

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	1	42
Plotting Date: 02/03/2015			

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

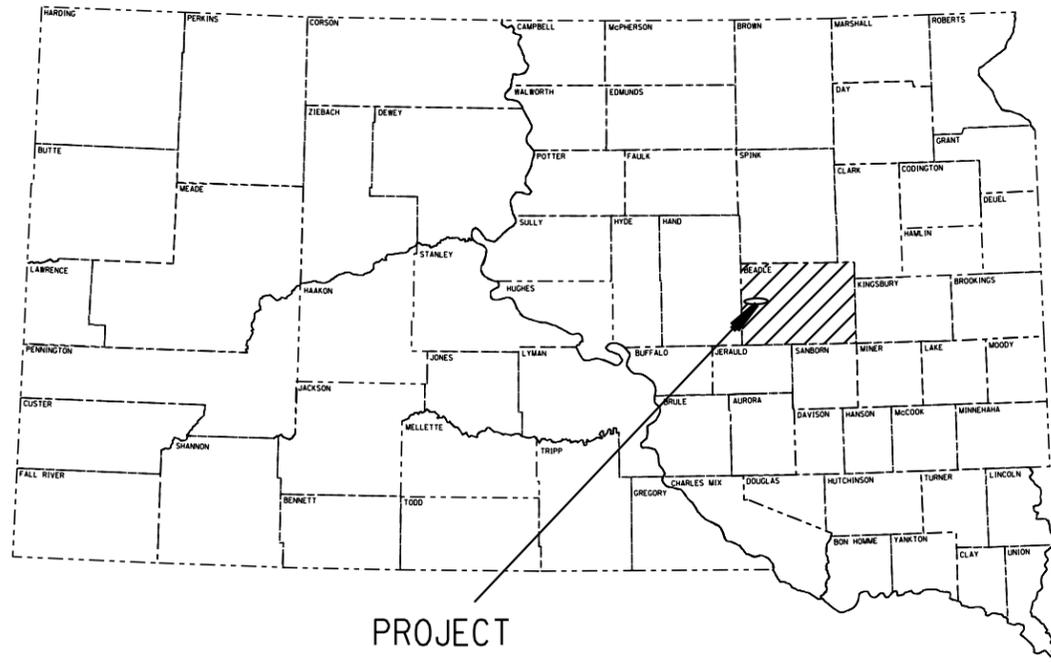
PLANS FOR PROPOSED

**PROJECT NH 0014(198)320**  
**US HIGHWAY 14**  
**BEADLE COUNTY**

ASPHALT CONCRETE RESURFACING,  
SIGNING & PAVEMENT MARKING  
PCN 0363

INDEX OF SECTIONS

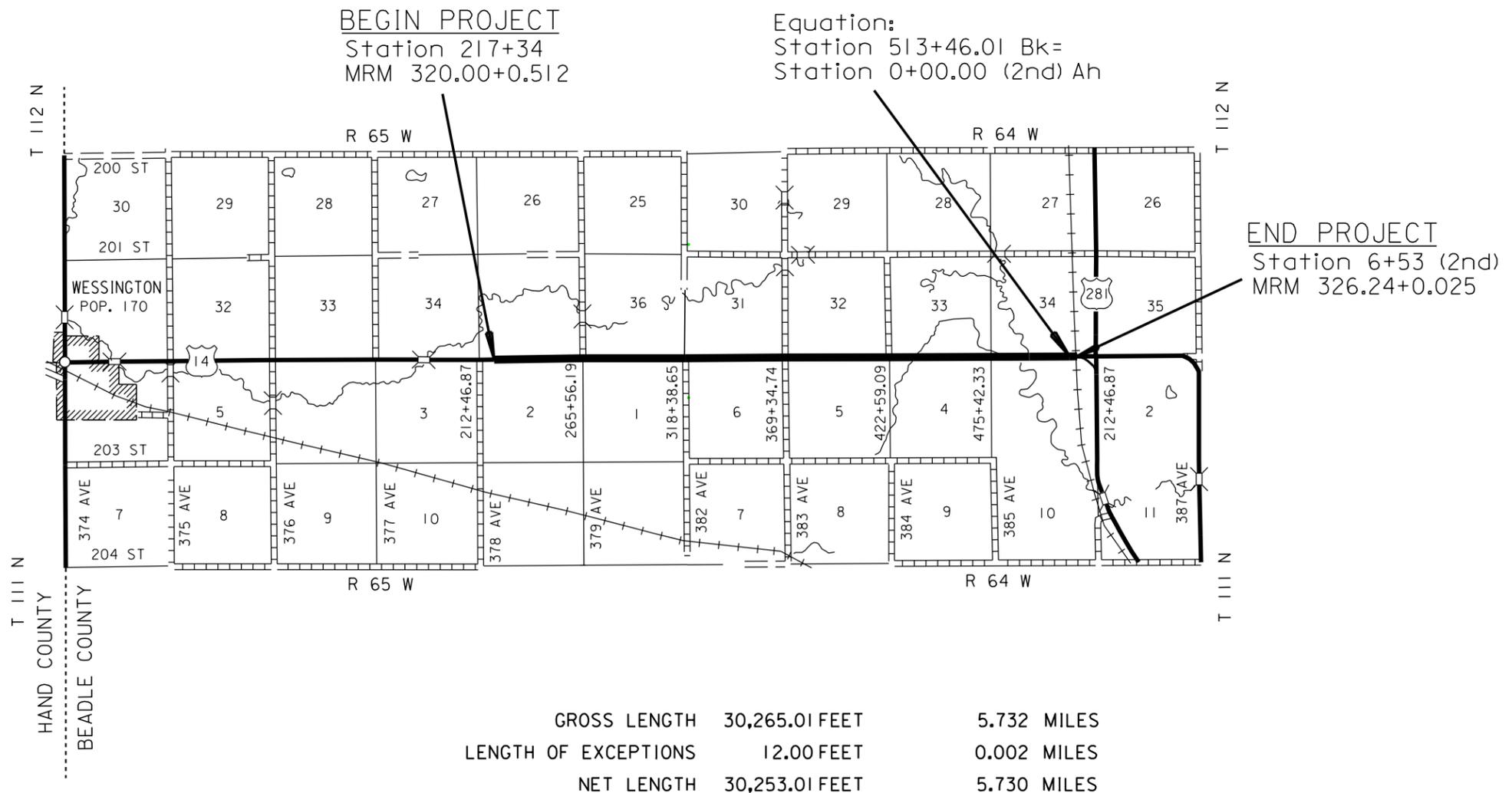
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PLOT SCALE - 1:200

PLOT NAME - 1

FILE - ... \TITLE SHEET.DGN



BEGIN PROJECT  
Station 217+34  
MRM 320.00+0.512

Equation:  
Station 513+46.01 Bk=  
Station 0+00.00 (2nd) Ah

END PROJECT  
Station 6+53 (2nd)  
MRM 326.24+0.025

DESIGN DESIGNATION

ADT (2013)	2,361
ADT (2033)	3,131
DHV	602
D	50.0
T DHV	5.5%
T ADT	28.5%
V	65 MPH

STORM WATER PERMIT  
(NONE REQUIRED)

GROSS LENGTH	30,265.01 FEET	5.732 MILES
LENGTH OF EXCEPTIONS	12.00 FEET	0.002 MILES
NET LENGTH	30,253.01 FEET	5.730 MILES

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PLOTTED FROM - TRHJUNT06

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

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Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0130	Remove Traffic Sign	20	Each
110E1010	Remove Asphalt Concrete Pavement	268.0	SqYd
110E1100	Remove Concrete Pavement	306.7	SqYd
120E0100	Unclassified Excavation, Digouts	143	CuYd
210E2000	Shoulder Shaping	11.500	Mile
260E1010	Base Course	3,764.4	Ton
320E0007	PG 64-28 Asphalt Binder	1,706.7	Ton
320E1003	Class Q3 Hot Mixed Asphalt Concrete	26,195.1	Ton
320E1200	Asphalt Concrete Composite	127.3	Ton
320E1810	Asphalt Concrete Leveling Lift	3,339.6	Ton
320E4000	Hydrated Lime	286.8	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	11.5	Mile
330E0010	MC-70 Asphalt for Prime	84.8	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	84.8	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	30.1	Ton
330E2000	Sand for Flush Seal	295.8	Ton
380E6500	Planing PCC Pavement	980.0	SqYd
632E1320	2.0"x2.0" Perforated Tube Post	184.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	84.0	Ft
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	113.4	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	83.5	SqFt
633E0055	Cold Applied Plastic Pavement Marking, Railroad Crossing	2	Each
633E1300	Pavement Marking Paint, White	193.7	Gal
633E1305	Pavement Marking Paint, Yellow	49.4	Gal
633E5040	Grooving for Cold Applied Plastic Pavement Marking, Railroad Crossing	2	Each
634E0010	Flagging	600	Hour
634E0020	Pilot Car	300	Hour
634E0100	Traffic Control	1,010	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	22.9	Mile
900E0010	Refurbish Single Mailbox	5	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

## 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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

#### Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

## SPECIFICATIONS

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

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

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## **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.

## **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.

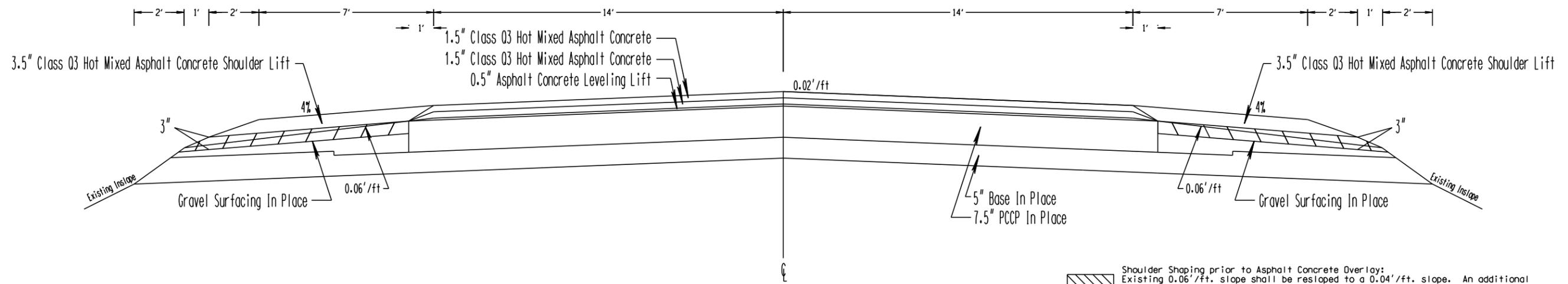
If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

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.

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# TYPICAL RESURFACING SECTION

US14 - Section 1  
Sta 217+34 to Sta 5+07 (2nd) (thru Equation)



Shoulder Shaping prior to Asphalt Concrete Overlay:  
Existing 0.06' /ft. slope shall be resloped to a 0.04' /ft. slope. An additional 250 tons of Base Course per mile, per shoulder for Shoulder Shaping is provided to bring the existing slope to the new slope. After completion of the shoulder shaping the shoulders shall be primed as provided in the Rates of Materials.

PLOT SCALE - 1/4"=1'-0"

PLOTTED FROM - TRHJUNT06

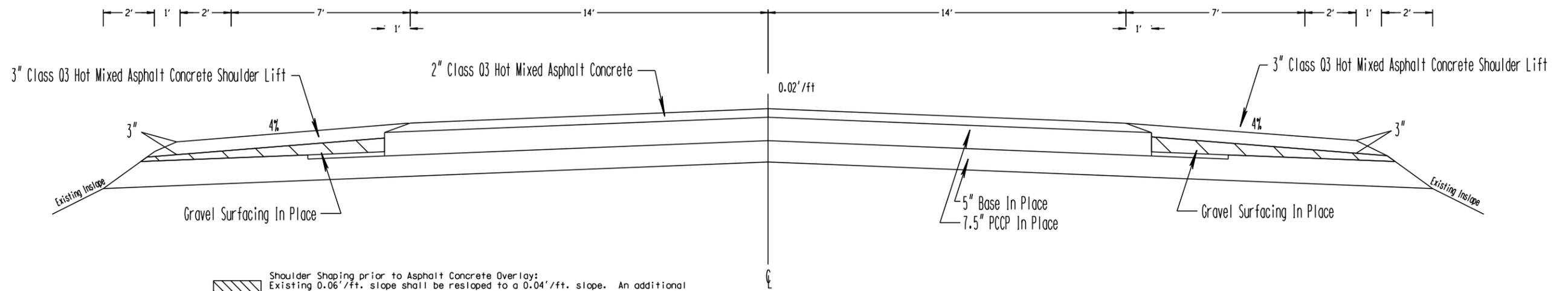
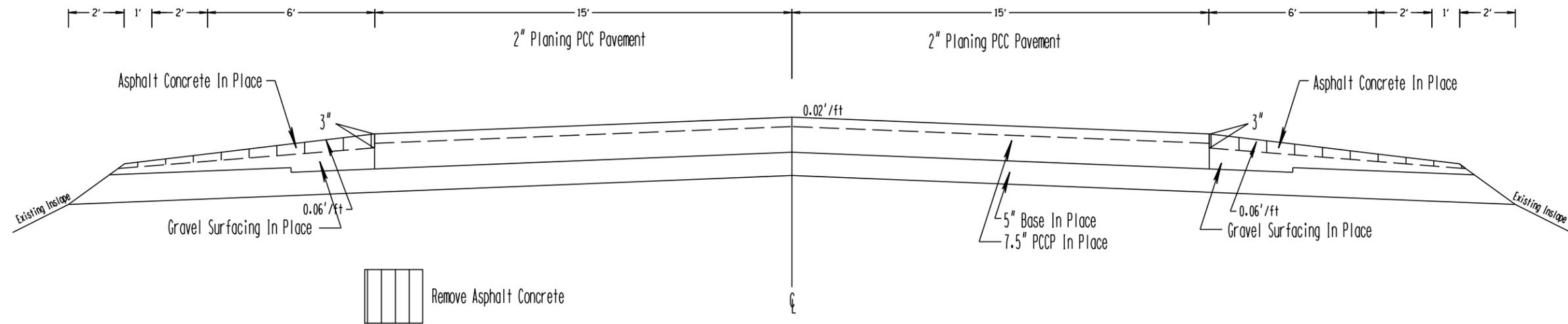
PLOT NAME - 1

FILE - ... \0363TYP.DGN

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# TYPICAL RESURFACING SECTION

US14 - Section 2  
East of of the RR Crossing  
5+19(2nd) to 6+53(2nd)



Shoulder Shaping prior to Asphalt Concrete Overlay:  
Existing 0.06'/ft. slope shall be resloped to a 0.04'/ft. slope. An additional 250 tons of Base Course per mile, per shoulder for Shoulder Shaping is provided to bring the existing slope to the new slope. After completion of the shoulder shaping the shoulders shall be primed as provided in the Rates of Materials.

PLOT SCALE - 1/4\"/>

PLOTTED FROM - TRHJINT06

PLOT NAME - 1

FILE - ... \0363TYP.DGN

**RATES OF MATERIALS**

**SECTION 1**

**Sta. 217+34 to 5+07(2<sup>nd</sup>)**

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

**0.5" Asphalt Concrete Leveling Lift**

Contractor Furnished Aggregate.....	444 Tons
PG 64-28 Asphalt Binder.....	36 Tons
<b>Total without Lime</b>	<b>480 Tons</b>
Hydrated Lime.....	5 Tons
<b>Total with Lime</b>	<b>485 Tons</b>

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **3.9** tons applied **31** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**CLASS Q3 HOT MIXED ASPHALT CONCRETE - 1.5" 1<sup>st</sup> LIFT**

Contractor Furnished Aggregate.....	1329 Tons
PG 64-28 Asphalt Binder.....	79 Tons
<b>Total without Lime</b>	<b>1408 Tons</b>
Hydrated Lime.....	14 Tons
<b>Total with Lime</b>	<b>1422 Tons</b>

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **3.9** tons applied **31** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**CLASS Q3 HOT MIXED ASPHALT CONCRETE - 1.5" 2<sup>nd</sup> LIFT**

Contractor Furnished Aggregate.....	1337 Tons
PG 64-28 Asphalt Binder.....	79 Tons
<b>Total without Lime</b>	<b>1416 Tons</b>
Hydrated Lime.....	14 Tons
<b>Total with Lime</b>	<b>1430 Tons</b>

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **3.9** tons applied **31** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**CLASS Q3 HOT MIXED ASPHALT CONCRETE - 3.5" SHOULDER LIFT (ONE SIDE ONLY)**

Contractor Furnished Aggregate.....	799 Tons
PG 64-28 Asphalt Binder.....	49 Tons
<b>Total without Lime</b>	<b>848 Tons</b>
Hydrated Lime.....	8 Tons
<b>Total with Lime</b>	<b>856 Tons</b>

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

MC-70 Asphalt for Prime at the rate of **7.4** tons applied **11** feet wide.  
(11 feet wide each shoulder) (Rate = 0.30 Gal./Sq.Yd.)

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **1.3** tons applied **10** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**SECTION 2**

**Sta. 5+19(2<sup>nd</sup>) to 6+53(2<sup>nd</sup>)**

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

**CLASS Q3 HOT MIXED ASPHALT CONCRETE - 2" LIFT**

Contractor Furnished Aggregate.....	1772 Tons
PG 64-28 Asphalt Binder.....	105 Tons
<b>Total without Lime</b>	<b>1877 Tons</b>
Hydrated Lime.....	19 Tons
<b>Total with Lime</b>	<b>1896 Tons</b>

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **3.9** tons applied **31** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**CLASS Q3 HOT MIXED ASPHALT CONCRETE - 3" SHOULDER LIFT (ONE SIDE ONLY)**

Contractor Furnished Aggregate.....	685 Tons
PG 64-28 Asphalt Binder.....	42 Tons
<b>Total without Lime</b>	<b>727 Tons</b>
Hydrated Lime.....	7 Tons
<b>Total with Lime</b>	<b>734 Tons</b>

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

MC-70 Asphalt for Prime at the rate of **7.4** tons applied **11** feet wide.  
(11 feet wide each shoulder) (Rate = 0.30 Gal./Sq.Yd.)

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **1.3** tons applied **10** feet wide.  
(Rate = 0.05 Gal./Sq.Yd.)

**FLUSH SEAL**

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **5.3** tons applied **42** 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.)

