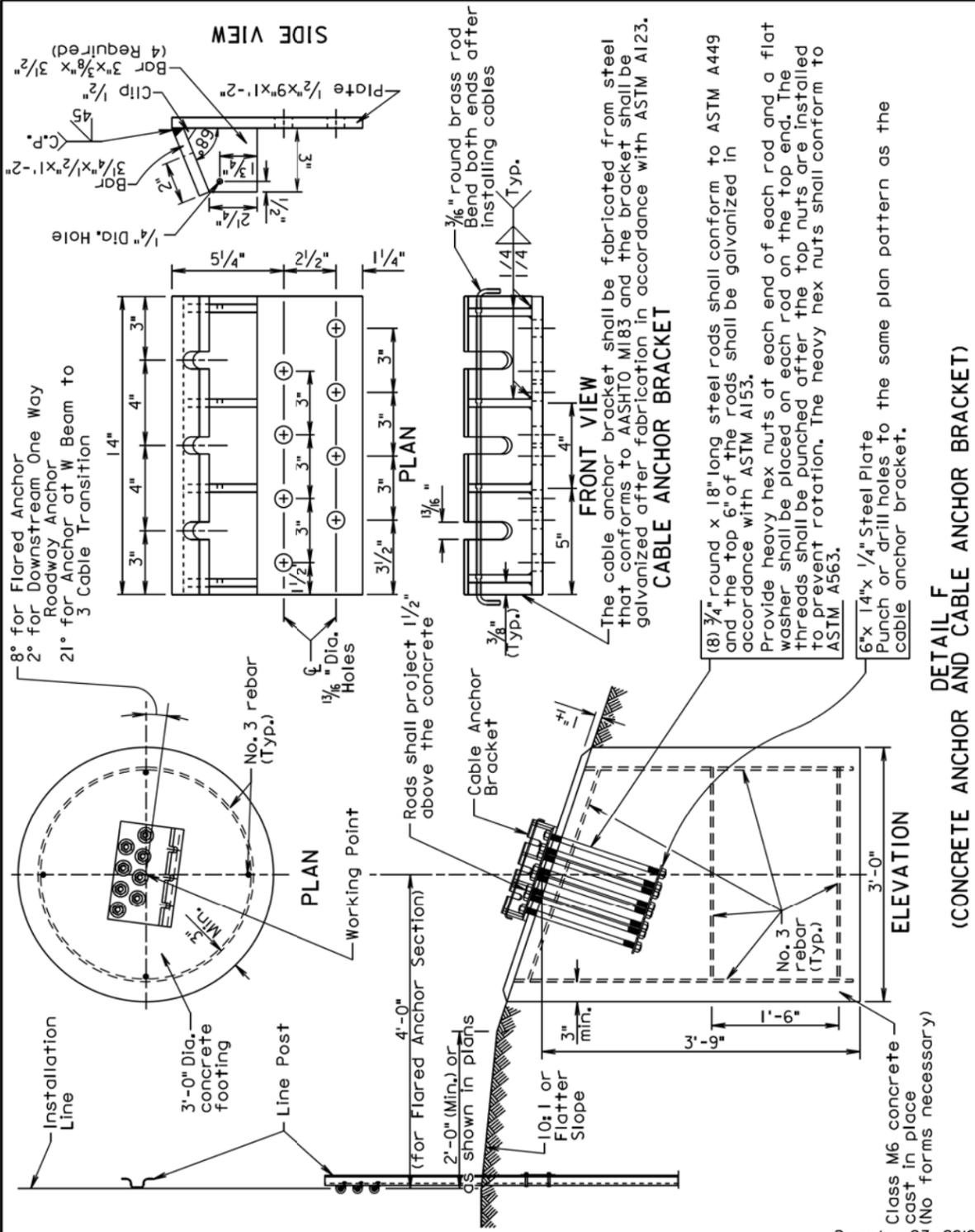
Published Date: 4th Qtr. 2014

**TODD**

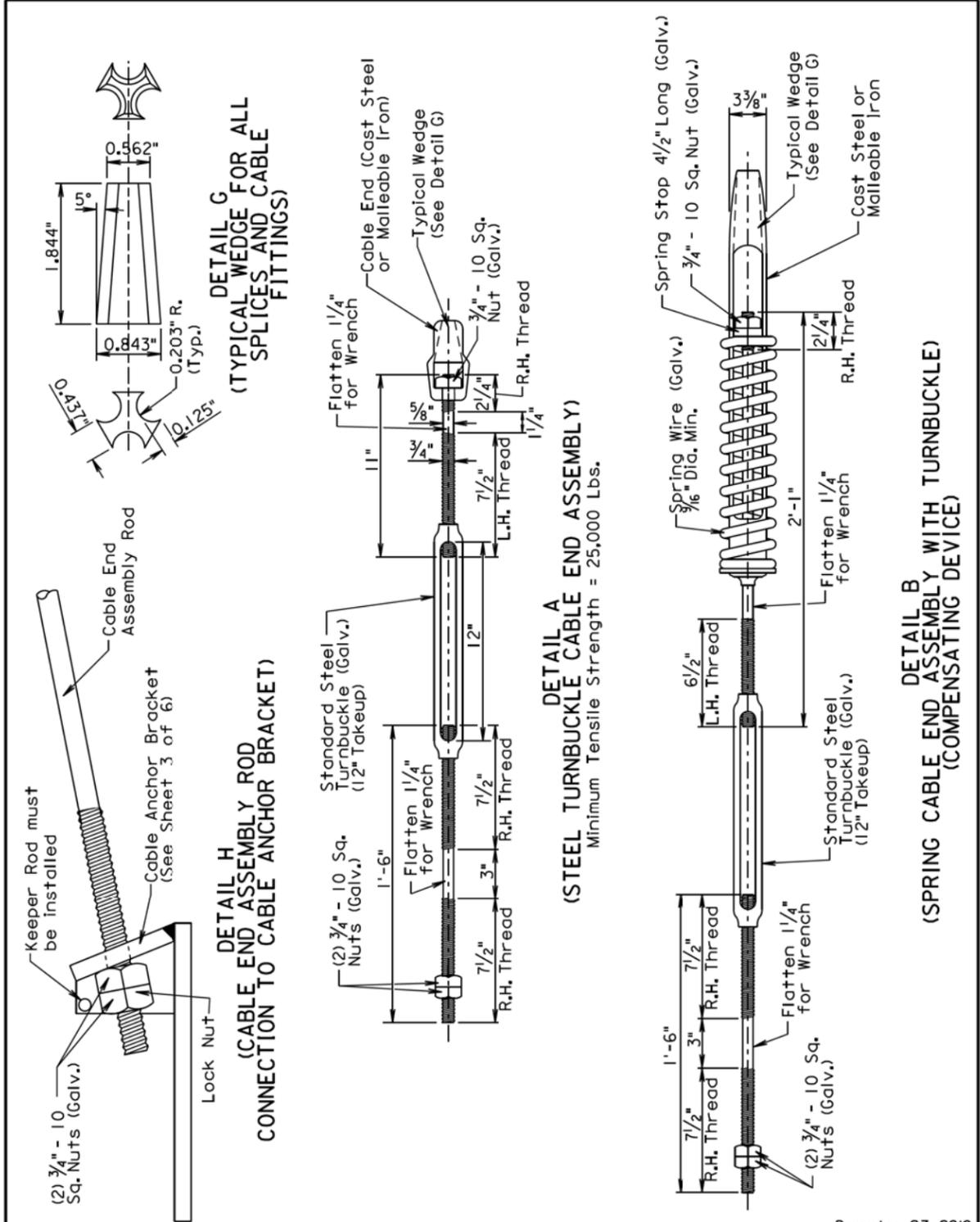
**3 CABLE GUARDRAIL**

PLATE NUMBER  
629.01

Sheet 2 of 6

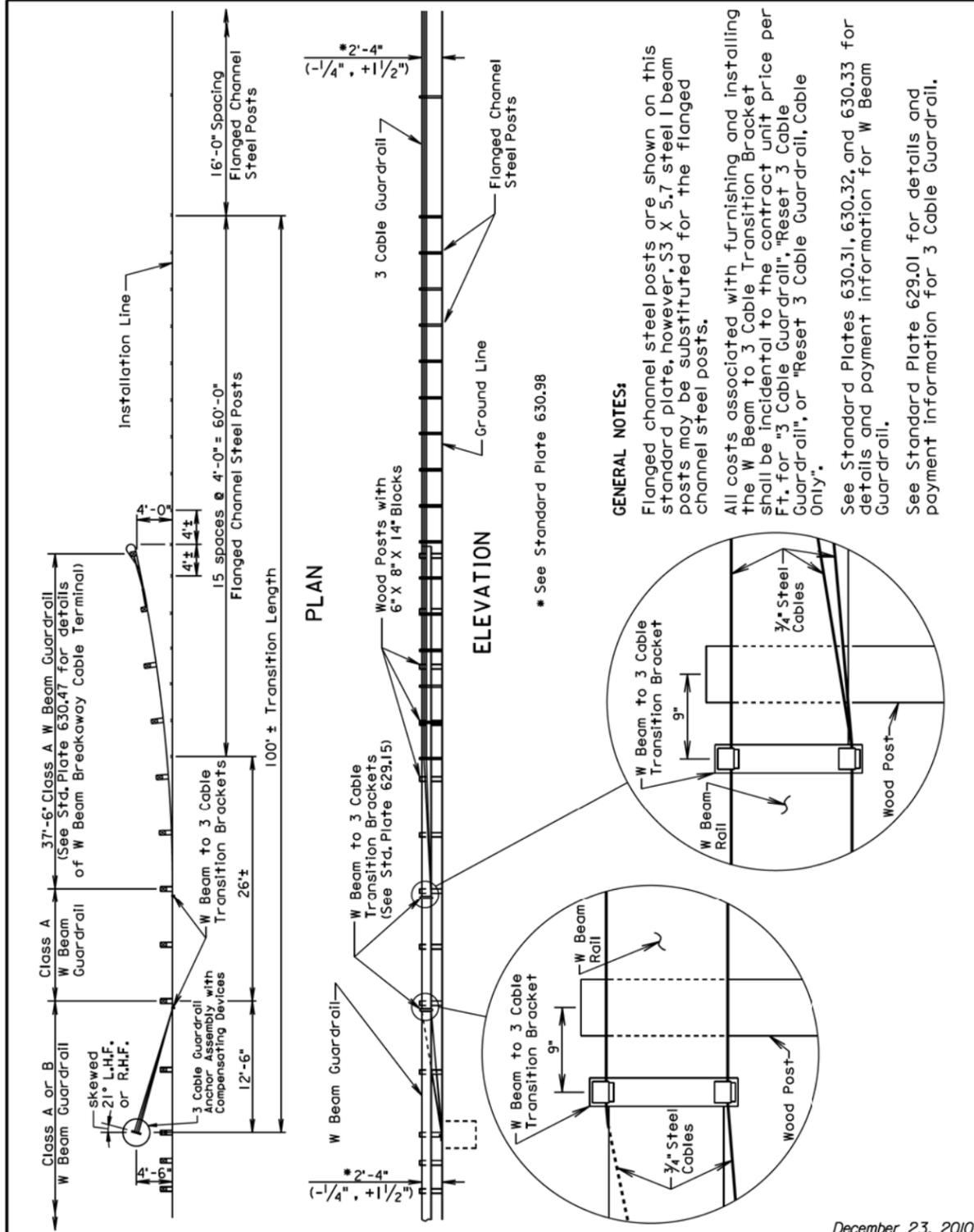


<b>S D D O T</b>	<b>3 CABLE GUARDRAIL</b>	PLATE NUMBER <b>629.01</b>
		Sheet 3 of 6
		Published Date: 4th Qtr. 2014



<b>S D D O T</b>	<b>3 CABLE GUARDRAIL</b>	PLATE NUMBER <b>629.01</b>
		Sheet 4 of 6
		Published Date: 4th Qtr. 2014

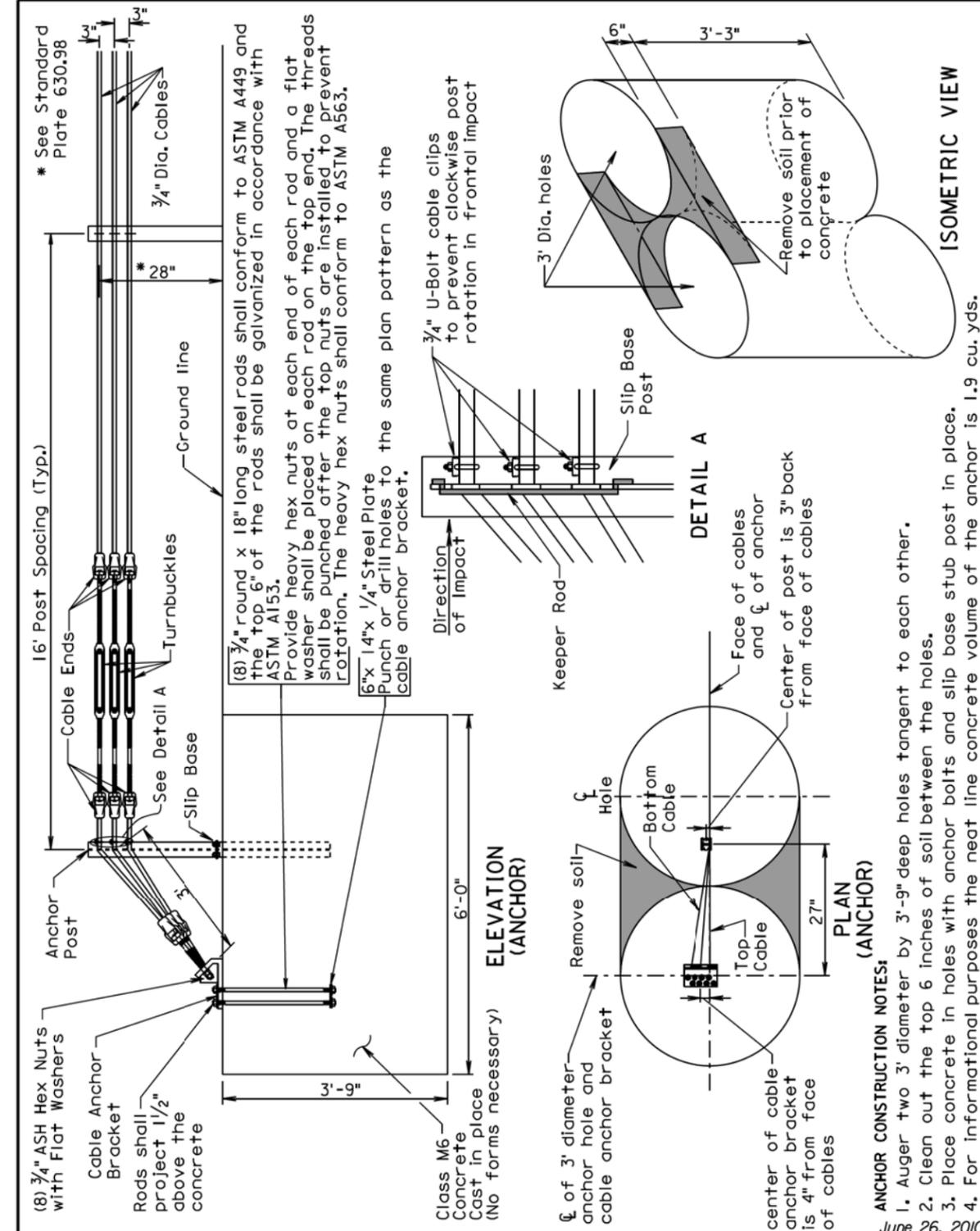




**GENERAL NOTES:**  
 Flanged channel steel posts are shown on this standard plate, however, S3 X 5.7 steel I beam posts may be substituted for the flanged channel steel posts.  
 All costs associated with furnishing and installing the W Beam to 3 Cable Transition Bracket shall be incidental to the contract unit price per Ft. for "3 Cable Guardrail", "Reset 3 Cable Guardrail", or "Reset 3 Cable Guardrail, Cable Only".  
 See Standard Plates 630.31, 630.32, and 630.33 for details and payment information for W Beam Guardrail.  
 See Standard Plate 629.01 for details and payment information for 3 Cable Guardrail.