**SUMMARY OF ASPHALT CONCRETE**

LOCATIONS:	Class Q3 Hot Mixed Asphalt Concrete with Specified Density Compaction	Class Q3 Hot Mixed Asphalt Concrete without Specified Density Compaction
	TONS	TONS

Section 1 - 1.5" Mainline 1st Lift	8,111.6	-
Section 1 - 1.5" Mainline 2nd Lift	8,157.2	-
Section 1 - 3.5" Shoulder Lift	-	9,765.9
Section 2 - 2" Mainline 1st Lift	48.1	-
Section 2 - 3" Shoulder Lift	-	37.2
Table of Additional Quantities	-	75.1
<b>TOTAL</b>	<b>16,316.9</b>	<b>9,878.2</b>

*Total Class Q3 Hot Mixed Asphalt Concrete: 26,195.1 Tons*

### TABLE OF PROJECT STATIONING

SECTION	STATION	TO	STATION	LENGTH (ft)	NET SECTION LENGTH (ft)	NET SECTION LENGTH (mile)
1	217+34	TO	513+46.01	29,612.0		
	0+00 (2ND)	TO	5+07 (2ND)	507.0	30,119.0	5.704
Railroad Exception	5+07 (2ND)	TO	5+19 (2ND)	12.0	12.0	0.002
2	5+19 (2ND)	TO	6+53 (2ND)	134.0	134.0	0.025
<b>TOTAL</b>					<b>30,253.0</b>	<b>5.730</b>

### TABLE OF MATERIAL QUANTITIES

	UNCL. EXC.- DIG OUTS	BASE COURSE (FOR BACKFILLING DIGOUTS)	BASE COURSE (FOR SHOULDER SHAPING)	WATER FOR GRANULAR MATERIAL	PLANING PCC PAVEMENT	REMOVE ASPHALT CONCRETE	ASPHALT CONCRETE LEVELING MIX	CLASS Q3 HOT MIXED ASPHALT CONCRETE	PG 64-28 ASPHALT BINDER	HYDRATED LIME	CRUSHED AGGREGATE NABI	ASPHALT CONCRETE COMPOSITE	MC-70 ASPHALT FOR PRIME	SS-1h/ CSS-1h ASPHALT FOR TACK	SS-1h/ CSS-1h ASPHALT FOR FLUSH SEAL	SAND FOR FLUSH SEAL
Section	CuYd	Ton	Ton	Mgal	SqYd	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
<b>1 - Asphalt Concrete Leveling Lift</b>	143	285.2	-	-	-	-	2,766.6	-	205.4	28.5	2,532.7	-	-	22.1	-	-
<b>Spot Leveling</b>	-	-	-	-	-	-	573.0	-	32.1	5.7	535.2	-	-	4.0	-	-
<b>1 - 1st 1.5" Mainline Lift</b>	-	-	-	-	-	-	-	8,111.6	450.6	79.9	7,581.1	-	-	22.1	-	-
<b>1 - 2nd 1.5" Mainline Lift</b>	-	-	-	-	-	-	-	8,157.2	450.6	79.9	7,626.7	-	-	22.1	20.0	294.5
<b>1 - 3.5" Shoulder Lift</b>	-	-	2,852.2	55.9	-	-	-	9,765.9	559.0	91.3	9,115.6	-	84.4	14.3	10.0	-
<b>2 - 2" Mainline Lift</b>	1	1.3	-	-	-	-	-	48.1	2.7	0.5	45.0	-	-	0.1	0.1	1.3
<b>2 - 3" Shoulder Lift</b>	-	-	12.7	0.2	-	-	-	37.2	2.1	0.3	34.8	-	0.4	0.1	0.0	-
<b>Additional Quantities</b>	-	613.0	-	-	980.0	268.0	-	75.1	4.2	0.7	70.2	127.3	-	-	-	-
<b>Totals</b>	<b>143</b>	<b>899.5</b>	<b>2,864.9</b>	<b>56.2</b>	<b>980.0</b>	<b>268.0</b>	<b>3,339.6</b>	<b>26,195.1</b>	<b>1,706.7</b>	<b>286.8</b>	<b>27,541.2</b>	<b>127.3</b>	<b>84.8</b>	<b>84.8</b>	<b>30.1</b>	<b>295.8</b>

## TABLE OF ADDITIONAL QUANTITIES

LOCATIONS:	CLASS Q3 HOT				
	BASE COURSE	MIXED ASPHALT CONCRETE	PG 64-28 ASPHALT BINDER	HYDRATED LIME	CRUSHED AGGREGATE (NABI)
	<u>(Ton)</u>	<u>(Ton)</u>	<u>(Ton)</u>	<u>(Ton)</u>	<u>(Ton)</u>
Farm/Home Entrances	126.0	0.0	0.0	0.0	0.0
Field Entrances/Approaches	420.0	0.0	0.0	0.0	0.0
Intersecting Roads	67.0	75.1	4.2	0.7	70.2
<b>TOTALS</b>	<b>613.0</b>	<b>75.1</b>	<b>4.2</b>	<b>0.7</b>	<b>70.2</b>

\*The tonnage shown in the Table of Additional Quantities for Class Q3 Asphalt Concrete is Based on an Average Compacted Depth of 2 inches for Intersecting Roads.

\*Base Course to be Place on Farm/Home/Field Entrances Shall be Spread and Compacted to an Even Depth within the ROW and Placed to Match the New Asphalt Concrete Surfacing to the Satisfaction of the Engineer. Base Course not Spread Evenly Shall be Reshaped at the Contractor's Expense.

\*Also Included in the Estimate of Quantities is 4 tons of SS 1h or CSS 1h Asphalt for Tack for surface repair, strengthening, and spot leveling areas throughout the project, and Shall be Applied at the Rate Shown on the Plans or as Directed by the Engineer.

\*The above quantities are included in the Estimate of Quantities.

### Highway 14 Additional Quantities

Station	Left/Right	Description	Type of Surfacing	Work Required	Q3 Asphalt Concrete (Ton)	PG 64- 28 Binder (Ton)	Hydrated Lime (Ton)	Crushed Aggregate (NABI) (Ton)	Base Course (Ton)	Comments
226+38	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
241+21	LEFT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
241+27	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
249+96	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
252+30	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
265+56	RIGHT	379th AVE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
265+56	LEFT	379th AVE	ASPHALT AROUND RADIUS	RESURFACE WITH Q3 ASPHALT CONCRETE UP TO RADIUS & PLACE BASE COURSE	15.0	0.8	0.15	14.0	5.0	2.0" COMPACTED DEPTH OF Q3 APSHALT CONCRETE; BASE COURSE TO TRANSITION
285+81	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
288+29	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
305+22	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
312+86	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
315+14	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
318+39	RIGHT	382nd AVE	ASPHALT AROUND RADIUS	RESURFACE WITH Q3 ASPHALT CONCRETE UP TO RADIUS & PLACE BASE COURSE	15.0	0.8	0.15	14.0	5.0	2.0" COMPACTED DEPTH OF Q3 APSHALT CONCRETE; BASE COURSE TO TRANSITION
318+39	LEFT	382nd AVE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
327+44	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
327+44	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
343+14	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
343+14	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
349+02	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
364+36	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
364+44	LEFT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
369+35	RIGHT	383rd AVE	ASPHALT AROUND RADIUS	RESURFACE WITH Q3 ASPHALT CONCRETE UP TO RADIUS & PLACE BASE COURSE	15.0	0.8	0.15	14.0	5.0	2.0" COMPACTED DEPTH OF Q3 APSHALT CONCRETE; BASE COURSE TO TRANSITION
369+35	LEFT	383rd AVE	ASPHALT AROUND RADIUS	RESURFACE WITH Q3 ASPHALT CONCRETE UP TO RADIUS & PLACE BASE COURSE	15.0	0.8	0.15	14.0	5.0	2.0" COMPACTED DEPTH OF Q3 APSHALT CONCRETE; BASE COURSE TO TRANSITION
393+94	LEFT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
395+72	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	

\*Work as listed in the "Work Required" Column and the "Comments" Column shall be incidental to various contract bid items including disposal of materials.

### Highway 14 Additional Quantities

Station	Left/Right	Description	Type of Surfacing	Work Required	Q3 Asphalt Concrete (Ton)	PG 64- 28 Binder (Ton)	Hydrated Lime (Ton)	Crushed Aggregate (NABI) (Ton)	Base Course (Ton)	Comments
411+76	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
411+76	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
417+56	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
418+63	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
418+63	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
422+59	RIGHT	384th AVE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
422+59	LEFT	384th AVE	ASPHALT AROUND RADIUS	RESURFACE WITH Q3 ASPHALT CONCRETE UP TO RADIUS & PLACE BASE COURSE	15.0	0.8	0.15	14.0	5.0	2.0" COMPACTED DEPTH OF Q3 APSHALT CONCRETE; BASE COURSE TO TRANSITION
433+20	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
449+06	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
449+06	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
462+80	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
463+78	RIGHT	FARM ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
475+35	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
475+47	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
476+49	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
495+16	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
503+44	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
503+44	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
518+89	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
518+89	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
6+00 (2nd)	RIGHT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
6+00 (2nd)	LEFT	FIELD ENTRANCE	GRAVEL	PLACE BASE COURSE	0.0	0.0	0.0	0.0	14.0	
<b>TOTALS</b>					75.1	4.2	0.74	70.2	613.0	

\*Work as listed in the "Work Required" Column and the "Comments" Column shall be incidental to various contract bid items including disposal of materials.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0014(198)320	11	42

### **SURFACING THICKNESS DIMENSIONS**

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

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

### **SEQUENCE OF OPERATIONS**

1. Install fixed location signing prior to start of work.
2. Complete growth joint construction.
3. Excavate ditches and complete backfill operations.
4. Complete shoulder work.
5. Complete PCC Planing.
6. Complete asphalt paving operations.
7. Place and shape gravel on approaches and mow project inslopes.
8. Complete grinding of rumble strips.
9. Complete flush seal.
10. Complete permanent pavement marking and permanent signing replacement.
11. Complete all remaining project items.

### **GENERAL NOTES**

The Contractor shall complete the Growth Joints a minimum of two weeks before placement of the Class Q3 Hot Mix Asphalt Concrete overlay to allow for settlement and compaction due to traffic.

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.

Once work that inconveniences traffic, it shall be pursued in a near continuous, expeditious manner to its completion. Any work that restricts the motorist from driving the posted speed limit, reduces existing roadway width, or causes a potentially unsafe condition due to Contractor operations such as frequent movement of equipment or materials on or through the project, is considered to be an inconvenience to traffic.

### **PROJECT WORK HOURS**

The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer. Daylight hours are considered to be sunrise until sunset. Traffic shall be returned to normal driving lanes during non-working hours.

### **TRAFFIC CONTROL**

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

Certified flaggers properly attired and preceded by FLAGGER symbol signs, will be required where work activity and/or equipment present a hazard to the workers, a hazard to through traffic, or encroaches into a driving lane.

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 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.

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.

Erect only those signs that are applicable to the work in progress. When the Contractor is working at specific work spaces within the project, only those traffic control devices applicable to that operation should be displayed. Non-applicable signs and/or devices shall be removed from the view by the Contractor and stored a minimum of 30 feet from the driving lanes during periods of in-activity. All costs to do this work shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

A shadow vehicle, equipped with flashing amber light and a ROAD MACHINERY AHEAD sign prominently displayed, shall be used in advance of landscaping, clean up, and other mobile work activities. Highway equipment working within traffic or adjacent to traffic shall, at all times, display a flashing or revolving amber light to warn the traveling public. The Contractor shall maintain the driving surface on the project to eliminate hazards to the traveling public. The driving surface is defined as both driving lanes along with both outside shoulders on the project.

The cost for additional signs shall be paid for at the contract unit price per unit for Traffic Control. Additional Flagger hours shall be paid for at the contract unit price per hour for Flagging. The cost of additional channeling devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

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.

Fresh oil signs have been added to the ITEMIZED LIST FOR TRAFFIC CONTROL. These signs are to be used at locations approved by the Engineer.

### **TRAFFIC CONTROL FOR ASPHALT CORING**

Coring operations shall be completed during daylight hours only. Traffic control for coring operations shall be executed by following the "Special Detail for Mobile Operations for Asphalt Coring" on sheet 17.

### **BUMP SIGNS**

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 Traffic Control Devices Inventory sheet in these plans.

### **UTILITIES**

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

### **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.

**SHOULDER PREPARATION**

Prior to beginning the shoulder build up operations, vegetation, accumulated material and topsoil shall be bladed down the respective inslopes and left in a windrow 2' +/-, just outside the limits of the surfacing materials required to construct in accordance with the typical section. 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.

Any vegetation damaged outside of the asphalt concrete limits shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

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.

**EXCAVATION OF UNSTABLE MATERIAL**

Included in the Estimate of Quantities are **25** Cubic Yards of Unclassified Excavation, Digouts per mile for the necessary removal of unstable material.

Backfill shall be Base Course 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.

In the event that digouts are required under the mainline existing concrete pavement Remove Concrete Pavement will be paid for at the contract unit price per SqYd.

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

**PLANING PCC PAVEMENT TAPERS**

In order to construct the new asphalt surfacing flush with the adjacent Pavement and Railroad Tracks, Planing PCC Pavement shall be done as per the Details for Planing PCC Pavement.

The basis of payment for Planing PCC Pavement will be plans quantity. No separate measurements will be taken.

STATION	LOCATION	SIZE	PLANING PCC PAVEMENT
217+34	Beginning of Project	80' long x 30' wide	266.7 SqYd
4+27 (2nd)	West of RXR	80' long x 30' wide	266.7 SqYd
5+19 (2nd)	East of RXR	134' long x 30' wide	446.7 SqYd
			<b>980.0 SqYd</b>

**TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL**

In order to construct the new asphalt surfacing flush with the adjacent Pavement and Railroad Tracks, Remove Asphalt Concrete Pavement shall be done as per the Typical Section 2.

The basis of payment for Remove Asphalt Concrete Pavement will be plans quantity. No separate measurements will be taken.

STATION	LOCATION	SIZE	REMOVE ASPHALT CONCRETE
5+19 (2nd) L to 6+53 (2nd) L	Left Shoulder East of RXR	134' x 9'	134 SqYd
5+19 (2nd) L to 6+53 (2nd) L	Left Shoulder East of RXR	134' x 9'	134 SqYd
			<b>268 SqYd</b>

**TABLE OF CONCRETE PAVEMENT REMOVAL**

STATION	Description	Quantity (SqYd)
Multiple Locations	Growth Joints	306.7 SqYd

**SHOULDER SHAPING**

Prior to placing the asphalt concrete overlay, the upper portion of shoulders shall be scarified, reworked and shaped as detailed on the typical sections. Compaction of the reworked shoulders shall be according to Section 260.3 C. of the Specifications.

It is estimated that Water for Granular Material, for shaping and compaction, to be applied at the locations and rate as follows:

Section 1:  
Water for Granular Material at the rate of 9.4 M gallons per mile.

Section 2:  
Water for Granular Material at the rate of 9.4 M gallons per mile.

Included in the Estimate of Quantities are 11.5 miles of Shoulder Shaping.

Included in the Estimate of Quantities for Typical Sections 1 and 2 are 250 tons of Base Course per mile, per shoulder for Shoulder Shaping to bring the existing slope to the new slope.

**BASE COURSE**

Aggregate for Base Course shall conform to the specifications, except that the compaction shall be to the satisfaction of the Engineer.

Included in the Estimate of Quantities are **50** tons of Base Course per mile for backfill of Unclassified Excavation, Digouts.

**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.

**TYPE III FIELD LABORATORY / STORAGE UNIT**

A Type III Field Laboratory and Storage Unit are required for this project. If the Contractor's Sequence of Operations requires either to be moved, additional payment will not be made.

The Type III Field Laboratory and Storage Unit will only be paid for once on the three tied projects (NH 0014(198)320, NH 0281(110)105 & NH 0281(109)145). The bid items and project notes are included in the NH 0281(110)105 plans.

**ASPHALT FOR TACK**

Included in the Estimate of Quantities are **4** 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.).

Certified weight tickets for the distributor shall be received prior and subsequent to anytime SS-1h or CSS-1h is used off the project. If the Contractor fails to provide the Engineer with weight tickets, the amount of SS-1h or CSS-1h used on the project will be determined by the Engineer via Shot Records.

**ASPHALT CONCRETE COMPOSITE**

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

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

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

**ASPHALT CONCRETE LEVELING LIFT**

Mineral aggregate shall be furnished by the Contractor.

Mineral Aggregate for Asphalt Concrete Leveling Lift shall conform to the requirement of Class E, Type 2 except the gradation shall be as follows:

Passing 3/8" sieve	100%
Passing No. 4 sieve	75-95%
Passing No. 8 sieve	45-65%
Passing No. 16 sieve	28-48%
Passing No. 40 sieve	14-30%
Passing No. 200 sieve	4.0-10.0%

The mineral aggregate retained on the No. 4 sieve shall contain at least seventy percent by dry weight of crushed pieces having two or more surfaces produced by crushing.

The portion of mineral aggregate passing the No. 4 sieve shall be manufactured solely from material retained on a 3/4 inch sieve except that up to thirty percent of the total mineral aggregate may be natural sand or filler necessary to meet gradation. Sand or filler shall be added to the cold feed by separate adjustable methods, which provides a constant and uniform flow.

The Asphalt Concrete Leveling Lift shall be compacted by the Specified Roller Coverage Method.

All other requirements for Asphalt Concrete Class E shall apply.

The Asphalt Concrete Leveling Lift shall be completed in its entirety before beginning placement of the Q3 Hot Mix Asphalt Concrete.

**ADDITIONAL QUANTITIES:**

Included in the Estimate of Quantities are **100** tons of Asphalt Concrete Leveling Lift, **1** tons of Hydrated Lime of Asphalt concrete and **5.6** tons of PG **64-28** 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.

**CLASS Q3 HOT MIXED ASPHALT CONCRETE**

Mineral Aggregate for Class Q3 Hot Mixed Asphalt Concrete shall conform to the requirements included in the Special Provision for Gyratory Controlled Quality Control/Quality Assurance Hot Mixed Asphalt Concrete Pavement.

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 adjacent mainline asphalt concrete or as directed by the Engineer.

**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.

Aggregate for Flush Seal shall conform to the requirements of Section 879 of the Specifications.

**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. 900.01, 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
STA	SIDE		
240+90	RT	2	Eliminate Plainsman Post
363+72	RT	1	
418+03	RT	1	
462+69	LT	1	
TOTALS		5	

All costs for removing existing mailboxes, providing temporary mailboxes, resetting newspaper boxes if attached to mailbox post, 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 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 Asphalt for Flush Seal 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)
217+34 to 6+53 (2 <sup>nd</sup> ) thru equations (Both Shoulders)	60,529.92	
Total	60,529.92	11.5

**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. The diagonal markings within channelizing islands may be omitted from the temporary markings but shall be provided with the permanent markings.

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 Q3 Hot Mixed Asphalt Concrete wear course or after application of the Flush Seal.**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0014(198)320	14	42

### TEMPORARY PAVEMENT MARKINGS

The total length of no passing zone on this project is estimated to be **1.3** miles.

The Contractor is allowed to use DO NOT PASS and PASS WITH CARE signs for a period of 2 weeks to mark no passing zones on roads with an average daily traffic of 2500 vehicles or less. It is estimated that **9** DO NOT PASS and **9** PASS WITH CARE signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Quantities of Temporary Pavement Markings consist of:

- One pass on top of the Asphalt Concrete Leveling Lift.
- One pass on top of the 1<sup>st</sup> 1.5" Mainline Lift of Asphalt Concrete.
- One pass on top of the 2<sup>nd</sup> 1.5" Mainline Lift of 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.

### 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)

### GROOVE FOR PAVEMENT MARKING

The work shall generally consist of grooving the asphalt surface and subsequent application of cold applied plastic tape.

All surfaces receiving cold applied plastic pavement markings shall be grooved prior to application of the cold applied plastic pavement markings.

The groove shall be made in a single pass dry cut using stacked diamond or carbide tipped cutting heads mounted on a floating head with controls capable of providing uniform depth and alignment. The equipment shall be self- vacuuming and leave the cut groove ready for pavement marking installation. The pavement marking shall be placed in the grooves the same day the grooving is completed. Grooves shall be clean and dry prior to pavement marking application.

**Groove cleaning:** Grooves must be cleaned by using high pressure compressed air (90 psi minimum).

If the cold applied plastic pavement marking tape (including primer if required) does not immediately follow dry pavement grooving, the following shall apply:

Within 24 hours prior to placing the cold applied plastic pavement marking tape the groove shall be sandblasted and free of any residue or laitance. If the cold applied plastic pavement marking tape is not placed within 24 hours of sandblasting, the groove shall be re- sandblasted.

The cold applied plastic pavement marking tape shall be installed in accordance with the manufacturer's recommendations.

### 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.

### RAILROAD CROSSING

The Contractor shall coordinate his work with the Railroad Company regarding any work to be done adjacent to the railroad tracks. See Special Provision for Working on Railroad Company Right of Way.