December 23, 2010

Published Date: 4th Qtr. 2014	SDDOT	W BEAM TO 3 CABLE TRANSITION	PLATE NUMBER
			629.05
			Sheet 1 of 1



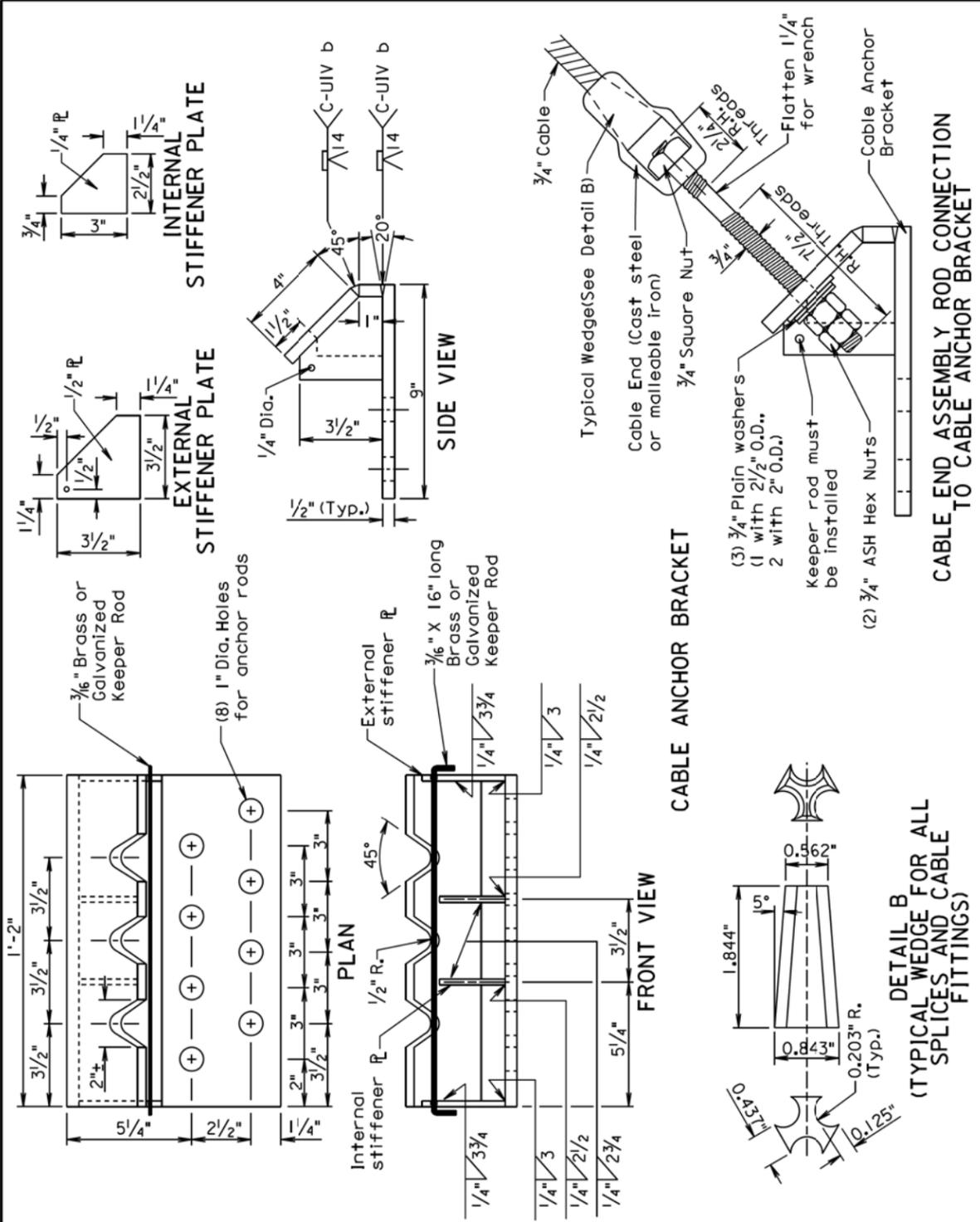
(8) 3/4" round x 18" long steel rods shall conform to ASTM A449 and the top 6" of the rods shall be galvanized in accordance with ASTM A153.  
 Provide heavy hex nuts at each end of each rod and a flat washer shall be placed on each rod on the top end. The threads shall be punched after the top nuts are installed to prevent rotation. The heavy hex nuts shall conform to ASTM A563.  
 6"x 14"x 1/4" Steel Plate  
 Punch or drill holes to the same plan pattern as the cable anchor bracket.