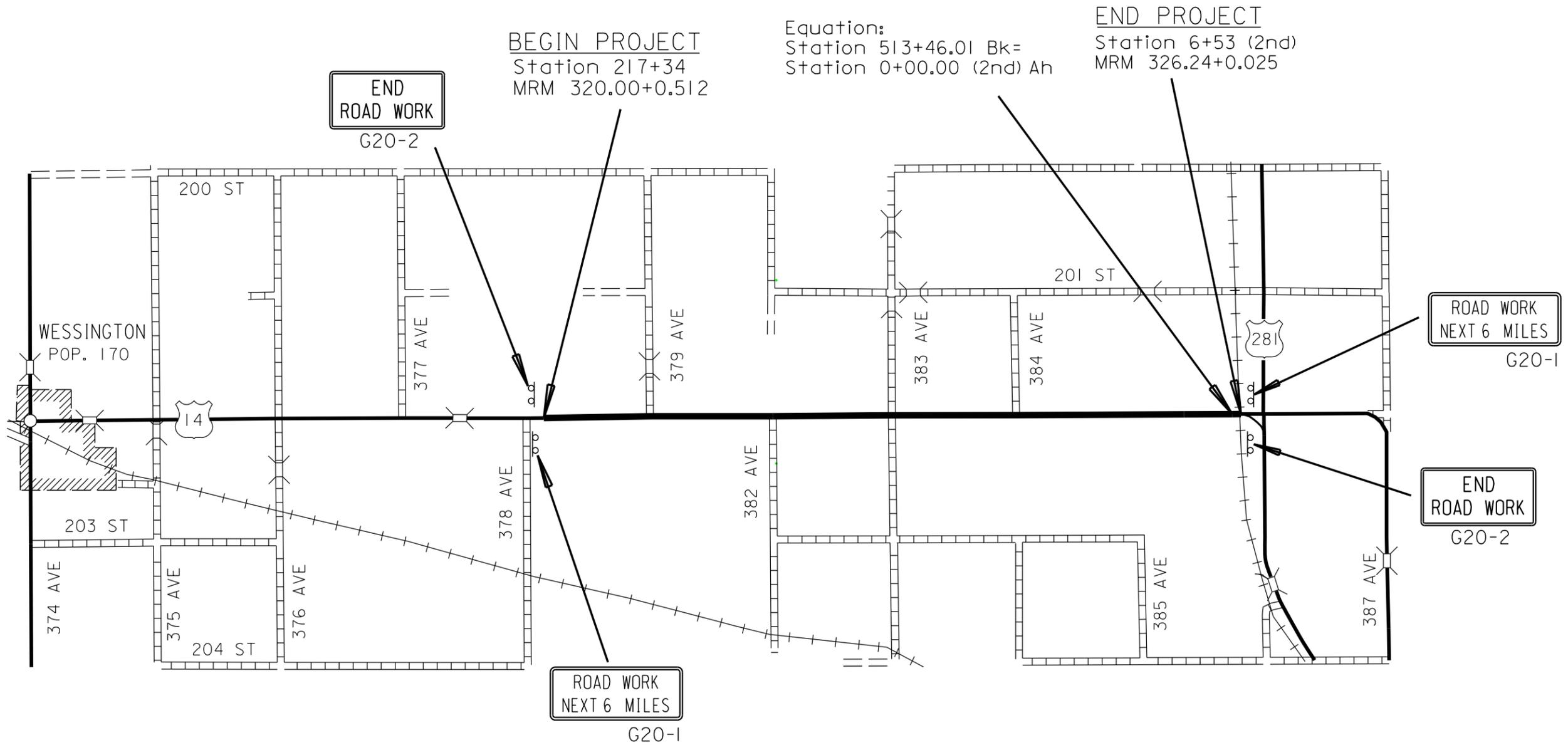
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	15	42
Plotting Date: 02/03/2015			

# FIXED LOCATION SIGNS

## GROUND MOUNTED, BREAKAWAY SUPPORTS

PLOT SCALE - 1:200

PLOT NAME - 2

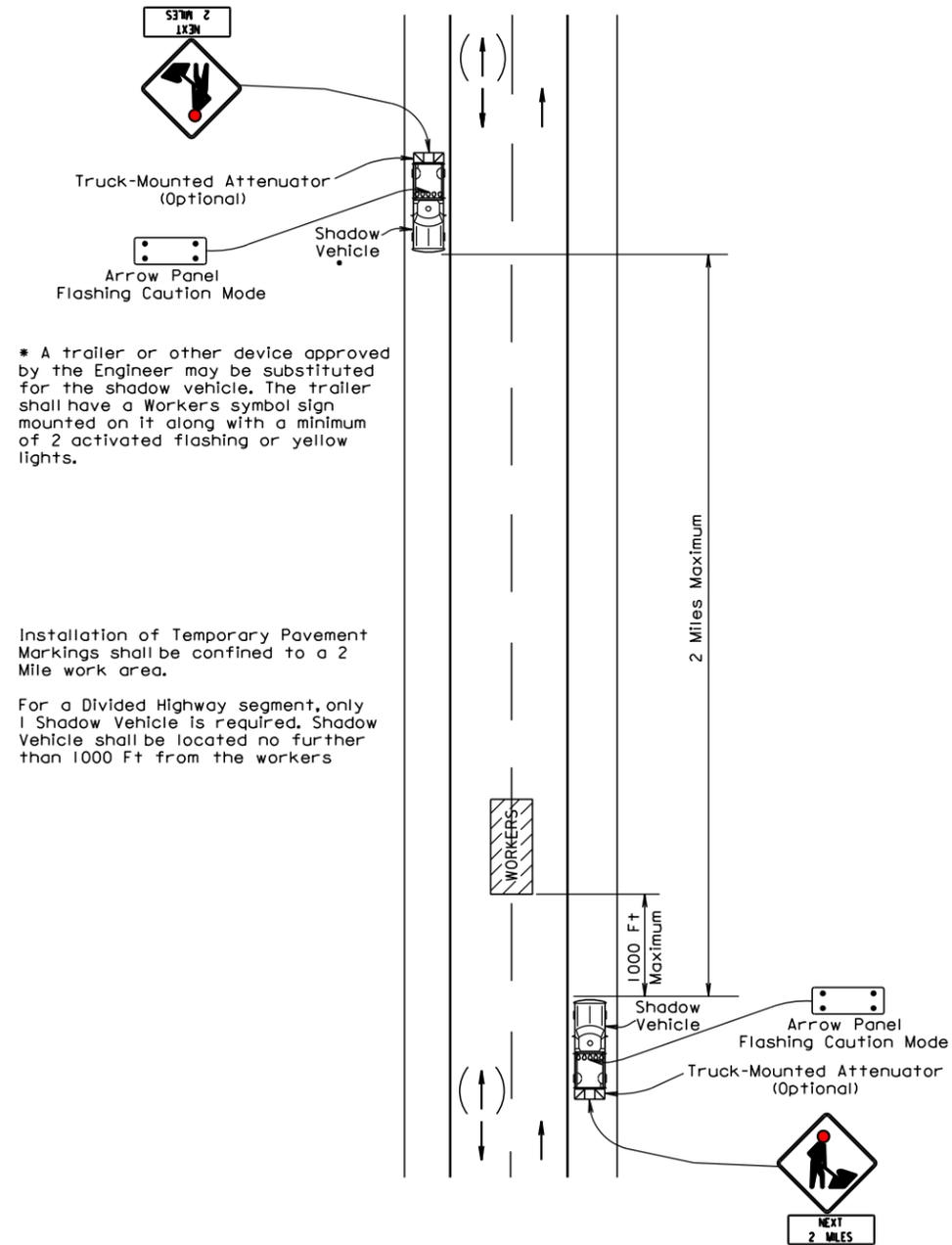


-EXACT LOCATION OF SIGNS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

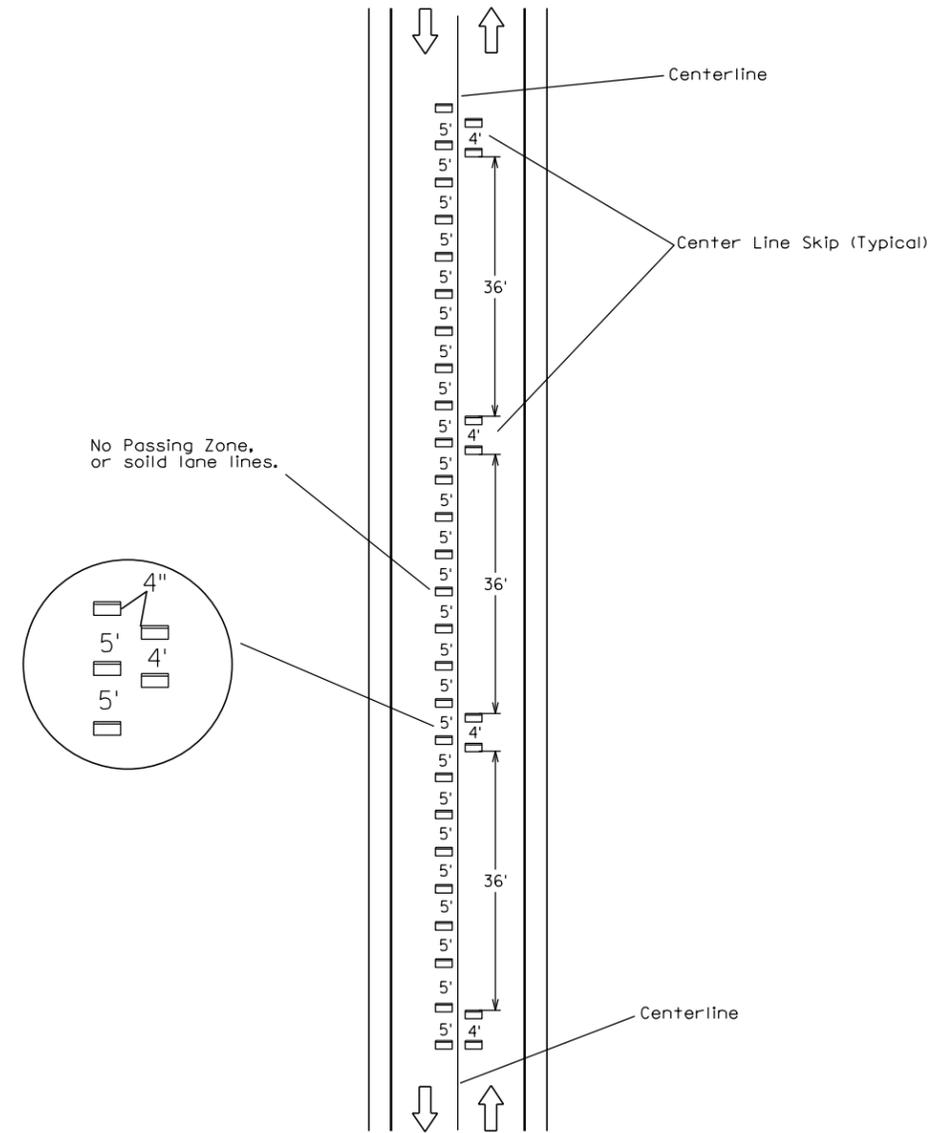
PLOTTED FROM - TRHJUNT06

FILE - ... \TITLE SHEET.DGN

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

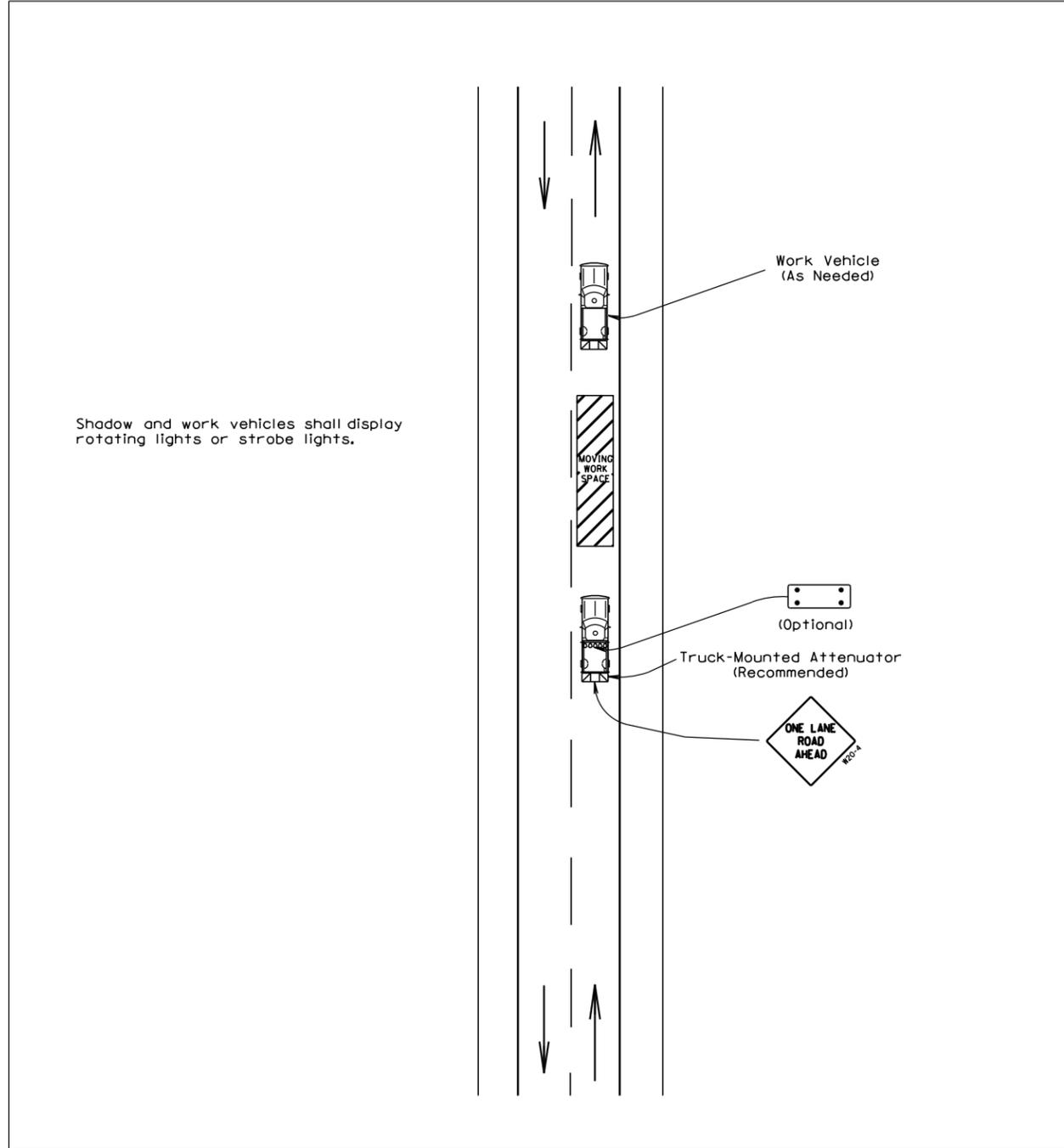


**GUIDES FOR TRAFFIC CONTROL DEVICES  
TEMPORARY ROAD MARKER INSTALLATION**



# SPECIAL DETAIL FOR MOBILE OPERATION FOR ASPHALT CORING

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (198) 320	17	42
Plotting Date: 01/23/2015			



PLOT SCALE - 1:246.408

PLOTTED FROM - TRHJINT06

PLOT NAME - 2

FILE - ... \TC\_TAB\_INSTALLATION.DGN

## DETAIL FOR TRAFFIC CONTROL MOBILE OPERATIONS INSTALL RUMBLE STRIPS ON SHOULDER

PLOT SCALE - 1:220

PLOT NAME - 3

\* In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

An activated flashing yellow light shall be used on all vehicles and equipment.

Arrow panel is required for mobile (intermittent and continuously moving) operations with no sight restriction and work exceeds 1 hour.

ROAD WORK AHEAD sign is required only when sight distance is restricted. (See Table)

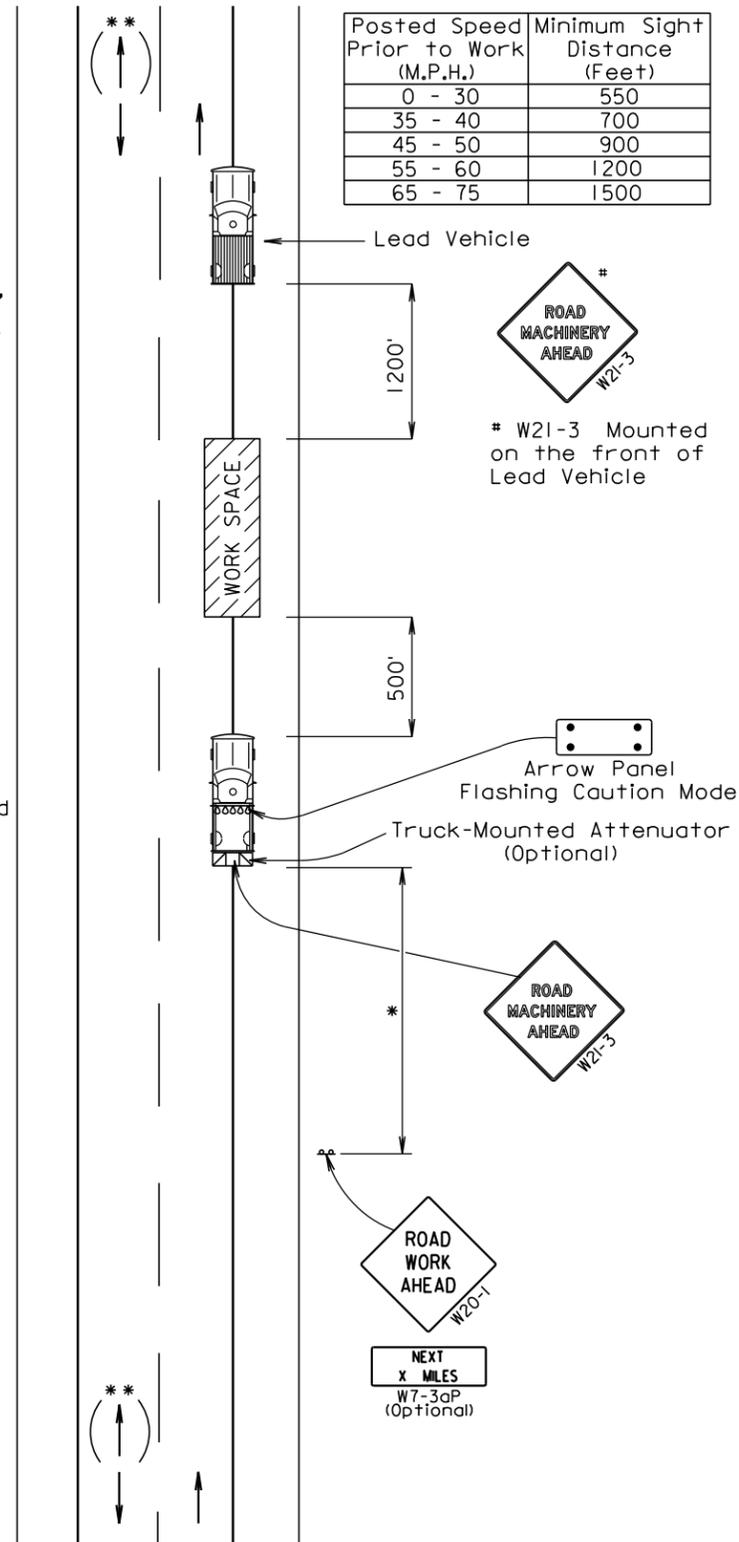
\*\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

\*\* Lead Vehicle not required on a 4-Lane divided or undivided highway.

# Slow Moving Vehicle Emblem displayed on rear of Lead Vehicle when speed is less than 25 M.P.H.

For tack and/or flush seal operations, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Posted Speed Prior to Work (M.P.H.)	Minimum Sight Distance (Feet)
0 - 30	550
35 - 40	700
45 - 50	900
55 - 60	1200
65 - 75	1500



PLOTTED FROM - TRHJUNT06

FILE - ... \TC\_TAB\_INSTALLATION.DGN

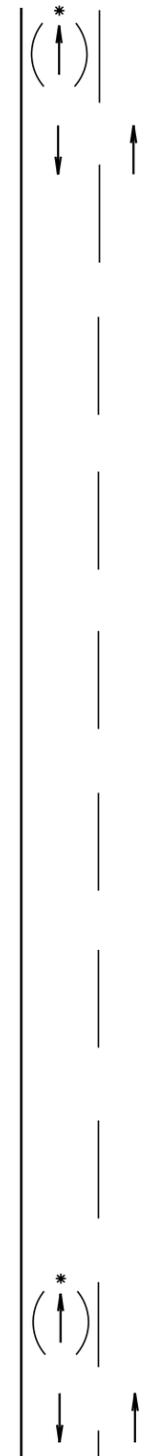
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

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

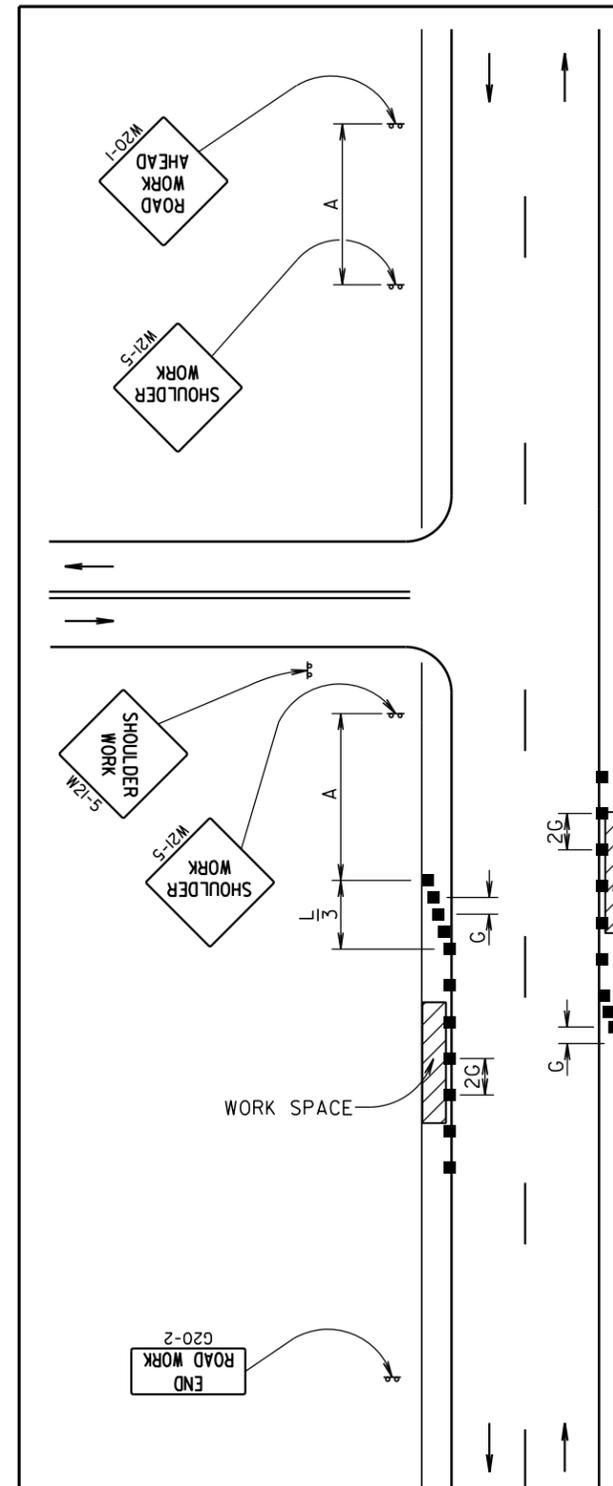
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