**ANCHOR CONSTRUCTION NOTES:**  
 1. Auger two 3' diameter by 3'-9" deep holes tangent to each other.  
 2. Clean out the top 6 inches of soil between the holes.  
 3. Place concrete in holes with anchor bolts and slip base stub post in place.  
 4. For informational purposes the neat line concrete volume of the anchor is 1.9 cu. yds.

June 26, 2010

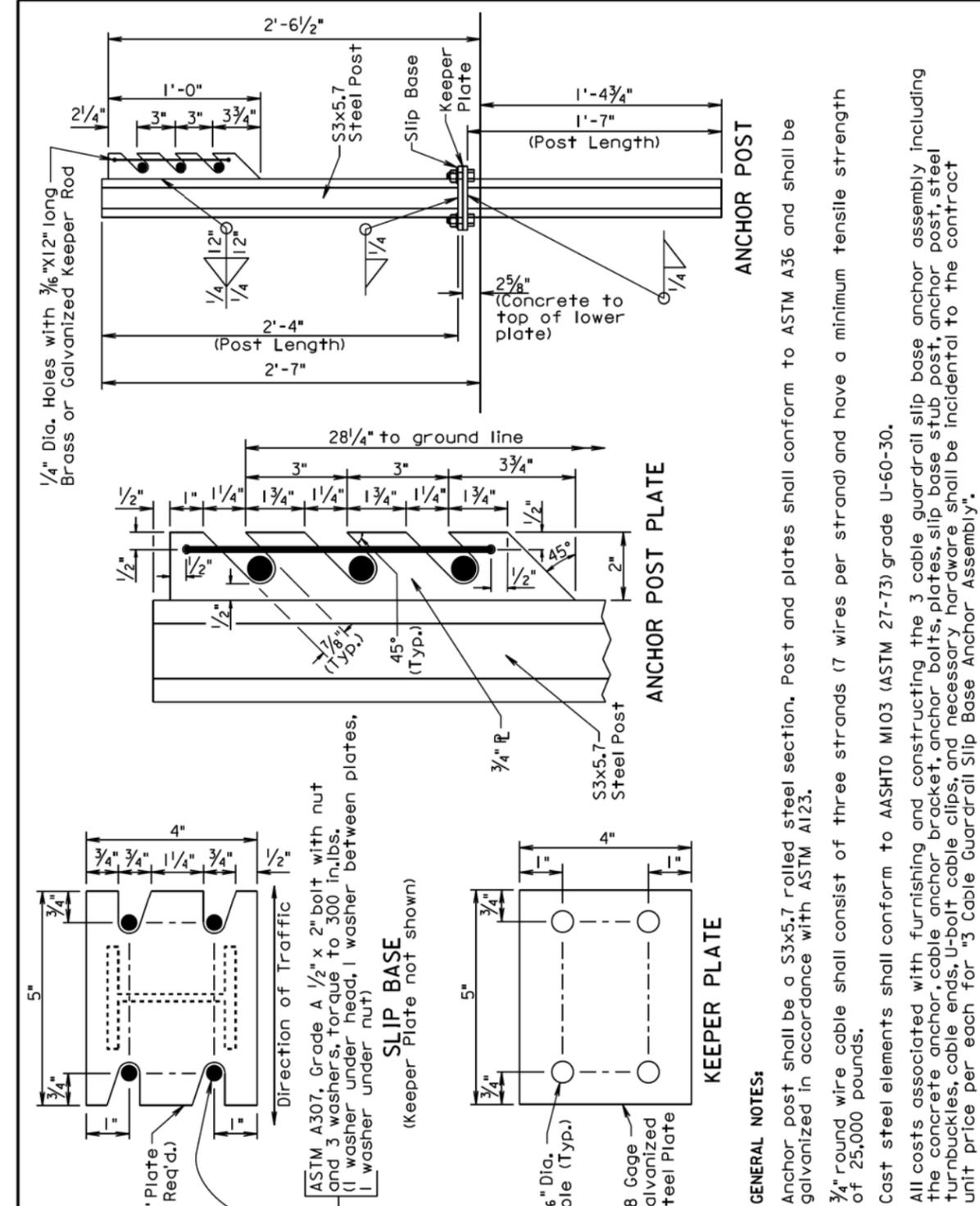
Published Date: 4th Qtr. 2014	SDDOT	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	PLATE NUMBER
			629.10
			Sheet 1 of 3