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



July 1, 2005



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

■ Channelizing Device



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

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

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

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

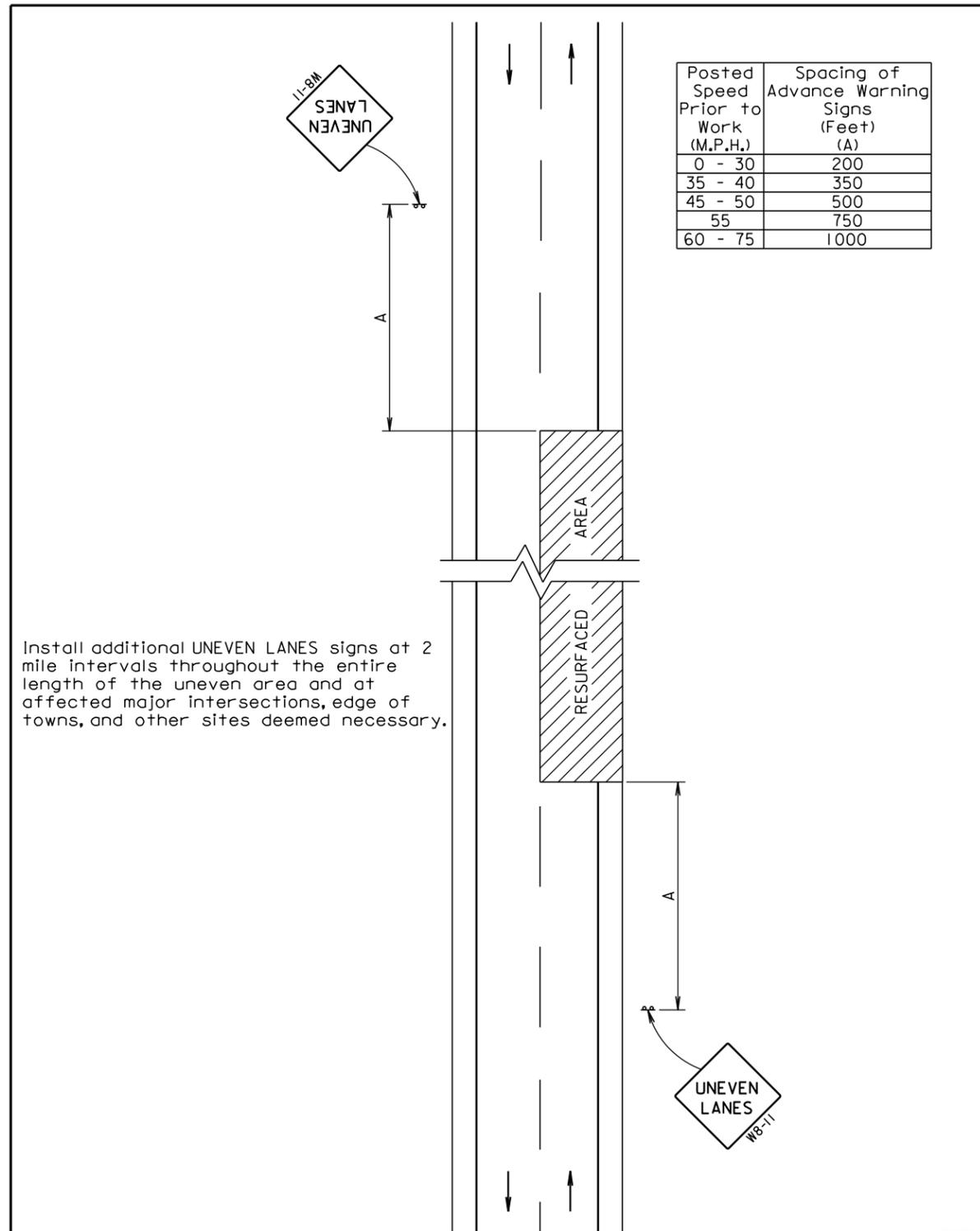
The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE



September 22, 2014

PLOTTED FROM - TRAB10100



Install additional UNEVEN LANES signs at 2 mile intervals throughout the entire length of the uneven area and at affected major intersections, edge of towns, and other sites deemed necessary.

July 1, 2005

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (C)
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.

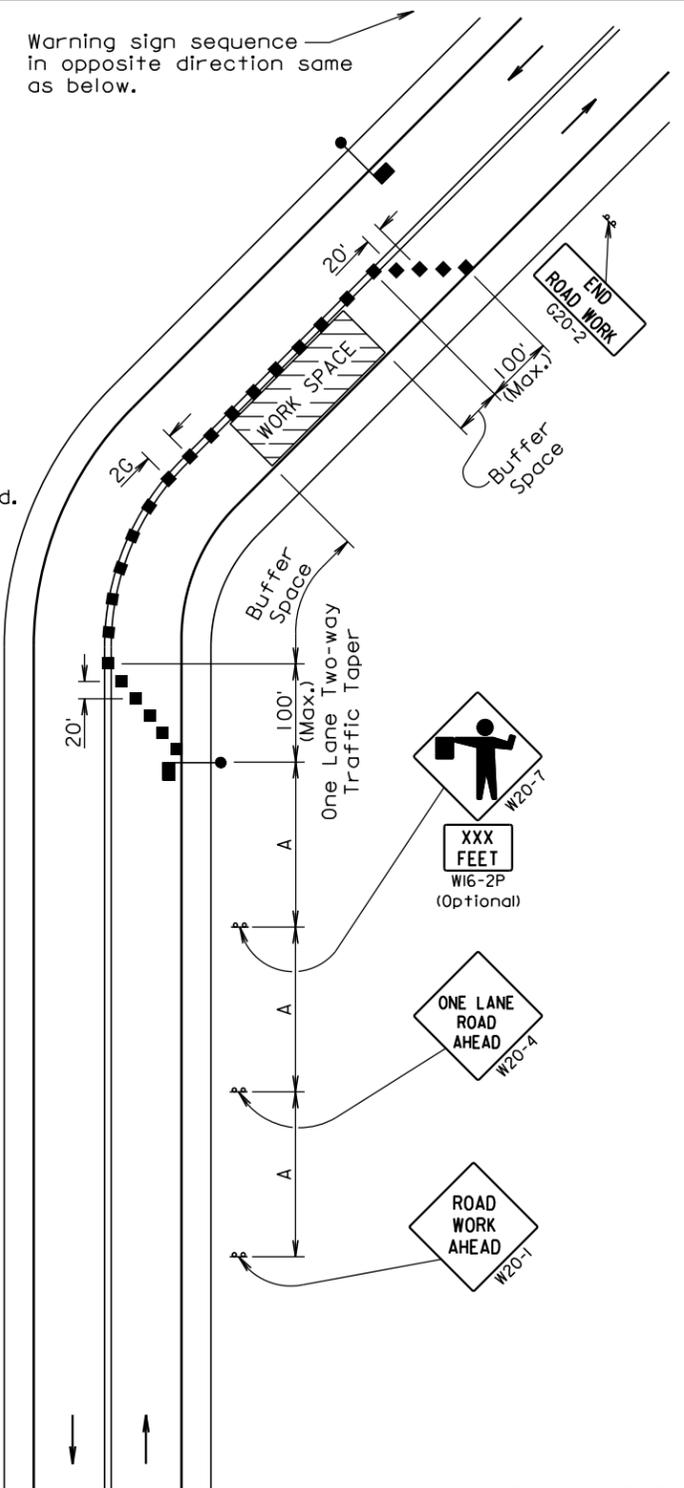
Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

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.

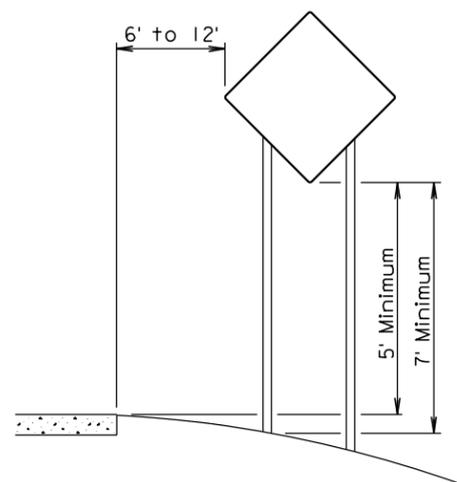
The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.

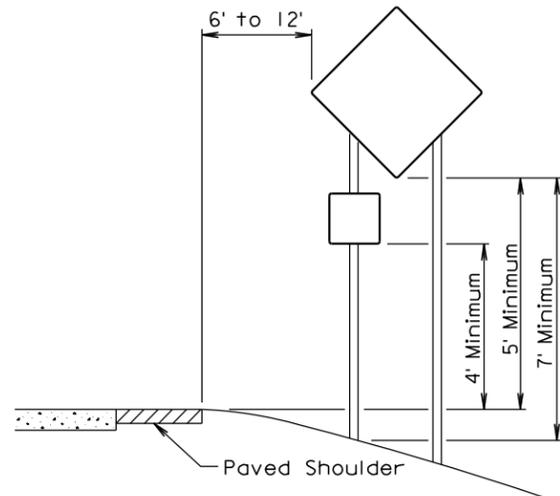
2-029  
ROAD WORK  
END



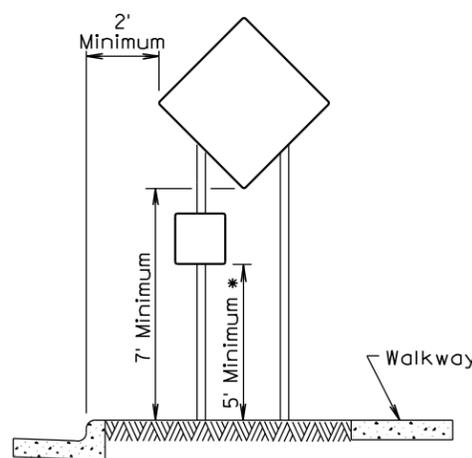
September 22, 2014



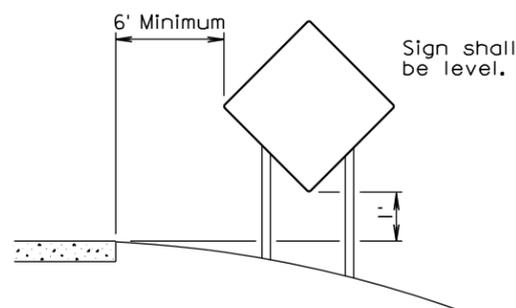
RURAL DISTRICT



RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT



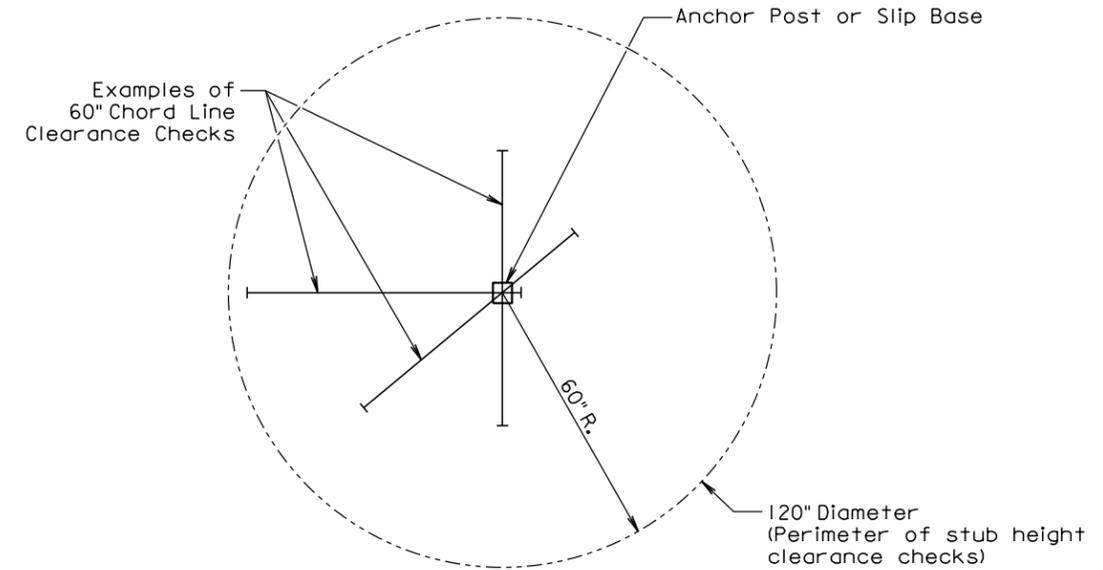
RURAL DISTRICT  
3 DAY MAXIMUM

(Not applicable to regulatory signs)

\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

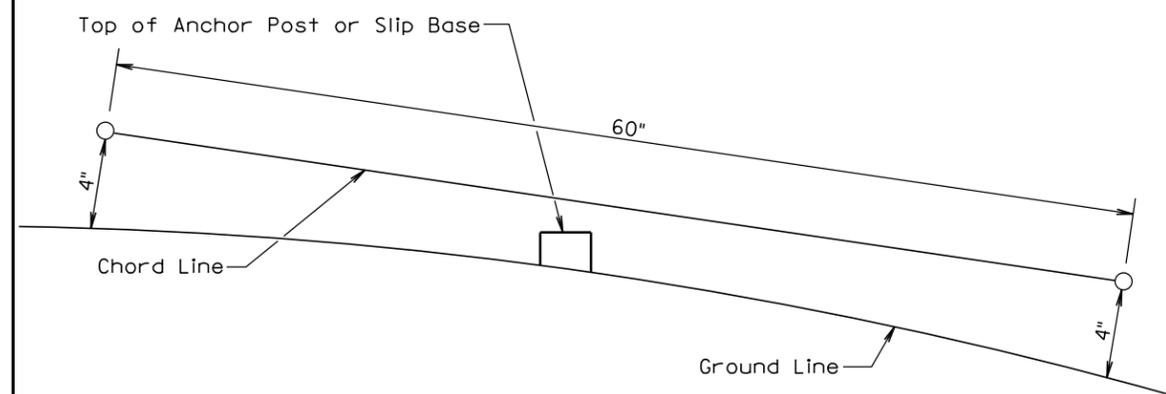
September 22, 2014

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

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

**ITEMIZED LIST FOR TRAFFIC CONTROL**

SIGN CODE	DESCRIPTION	CONVENTIONAL ROAD					
		NUMBER	SIGN SIZE		UNITS PER SIGN	UNITS	
W8-1	BUMP	6	48"	x	48"	34	204
W8-6	TRUCK CROSSING	2	48"	x	48"	34	68
W8-11	UNEVEN LANES	2	48"	x	48"	34	68
W13-1P	ADVISORY SPEED (plaque)	6	30"	x	30"	21	126
W20-1	ROAD WORK AHEAD	4	48"	x	48"	34	136
W20-4	ONE LANE ROAD AHEAD	2	48"	x	48"	34	68
W20-7	FLAGGER (symbol)	2	48"	x	48"	34	68
W21-2	FRESH OIL	2	48"	x	48"	34	68
W21-3	ROAD MACHINERY AHEAD	2	48"	x	48"	34	68
W21-5	SHOULDER WORK	2	48"	x	48"	34	68
G20-1	ROAD WORK NEXT ___ MILES	2	36"	x	18"	17	34
G20-2	END ROAD WORK	2	36"	x	18"	17	34
<b>TOTAL UNITS</b>						<b>1010</b>	

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

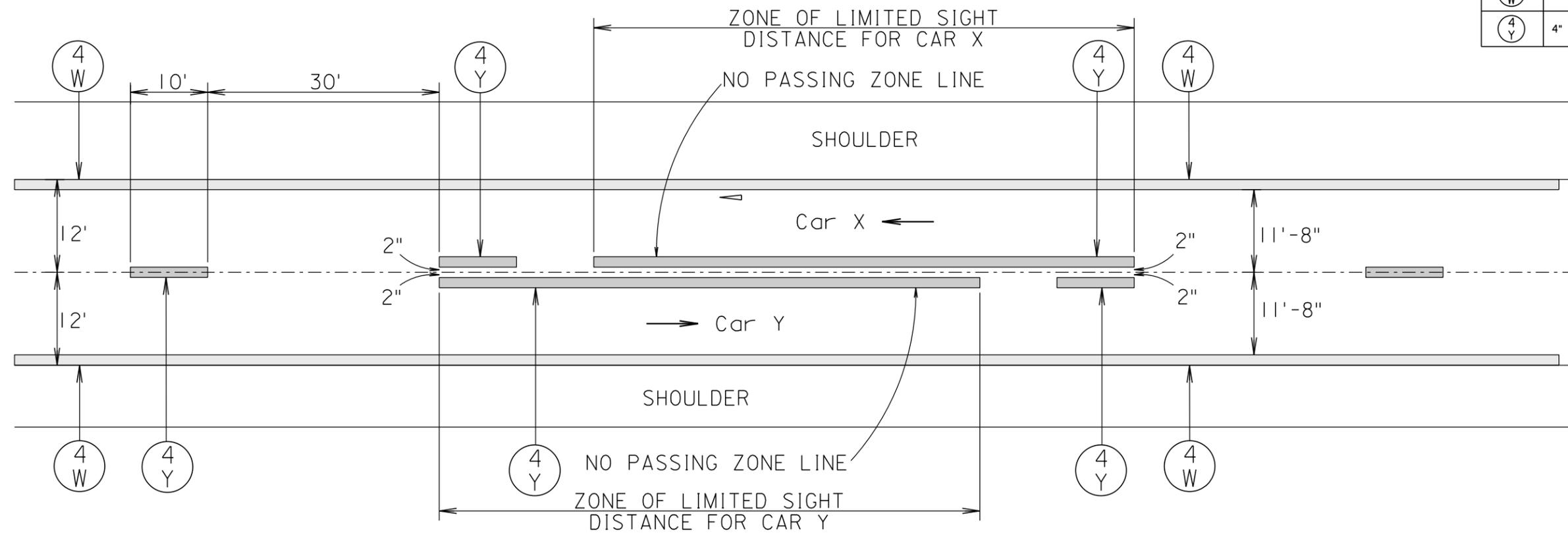
# FURNISHING AND APPLYING PAVEMENT MARKING PAINT

Paint Application Rates Shall Be as Follows:

Two Lane Roadway (Rates for One line)	
Dashed Yellow Centerline	Rate = 4.6 Gals/Pass-Mile
Solid Yellow Centerline	Rate = 16.9 Gals/Pass-Mile
Solid White Edgeline	Rate = 16.9 Gals/Pass-Mile
Glass Beads = 8 Lbs/Gal	

## TWO LANE UNDIVIDED ROADWAY

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



Typical pavement marking as shown on this sheet shall be applied throughout the entire length of undivided roadway.

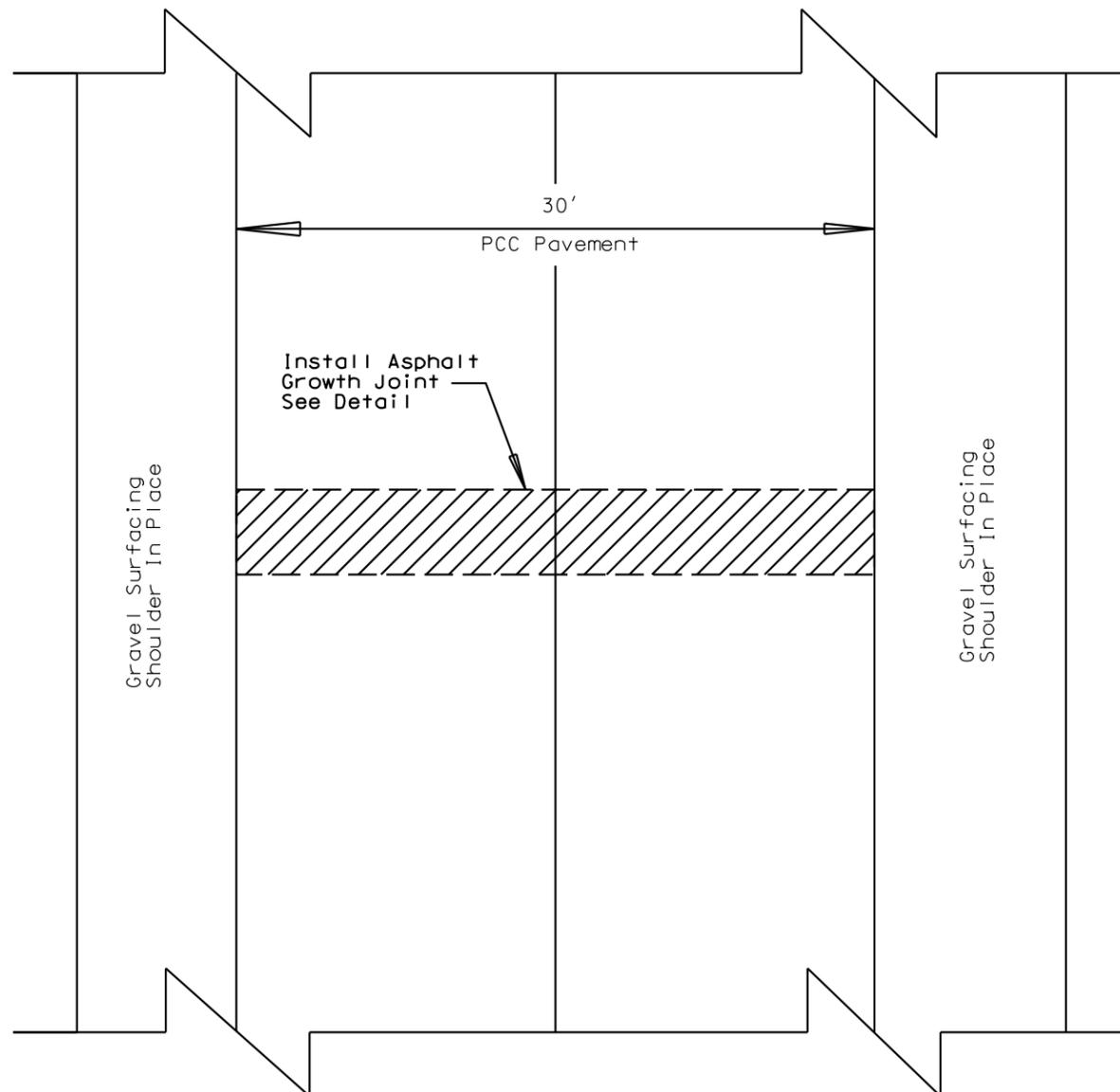
Traffic Control shall be incidental to the cost of application. The striping and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

NOTE: All pavement marking dimensions are based on 12' driving lanes.

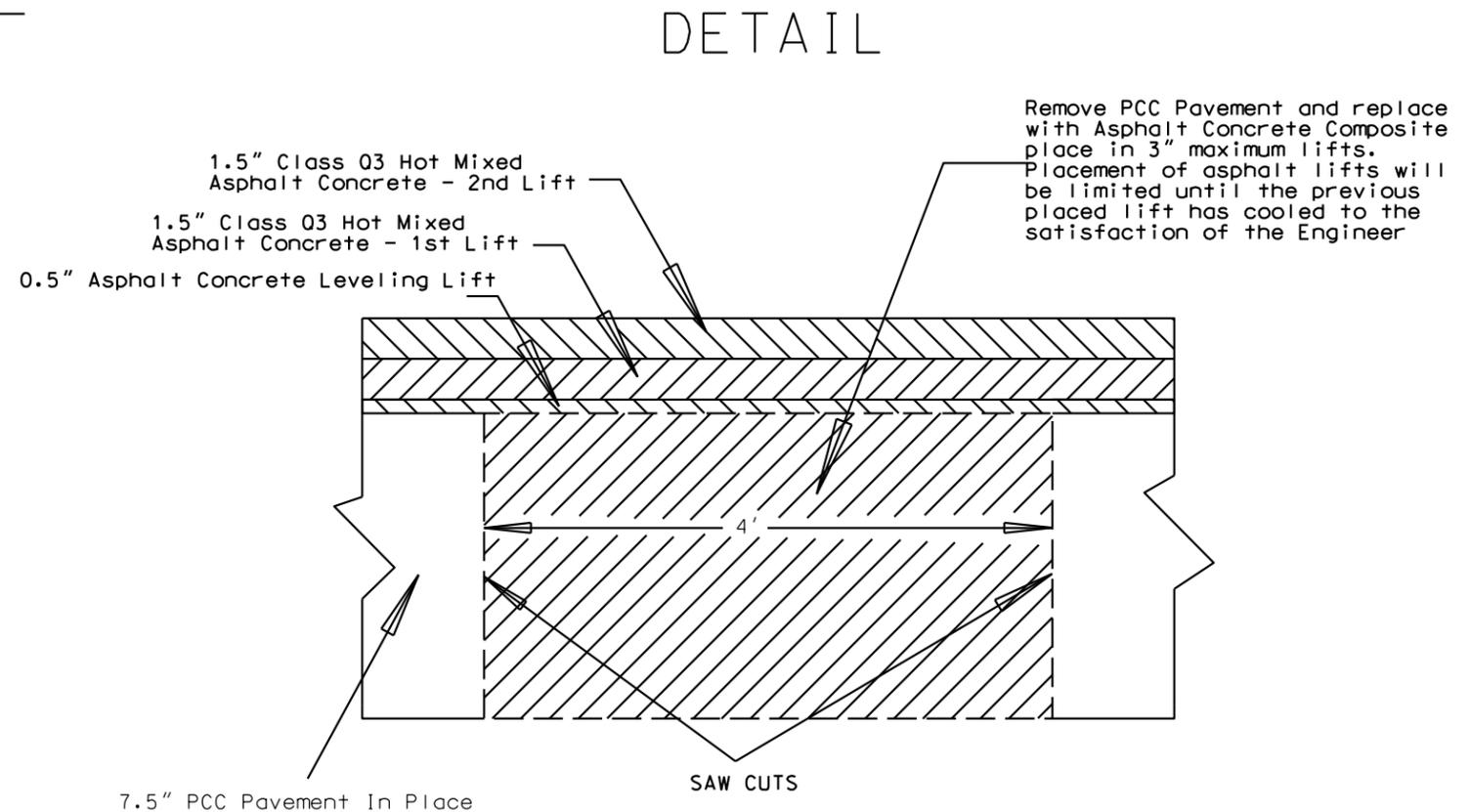
# LAYOUT FOR SAWING IN GROWTH JOINT

The Contractor shall install Growth Joints on US14. The Engineer shall determine the locations of the Growth Joints on construction. It is estimated that there will be 23 Growth Joints installed on US 14 at the rate of 4 Growth Joints per mile.

The Asphalt Concrete Composite placed in the Growth Joint shall be compacted to the satisfaction of the Engineer. Compaction equipment must be to the satisfaction of the Engineer to ensure compaction along the sides of the Growth Joints.



PLAN VIEW



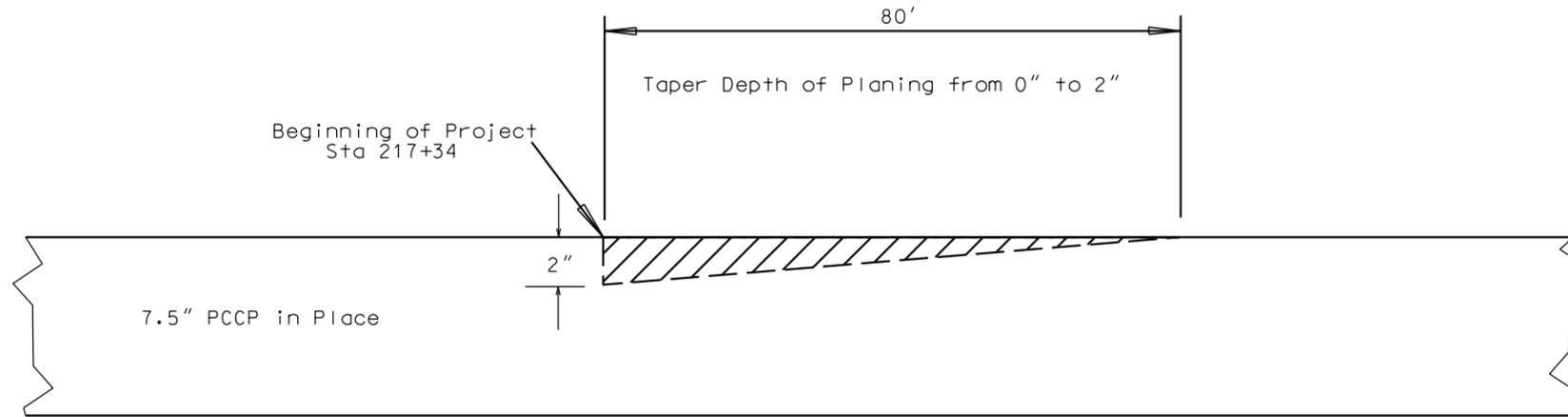
Sawing PCC Pavement Ft	Remove Concrete Pavement SqYds	Asphalt Concrete Composite Tons
*1380	306.7	**127.3

\* Cost for sawing PCC Pavement shall be incidental to the contract unit price per square yard for Remove Concrete Pavement.

\*\* Quantities are included in the Table of Additional Quantities.

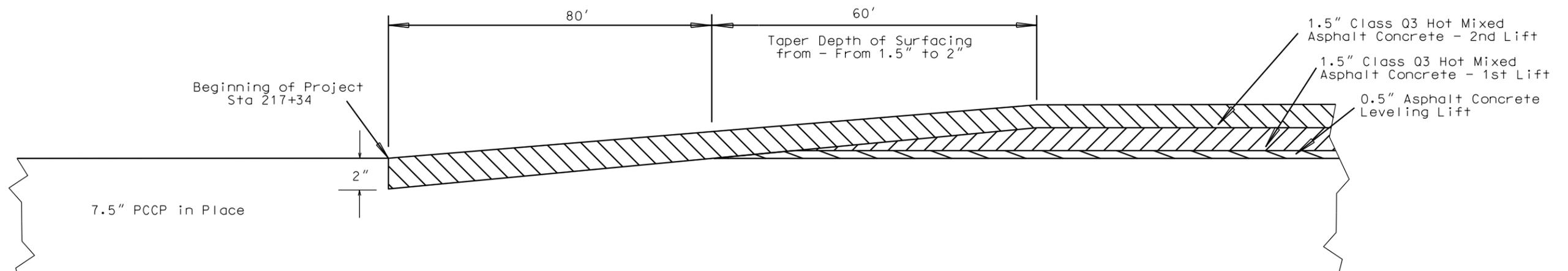
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	25	42
Plotting Date: 02/03/2015			

### DETAIL FOR PLANING PCC PAVEMENT TAPER Beginning of Project



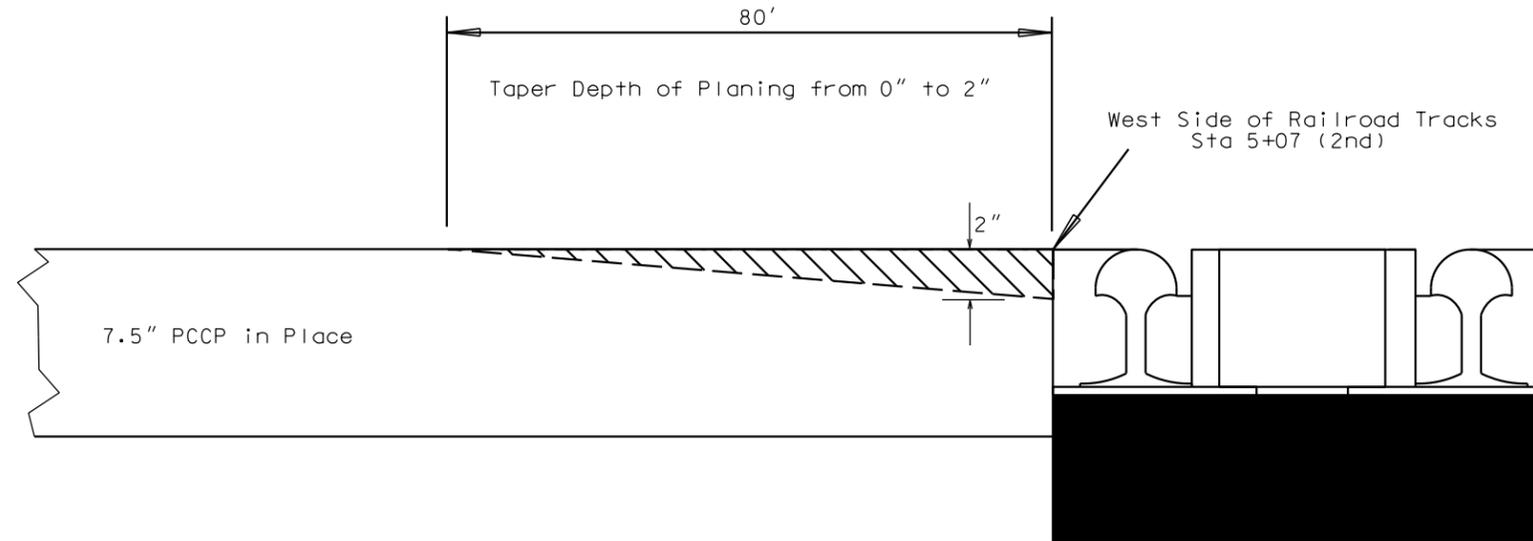
All costs associated with tapering the depth of pcc pavement shall be incidental to the contract unit price per square yard for Planing PCC Pavement.

### DETAIL FOR RESURFACING TAPER Beginning of Project



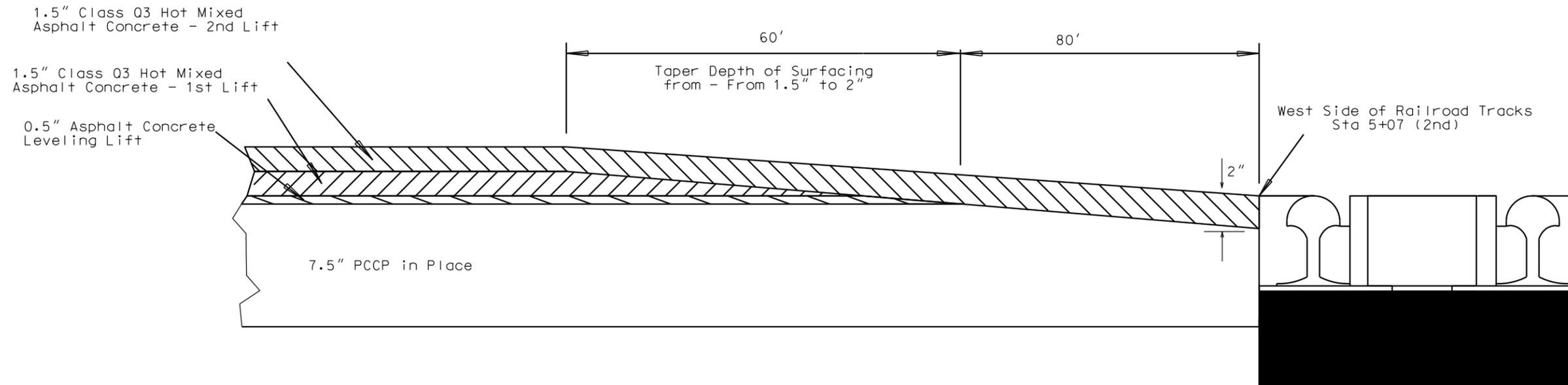
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	26	42
Plotting Date: 02/03/2015			

### DETAIL FOR PLANING PCC PAVEMENT TAPER West side of Railroad Tracks



All costs associated with tapering the depth of pcc pavement shall be incidental to the contract unit price per square yard for Planing PCC Pavement.

### DETAIL FOR RESURFACING TAPER West side of Railroad Tracks



PLOT SCALE - 1:220

PLOTTED FROM - TRHJINT06

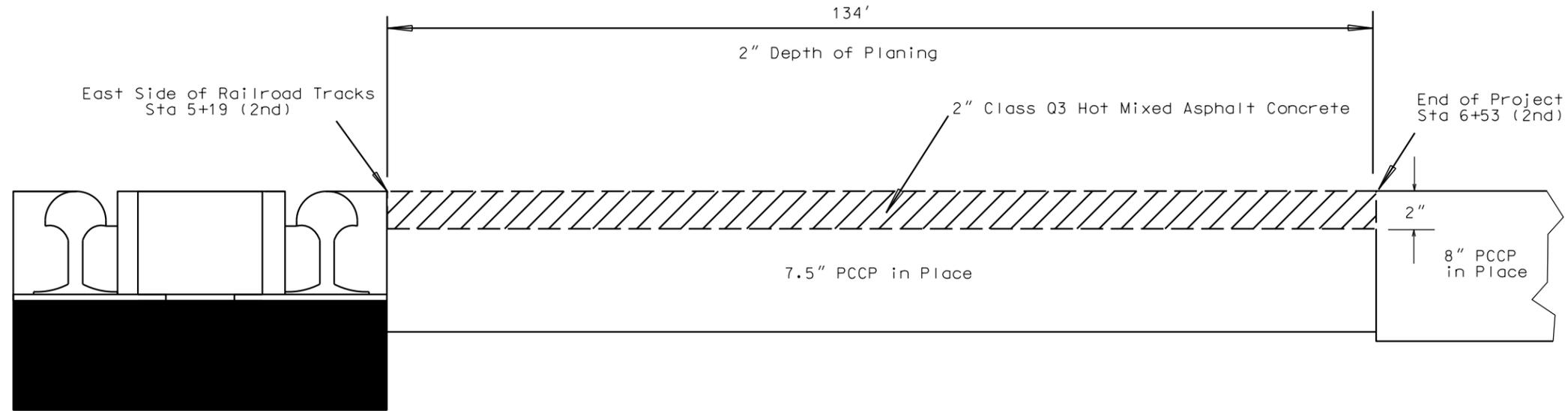
PLOT NAME - 5

FILE - ... \TITLE SHEET.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	27	42
Plotting Date: 02/03/2015			

### DETAIL FOR PLANING PCC PAVEMENT

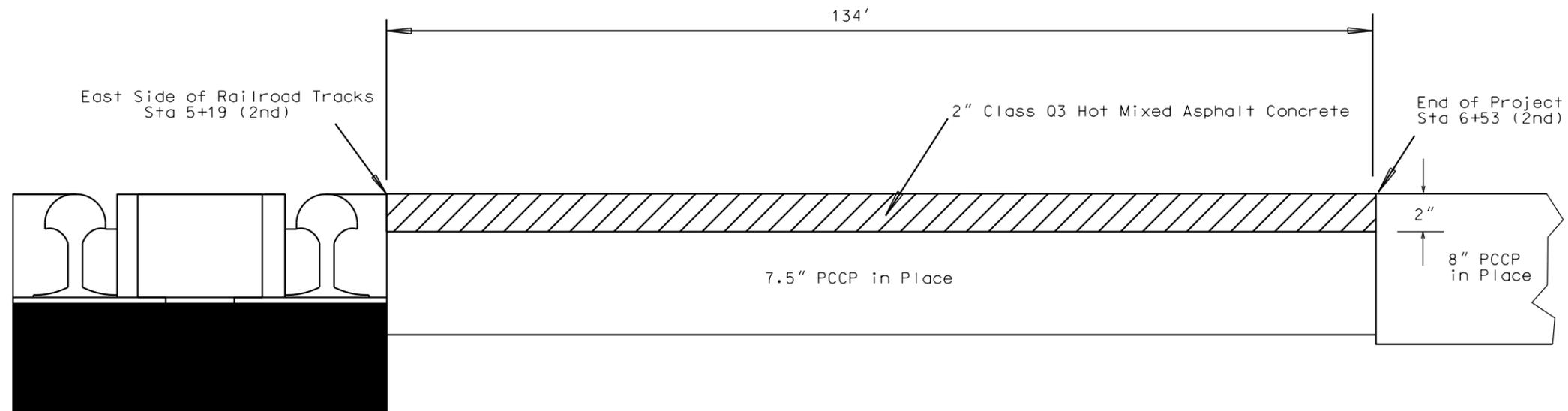
East Side of Railroad Tracks to End of Project



All costs associated with planing the depth of pcc pavement shall be incidental to the contract unit price per square yard for Planing PCC Pavement.