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(196)351	50	52
Plotting Date: 12/08/2014			



<b>SDOT</b>	<b>3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY</b>	PLATE NUMBER 629.10
		Sheet 2 of 3
		Published Date: 4th Qtr. 2014

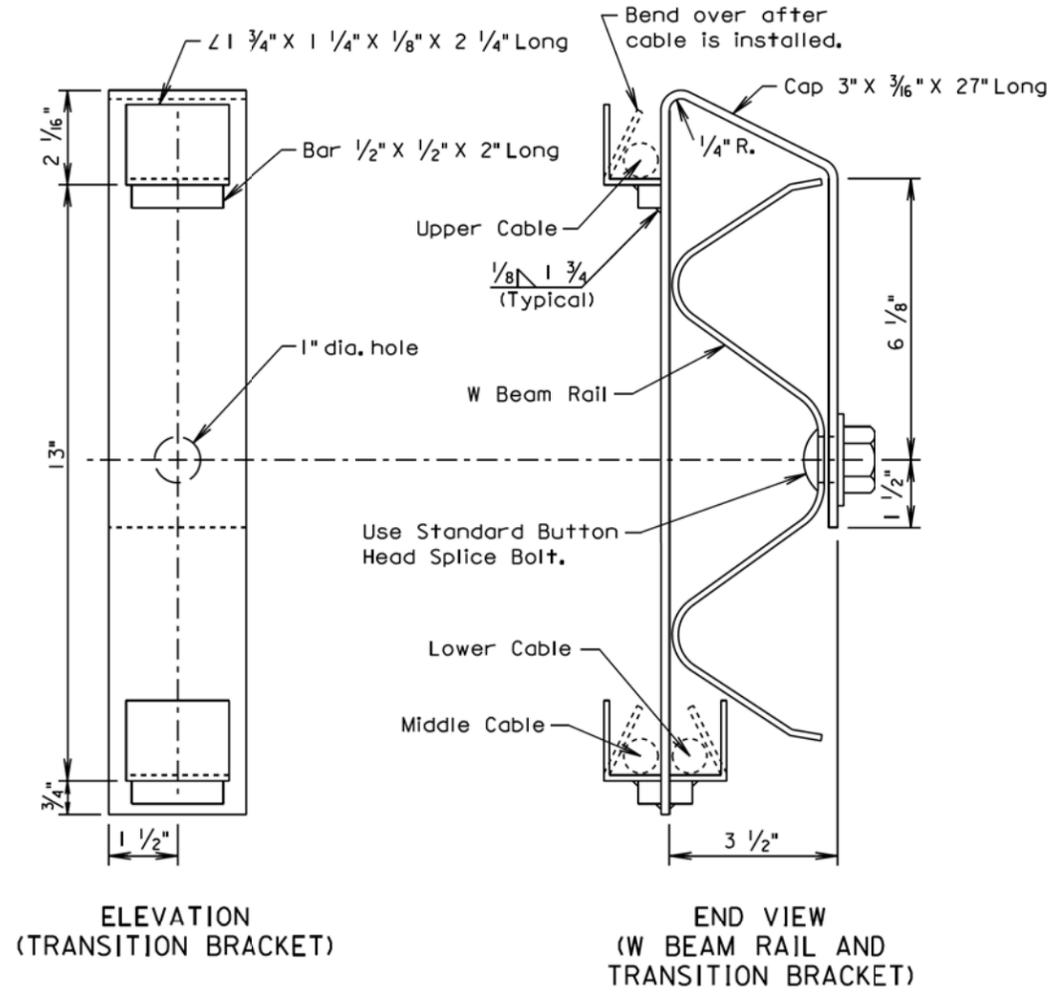
June 26, 2010



<b>SDOT</b>	<b>3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY</b>	PLATE NUMBER 629.10
		Sheet 3 of 3
		Published Date: 4th Qtr. 2014

June 26, 2010

**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".



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

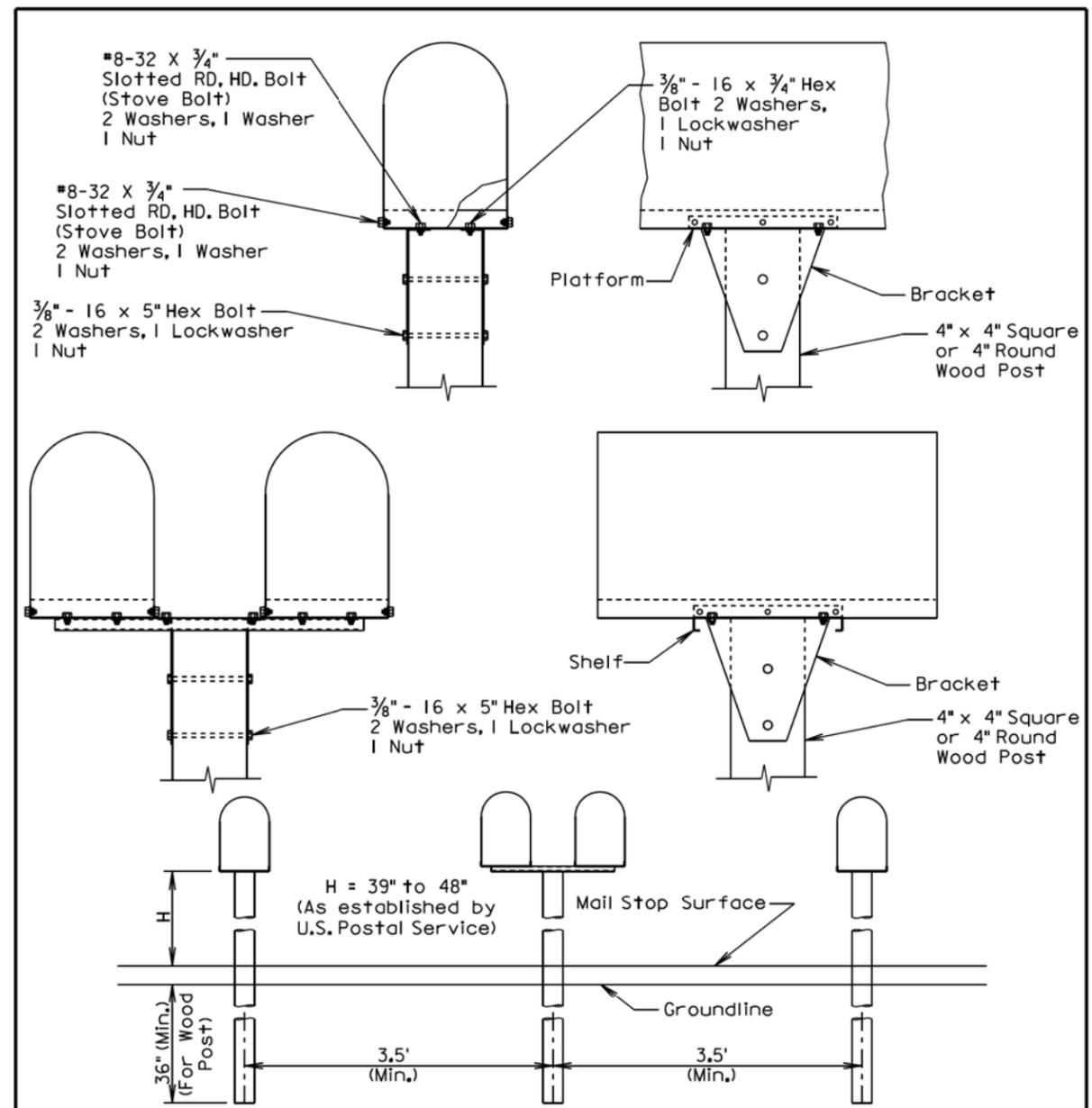
Published Date: 4th Qtr. 2014

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O  
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**W BEAM TO 3 CABLE TRANSITION BRACKET**