### DETAIL FOR RESURFACING

East Side of Railroad Tracks to End of Project



PLOT SCALE - 1:220

PLOT NAME - 6

FILE - ... \TITLE SHEET.DGN

PLOTTED FROM - TRHJINT06

### US 14, NH 0014(198)320, PCN 0363 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)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
320.788	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	W	U-Channel	Replace New Sign on New Post
321.104	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	E	U-Channel	Replace New Sign on New Post
321.417	Lt.	Stop	R1-1	30	30		5.2	10		1		1	N	4" X 6" Wood	Replace New Sign on New Post
321.699	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	W	U-Channel	Replace New Sign on New Post
322.031	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	E	U-Channel	Replace New Sign on New Post
322.435	Rt.	Stop	R1-1	30	30		5.2	10		1		1	S	4" X 6" Wood	Replace New Sign on New Post
323.377	Lt.	Stop	R1-1	30	30		5.2	11		1		1	N	4" X 6" Wood	Replace New Sign on New Post
323.388	Rt.	Stop	R1-1	30	30		5.2	11		1		1	S	4" X 6" Wood	Replace New Sign on New Post
324.005	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	W	4" X 6" Wood	Replace New Sign on New Post
324.400	Lt.	Stop	R1-1	30	30		5.2	10		1		1	N	U-Channel	Replace New Sign on New Post
324.480	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	E	U-Channel	Replace New Sign on New Post
324.979	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	W	U-Channel	Replace New Sign on New Post
325.291	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	E	U-Channel	Replace New Sign on New Post
325.432	Lt.	West	M3-4	24	12	2.0		11		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				
325.434	Rt.	Weigh Station 1 Mile	D8-1										W	Telespar	Do not Disturb
325.660	Rt.	All Vehicles Exceeding 8000 G.V.W Must Stop											W	Telespar	Do not Disturb
326.047	Rt.	Junction Marker	M2-1	21	15	2.2		11		1		1	W	4" X 6" Wood	Replace New Sign on New Post
		US 281	M1-4	30	24	5.0			W		Replace New Sign on New Post				
		US 14	M1-4	24	24	4.0			W		Replace New Sign on New Post				
		Advance Turn 45 Degrees Right	M5-2R	21	15	2.2			W		Replace New Sign on New Post				

### US 14, NH 0014(198)320, PCN 0363 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)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
326.101	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11		1		1	W	4" X 6" Wood	Replace New Sign on New Post
326.102	Rt.	Railroad Advanced Warning	W10-1	36	36		7.1	11		1		1	W	U-Channel	Replace New Sign on New Post
326.117	Lt.	Memorial Highway											E	4" X 6" Wood	Do not Disturb
326.152	Rt.	Redfield / Wolsey / Huron	D1-3	84	54	31.5			28		2	1	W	4" X 6" Wood	Replace New Sign on New Post
326.195	Lt.	Wessington 10 / Miller 24 / Pierre 96	D2-3	108	48	36.0			30		2	1	E	4" X 6" Wood	Replace New Sign on New Post
326.195	Rt.	Weigh Station Next Left											W	Telespar	Do not Disturb
		Open / Closed											W		Do not Disturb
326.242	Rt.	Railroad Crossbuck	R15-1										W	Steel Pole	Do not Disturb
326.247	Lt.	Railroad Crossbuck	R15-1										E	Steel Pole	Do not Disturb
326.271	Rt.	North	M3-1	24	12	2.0			26		1	1	W	4" X 6" Wood	Replace New Sign on New Post
		US 281	M1-4	30	24	5.0		W					Replace New Sign on New Post		
		Advance Turn 90 Degrees Left	M5-1L	21	15	2.2		W					Replace New Sign on New Post		
		East	M3-2	24	12	2.0		W					Replace New Sign on New Post		
		US14	M1-4	24	24	4.0		W					Replace New Sign on New Post		
		Single Arrow 45 Right	M6-2R	21	15	2.2		W					Replace New Sign on New Post		
		South	M3-3	24	12	2.0		W					Replace New Sign on New Post		
		US 281	M1-4	30	24	5.0		W					Replace New Sign on New Post		
Single Arrow 45 Right	M6-2R	21	15	2.2		W	Replace New Sign on New Post								
					TOTAL	113.4	83.5	184.0	84.0	17.0	5.0	20.0			

## 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
D1-3	Redfield / Wolsey / Huron	84	54	31.5	1	31.5		White on Green
D2-3	Wessington 10 / Miller 24 / Pierre 96	108	48	36.0	1	36.0		White on Green
M1-4	US 14	24	24	4.0	3	12.0		Black on White
M1-4	US 281	30	24	5.0	3	15.0		Black on White
M2-1	Junction Marker	21	15	2.2	1	2.2		Black on White
M3-1	North	24	12	2.0	1	2.0		Black on White
M3-2	East	24	12	2.0	1	2.0		Black on White
M3-3	South	24	12	2.0	1	2.0		Black on White
M3-4	West	24	12	2.0	1	2.0		Black on White
M5-1L	Advance Turn 90 Degrees Left	21	15	2.2	1	2.2		Black on White
M5-2R	Advance Turn 45 Degrees Right	21	15	2.2	1	2.2		Black on White
M6-2R	Single Arrow 45 Right	21	15	2.2	2	4.4		Black on White
R1-1	Stop	30	30	5.2	5		26.0	White on Red
W10-1	Railroad Advanced Warning	36	36	7.1	1		7.1	Black on Fluorescent yellow
W14-3	No Passing Zone	48X48X36		5.6	9		50.4	Black on Fluorescent yellow
<b>Totals</b>						<b>113.4</b>	<b>83.5</b>	

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 ( 198 ) 320	31	42

**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.

**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"x4' 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.

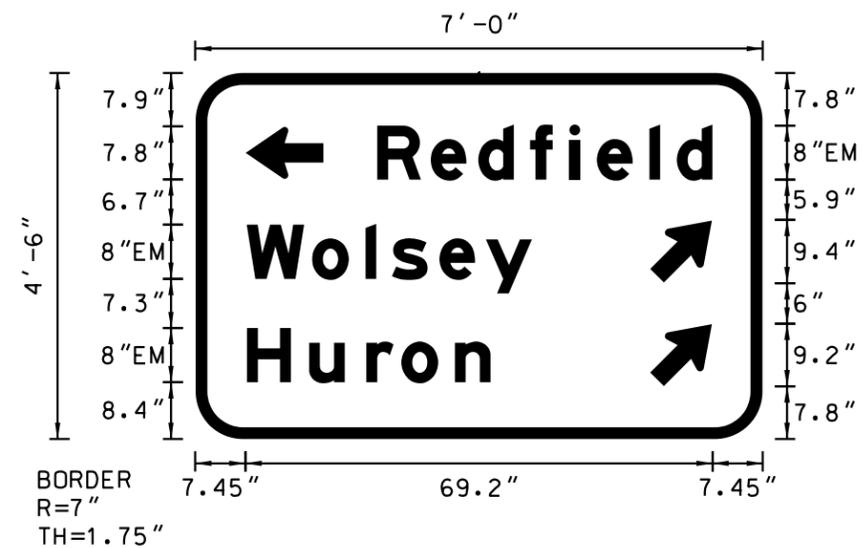
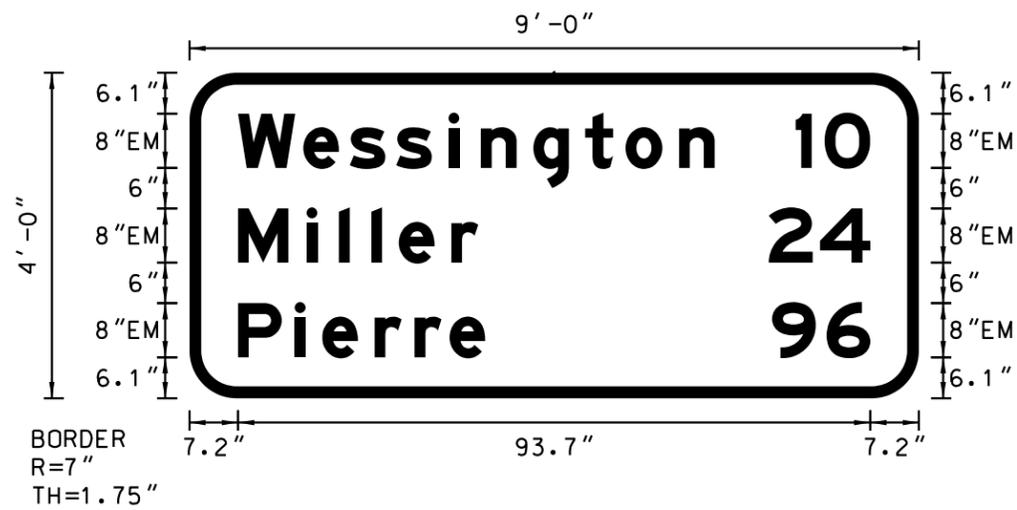
Winged slip base anchor shall consist of a slip base (upper), 48 inch long winged anchor (lower), and hardware kit.

**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.

# SPECIAL SIGN DESIGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014 (198) 320	32	42
Plotting Date: 01/12/2015			

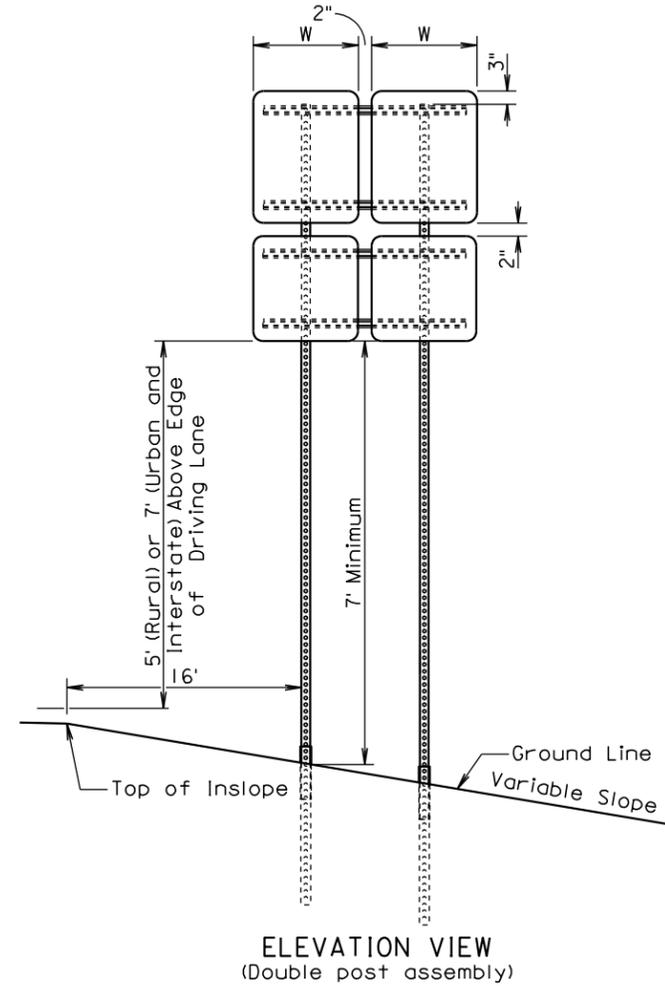
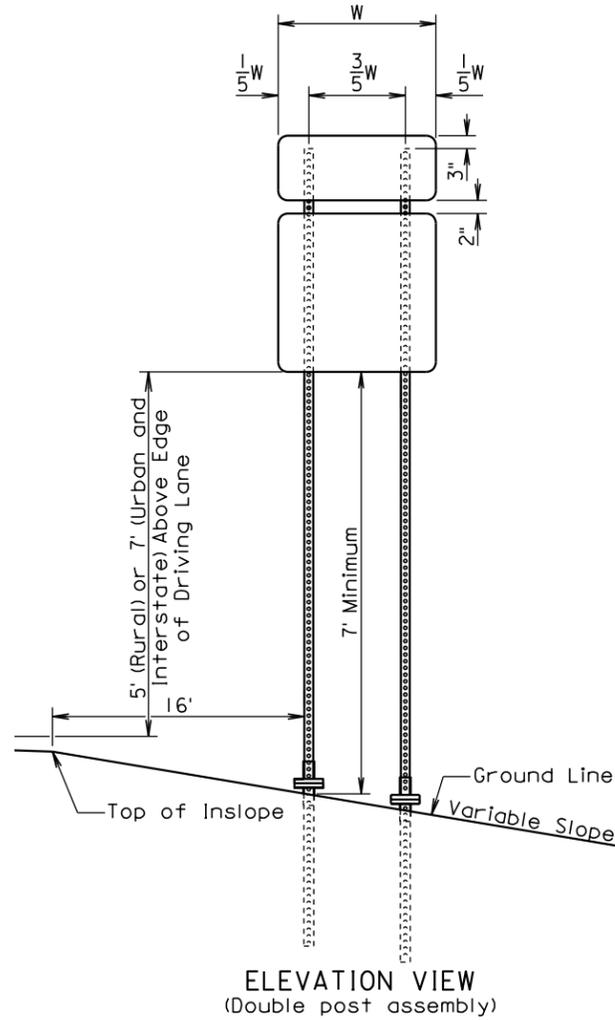
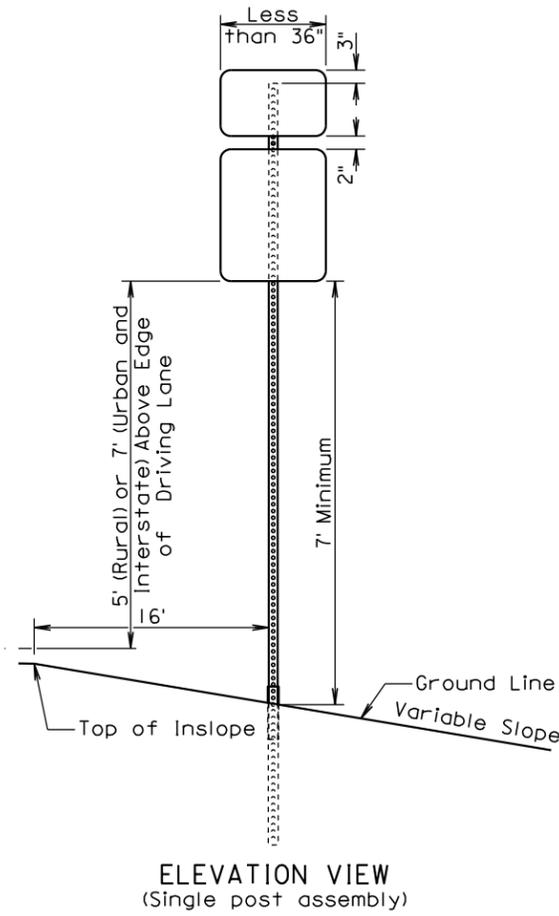


All signs on this sheet shall have a green background with white legend and white border



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	34	42
Plotting Date: 12/30/2014			

# INSTALLATION DETAILS FOR MULTIPLE SIGN ASSEMBLIES

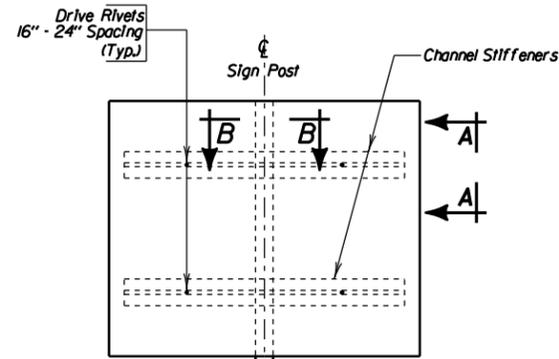


## GENERAL NOTES:

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.

# ONE POST BREAKAWAY SIGN SUPPORTS

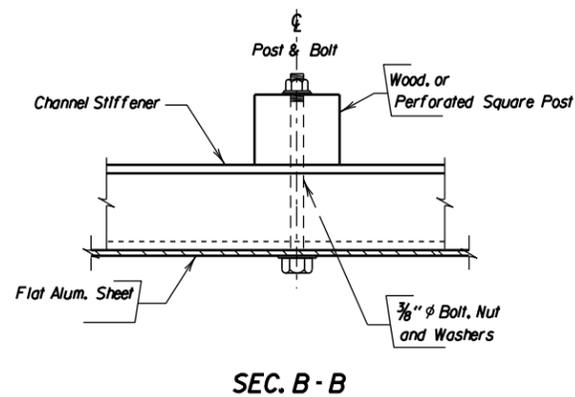
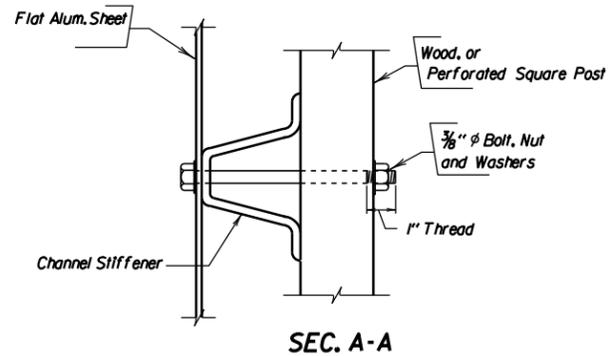
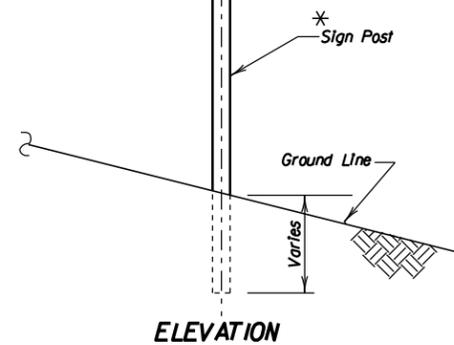


∅ A plastic washer, as recommended by the sheeting manufacturer, shall be installed between the sign face and the metal washer shown.

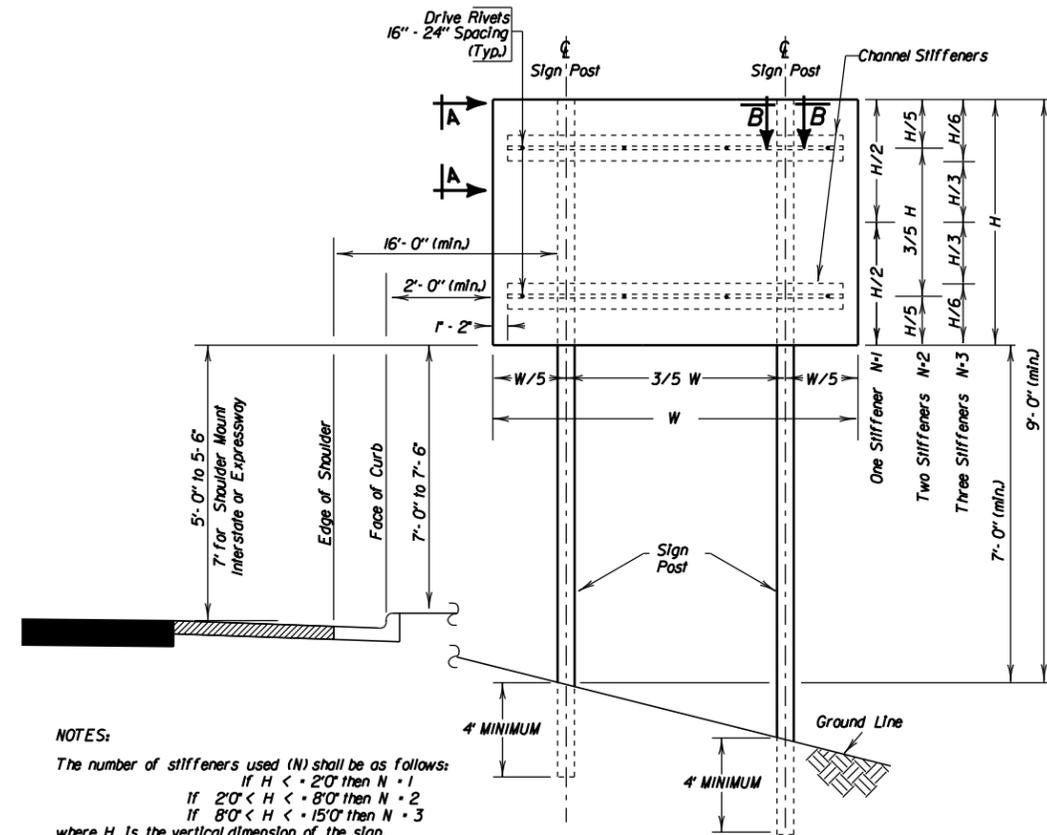
Height and lateral distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

\* 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:

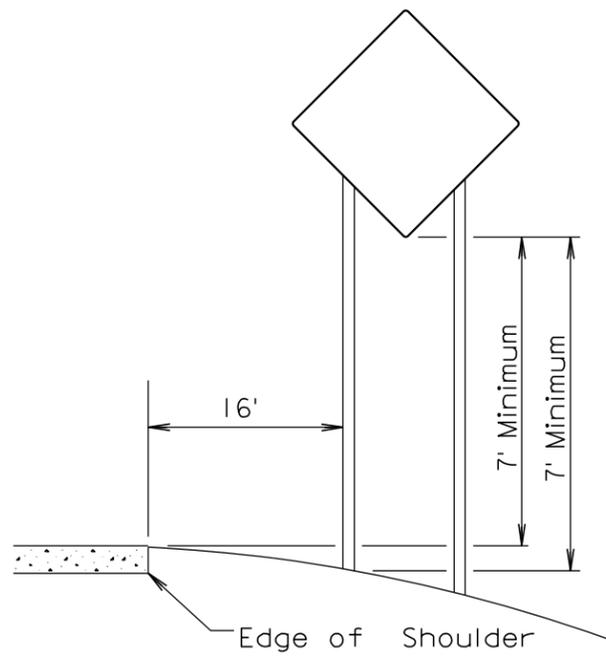
- If  $H < 2'0"$  then  $N = 1$
- If  $2'0" < H < 8'0"$  then  $N = 2$
- If  $8'0" < H < 15'0"$  then  $N = 3$

where H is the vertical dimension of the sign.

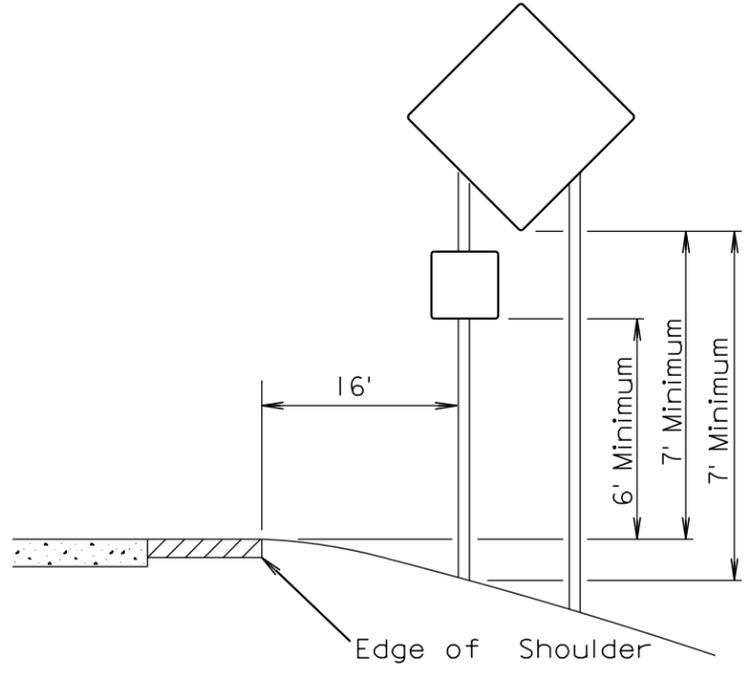
A minimum of two bolts shall be required to fasten the sign to each post.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	36	42
Plotting Date: 12/30/2014			

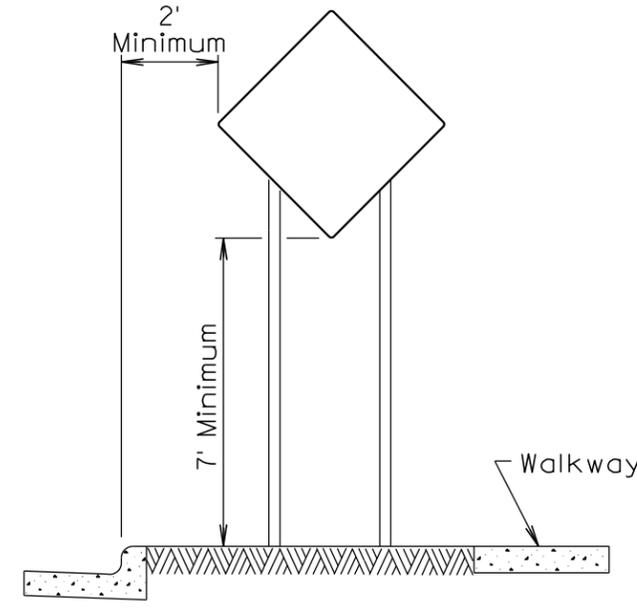
# SIGN SUPPORTS (Lateral Off-Sets)



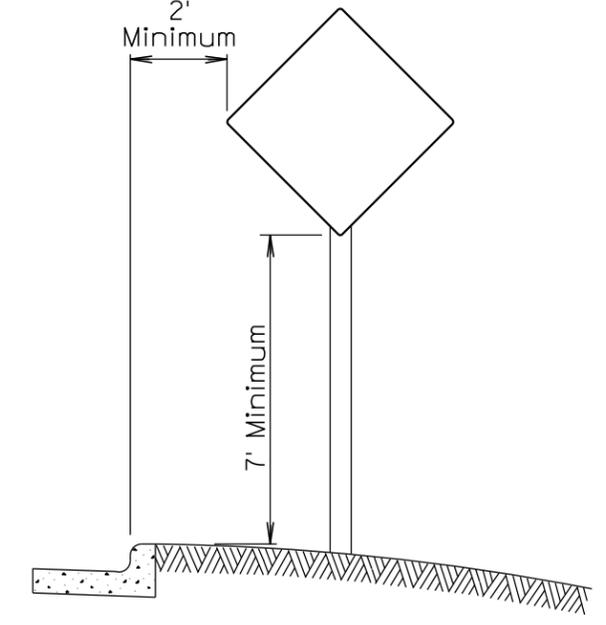
RURAL DISTRICT



RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

PLOT SCALE - 1:200

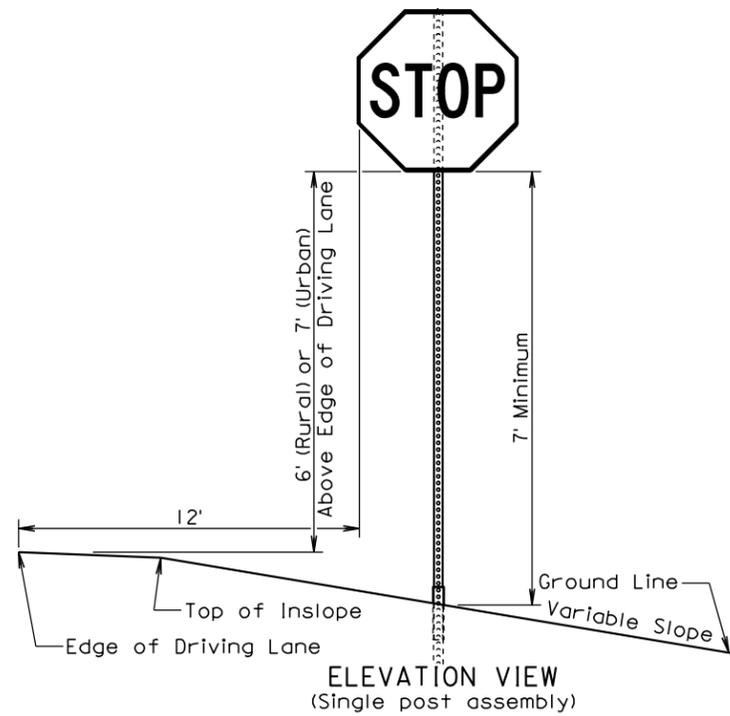
PLOTTED FROM - TRAB10100

PLOT NAME - 4

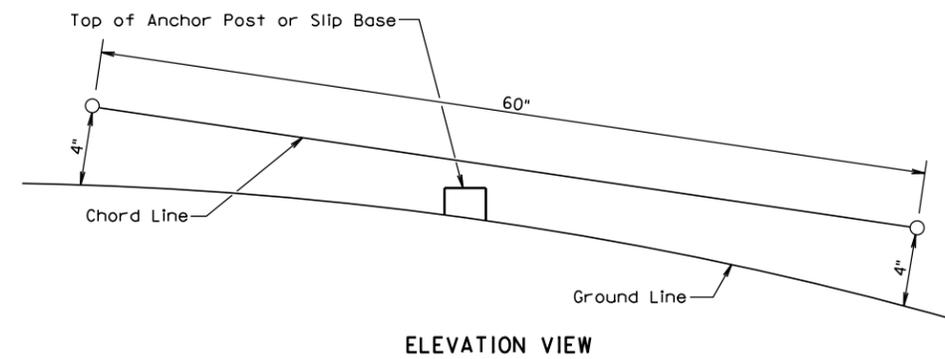
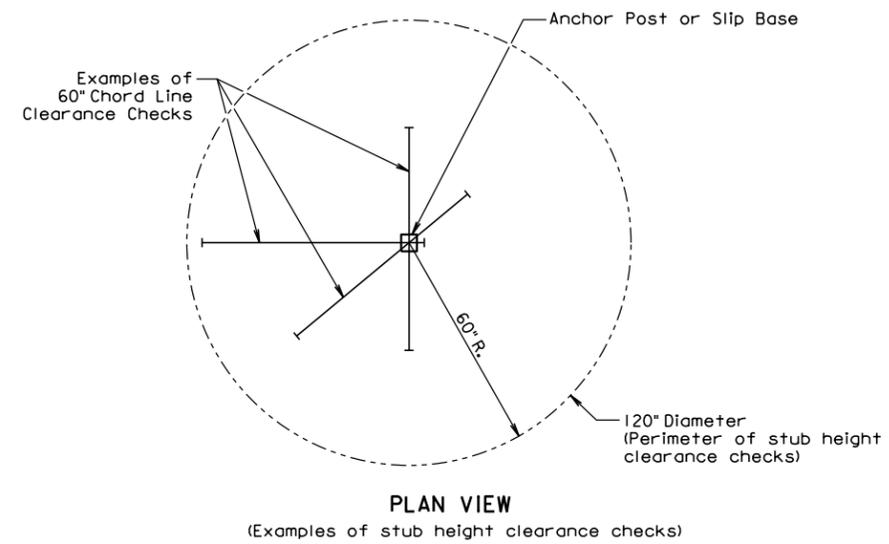
FILE - ... \SIGN POST INSTALL DETAILS.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	37	42
Plotting Date: 12/30/2014			

# INSTALLATION DETAILS FOR STOP SIGNS



# BREAKAWAY SUPPORT STUB CLEARANCE



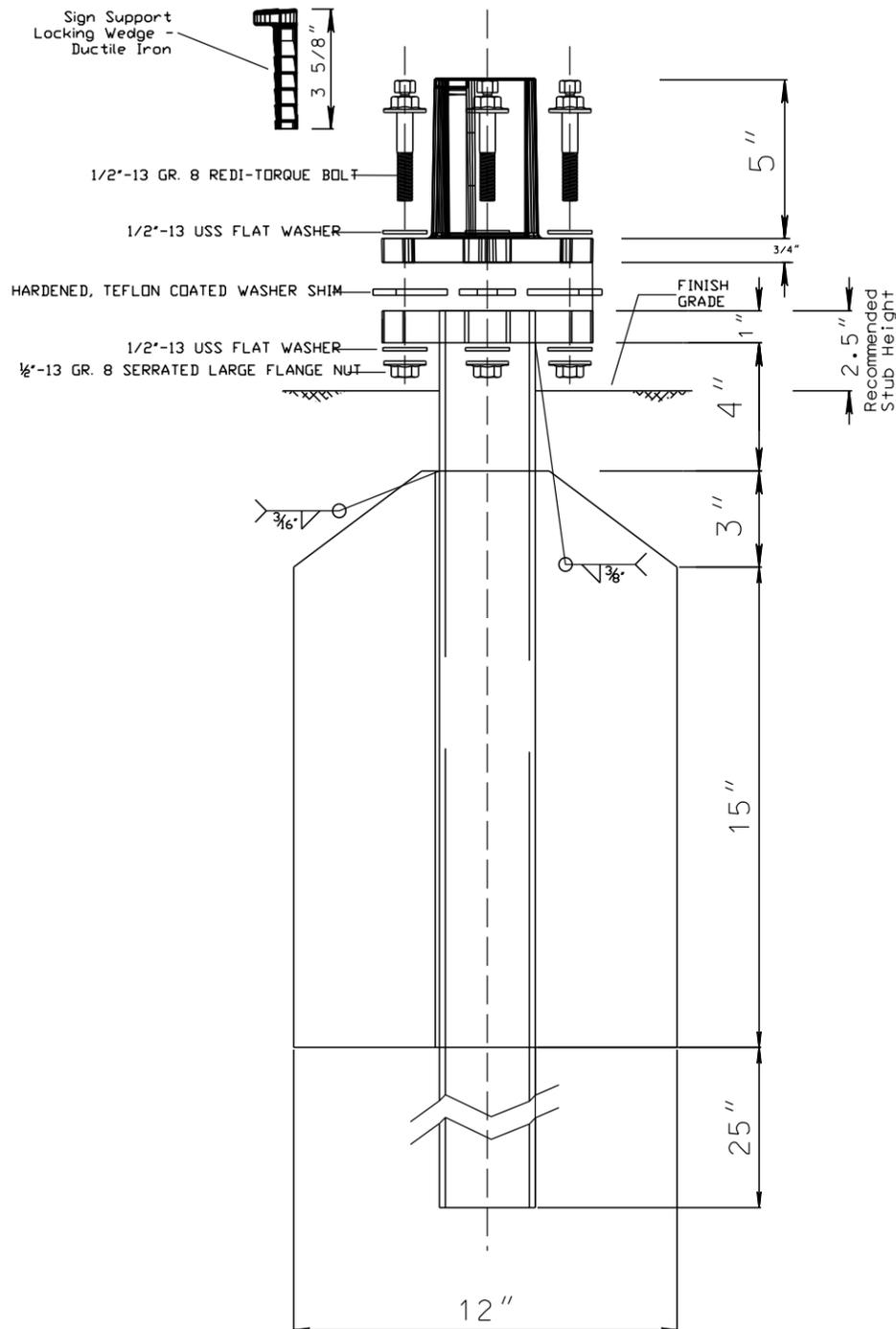
**GENERAL NOTES:**

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.

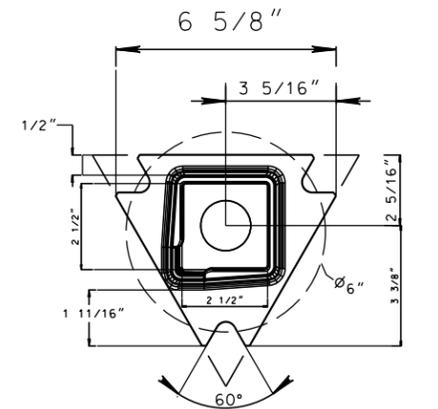
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	38	42
Plotting Date: 12/30/2014			

# 48" WINGED ANCHOR SLIP BASE

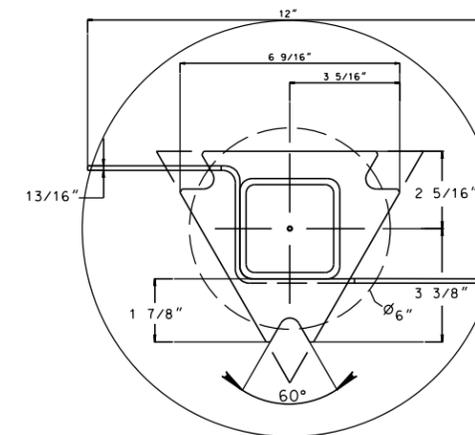


TOP POST RECEIVER  
for 2-1/2" SQUARE POST



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

BOTTOM UNIBASE  
SOIL STUB

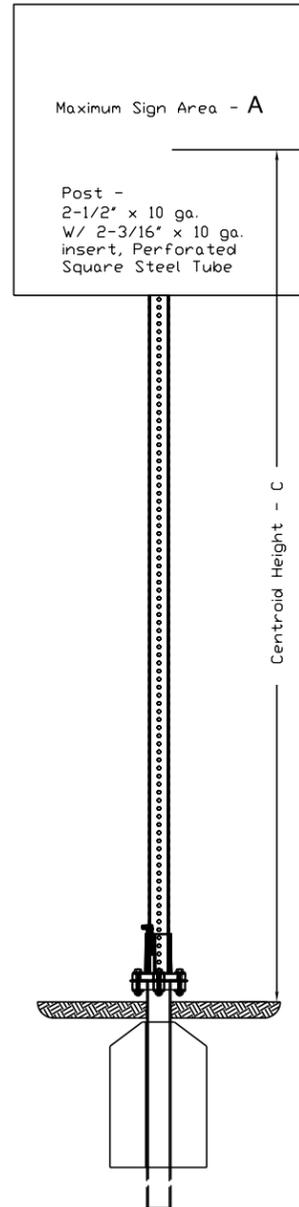


MATERIALS:  
Tube - 3" x 3" x 7 ga. ASTM A500 Grade B tube  
Stabilizing Wing - 7 ga. H.R.P.D. ASTM A 569  
Plate - ASTM A572 grade 50

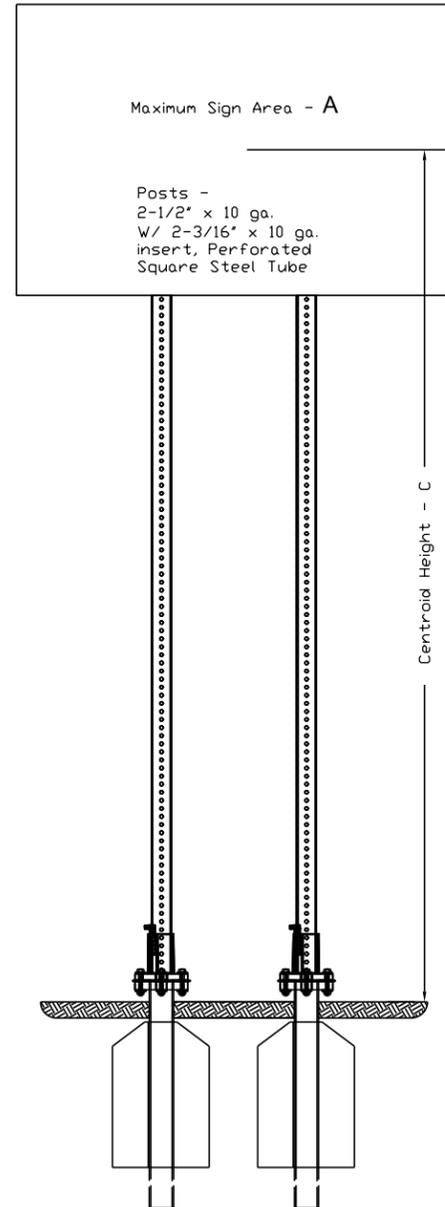


# 48" WINGED SLIP BASE

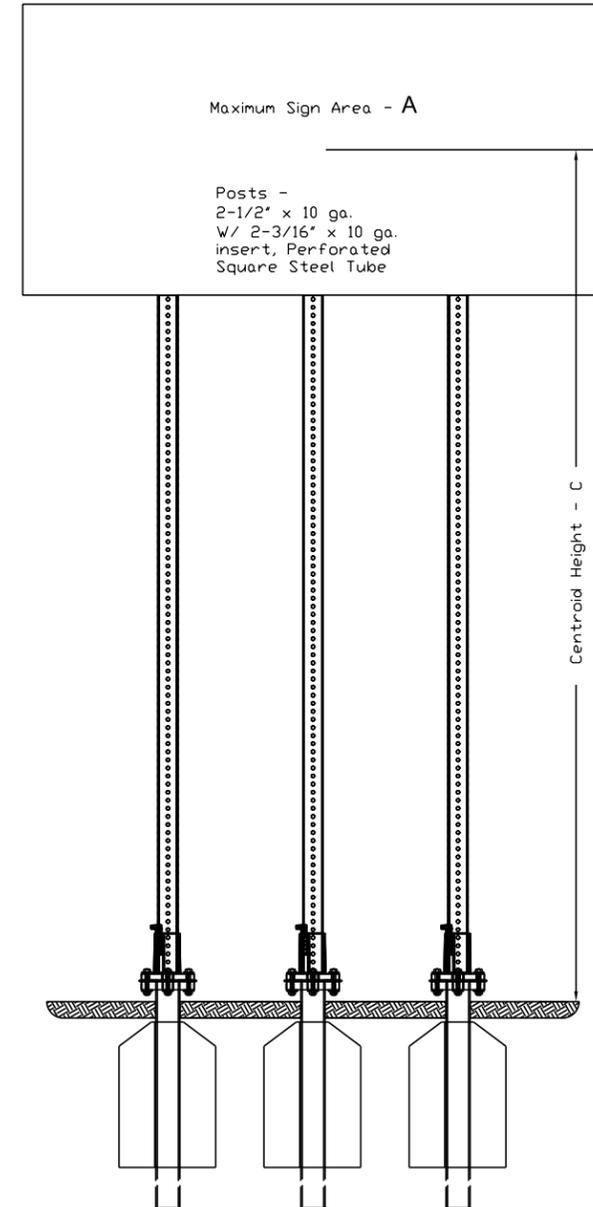
## Post and Wind Load Information



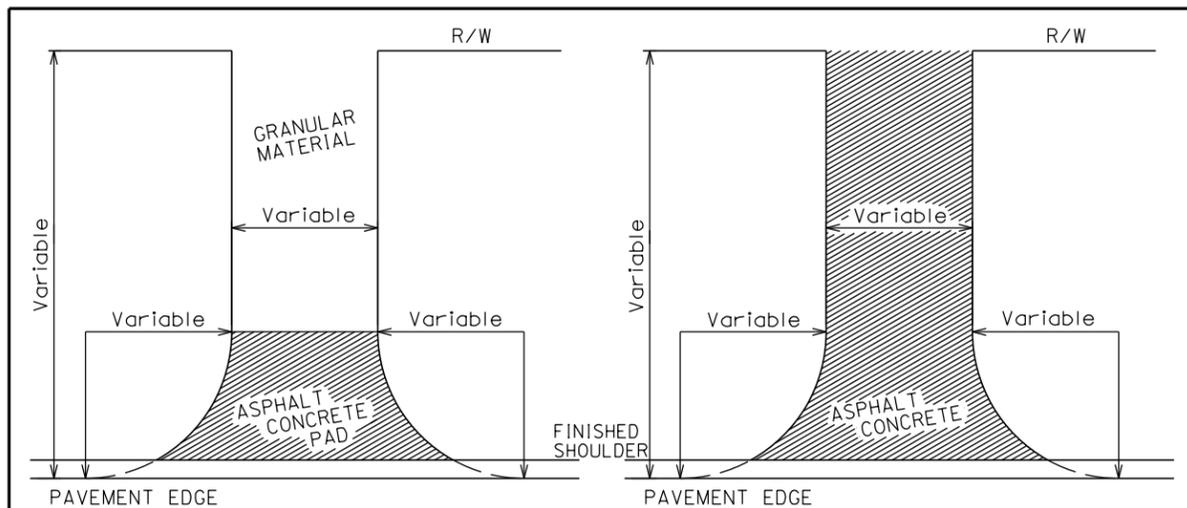
centroid - C	Maximum Sign Area - A
8 ft.	42 ft <sup>2</sup>
9 ft.	38 ft <sup>2</sup>
10 ft.	34 ft <sup>2</sup>
11 ft.	30 ft <sup>2</sup>
12 ft.	28 ft <sup>2</sup>
13 ft.	26 ft <sup>2</sup>
14 ft.	24 ft <sup>2</sup>
15 ft.	22 ft <sup>2</sup>
16 ft.	20 ft <sup>2</sup>