PLATE NUMBER  
629.15

Sheet 1 of 1



**GENERAL NOTES:**      **SPACING FOR MULTIPLE POST INSTALLATION**

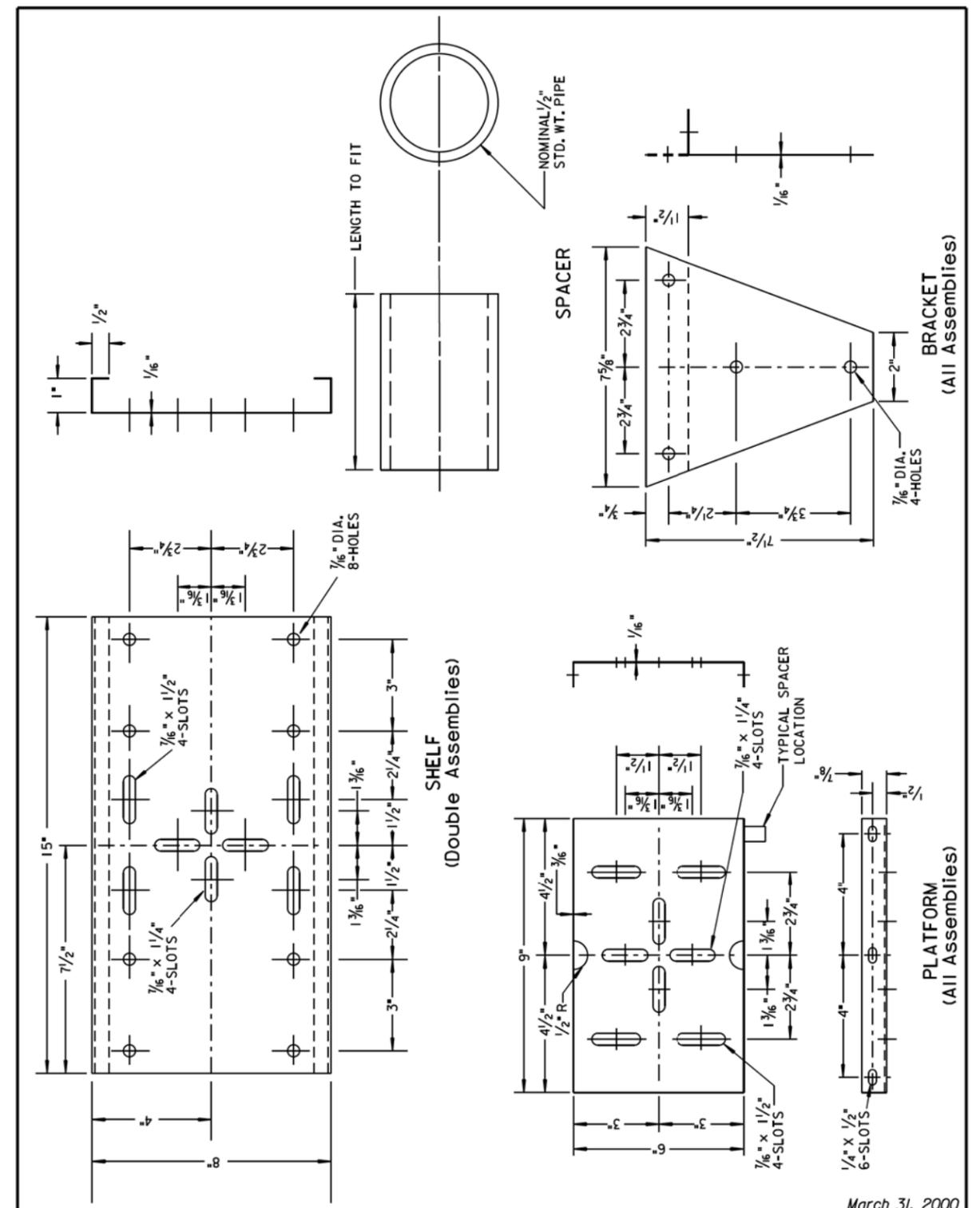
The post support assemblies provided should be consistent throughout the project. Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

September 6, 2013

<b>S D D O T</b>	<b>SINGLE AND DOUBLE MAILBOX ASSEMBLIES</b>	PLATE NUMBER <b>900.02</b>
		Sheet 1 of 1
Published Date: 4th Qtr. 2014		



<b>S D D O T</b>	<b>MAILBOX SUPPORT HARDWARE</b>	PLATE NUMBER <b>900.03</b>
		Sheet 1 of 1
Published Date: 4th Qtr. 2014		

March 31, 2000

PLOT SCALE - 1:200

PLOTTED FROM - TRAB12222

PLOT NAME - 12

FILE - ... \04DY\_08\_MISC.DGN