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>

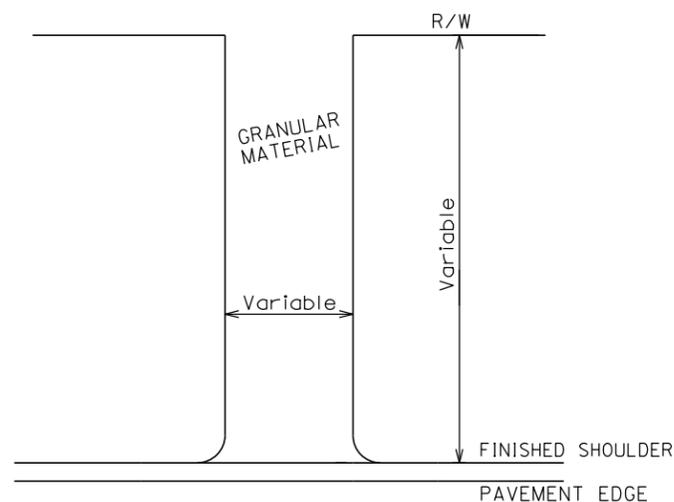


centroid - C	Maximum Sign Area - A
8 ft.	126 ft <sup>2</sup>
9 ft.	114 ft <sup>2</sup>
10 ft.	102 ft <sup>2</sup>
11 ft.	90 ft <sup>2</sup>
12 ft.	84 ft <sup>2</sup>
13 ft.	78 ft <sup>2</sup>
14 ft.	72 ft <sup>2</sup>
15 ft.	66 ft <sup>2</sup>
16 ft.	60 ft <sup>2</sup>



INTERSECTING ROAD  
NO ASPHALT CONCRETE SURFACING  
BEYOND R/W

INTERSECTING ROAD  
ASPHALT CONCRETE SURFACING  
BEYOND R/W



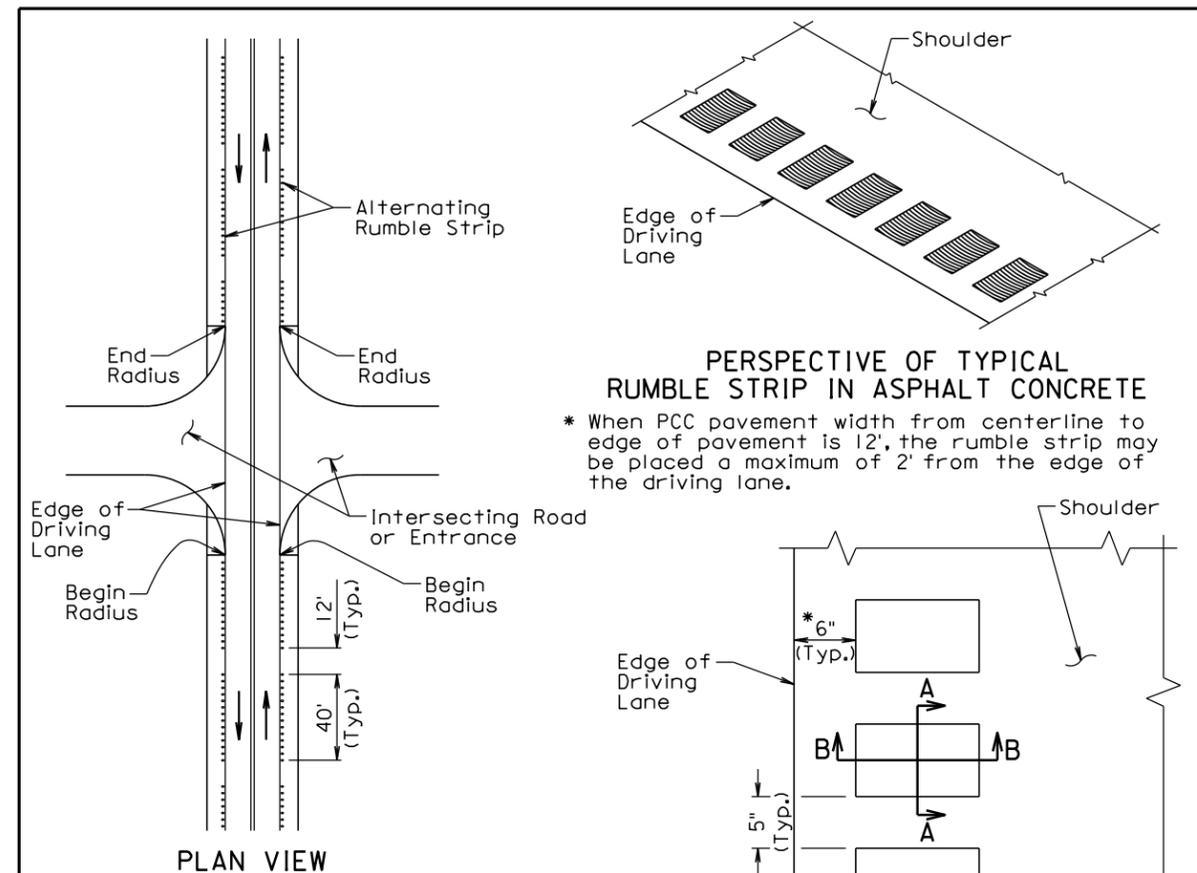
ENTRANCE

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.

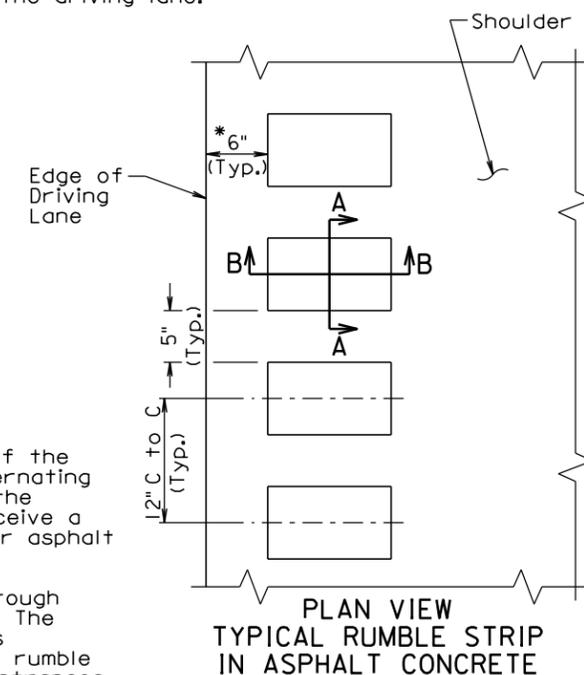
GENERAL NOTES:

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.

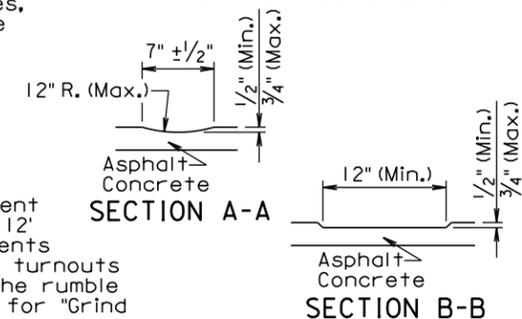
A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

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



SECTION A-A

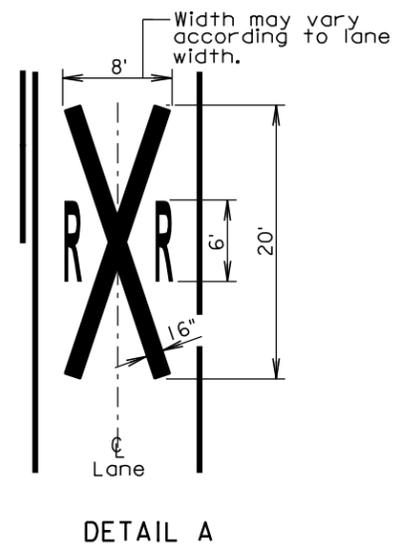
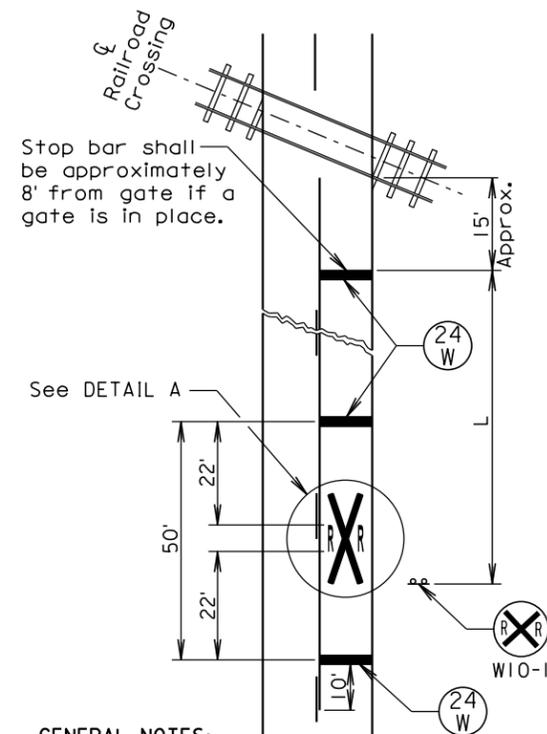
SECTION B-B

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

KEY	ITEM
	24" White
	White

Posted Speed Limit (M.P.H.)	L (Ft.)
≤ 30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550

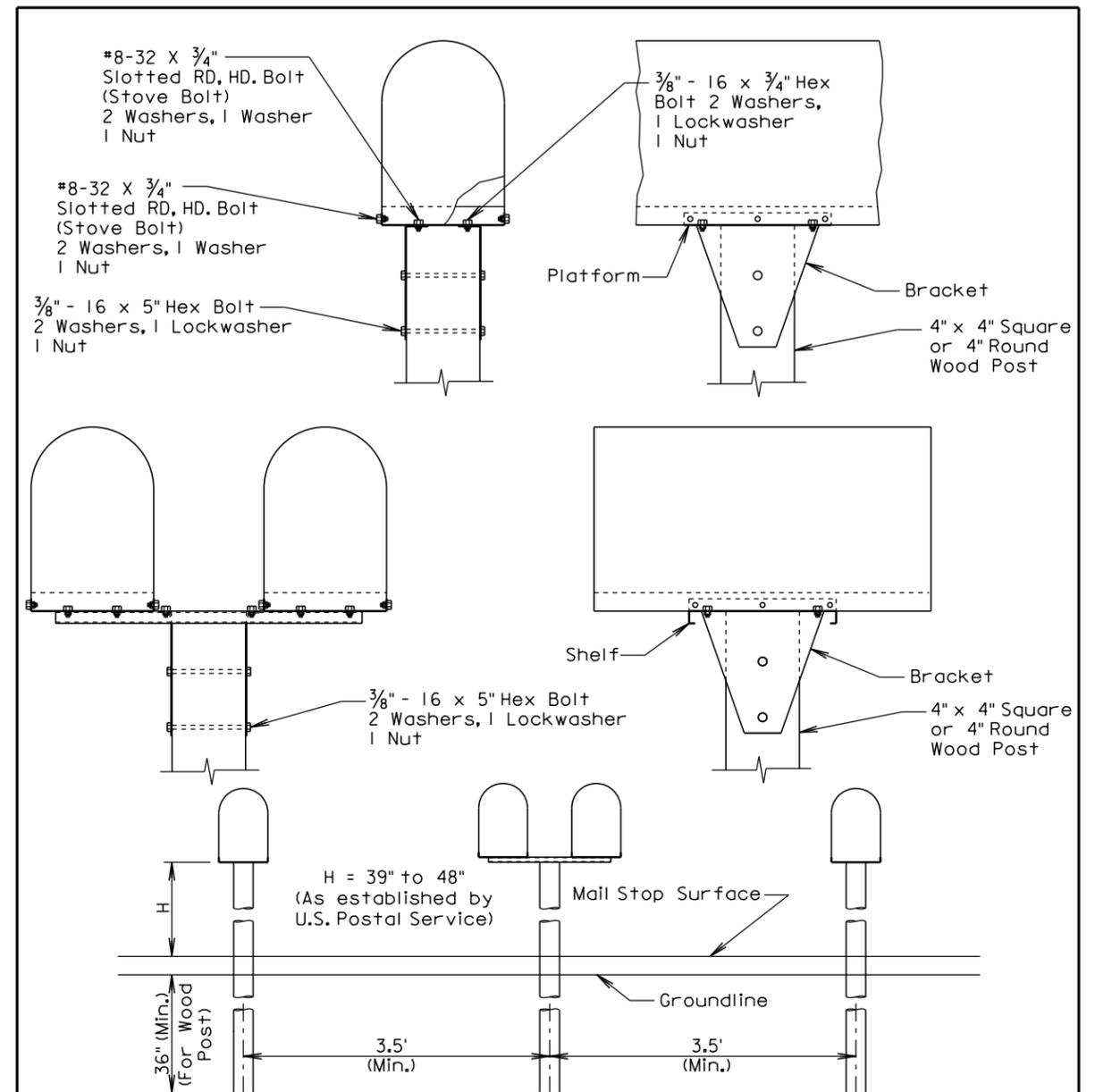


**GENERAL NOTES:**

- The railroad crossing pavement markings shall be placed symmetrically about the centerline of the railroad crossing.
- When pavement markings are used, a portion of the RXR symbol shall be placed directly opposite of the advance warning sign W10-1.
- On multi-lane roads the transverse bands shall extend across all approach lanes and individual RXR symbols shall be placed in each approach lane.
- The railroad crossing pavement markings shall consist of all the transverse bands, stop bars, and RXR symbols.
- When pavement marking paint is used for marking the railroad crossing, all costs for furnishing and painting the markings, materials, labor, and necessary equipment shall be incidental to the contract unit price per gallon for "Pavement Marking Paint, White".
- When pavement marking tape is used for marking the railroad crossing, all costs for furnishing and placing the markings, materials, labor, and necessary equipment shall be incidental to the contract unit price per each for "Cold Applied Plastic Pavement Marking, Railroad Crossing".

June 26, 2013

Published Date: 4th Qtr. 2014	S D D O T	PAVEMENT MARKINGS AT RAILROAD CROSSING	PLATE NUMBER 633.10
			Sheet 1 of 1



**GENERAL NOTES:**

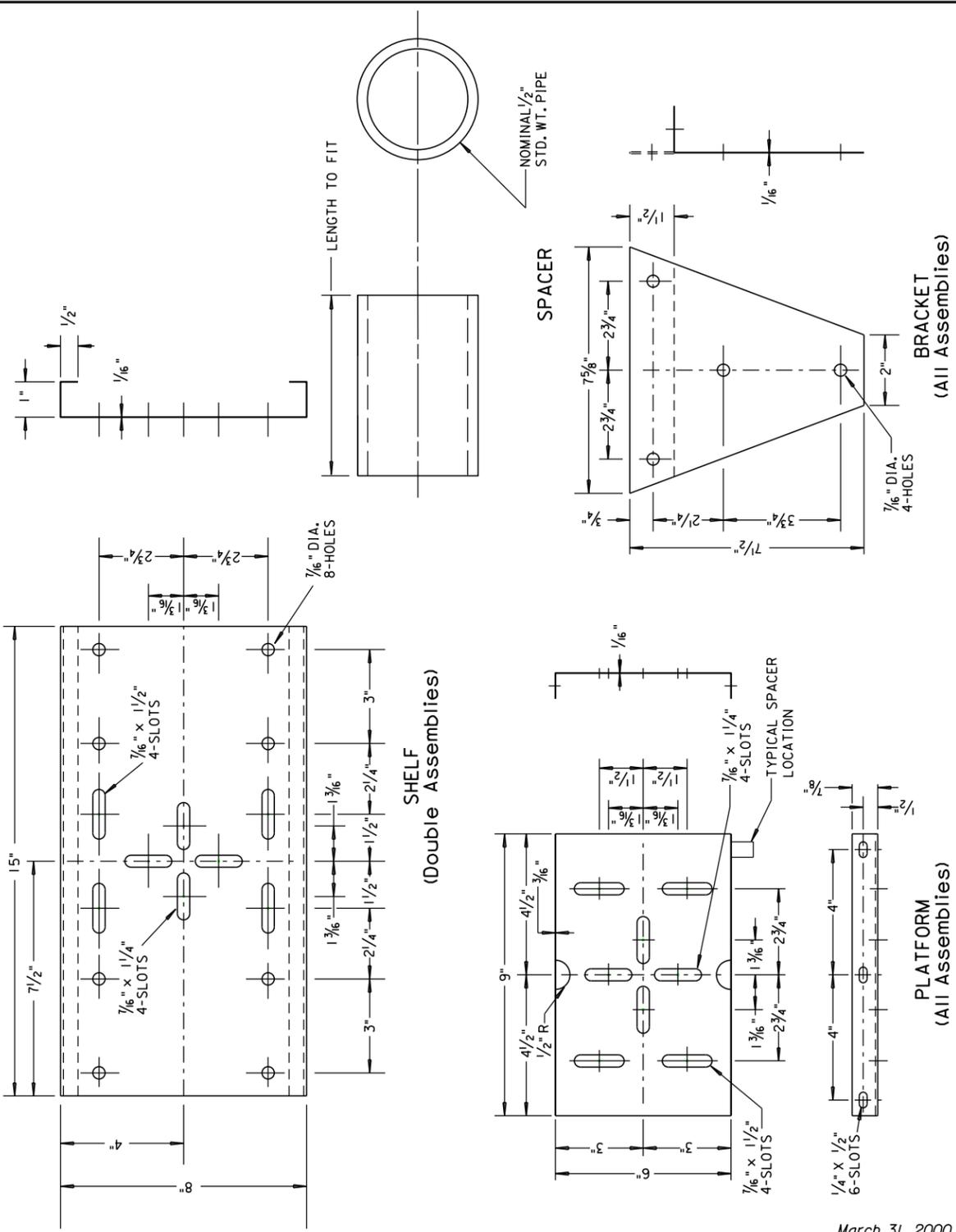
**SPACING FOR MULTIPLE POST INSTALLATION**

- 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.

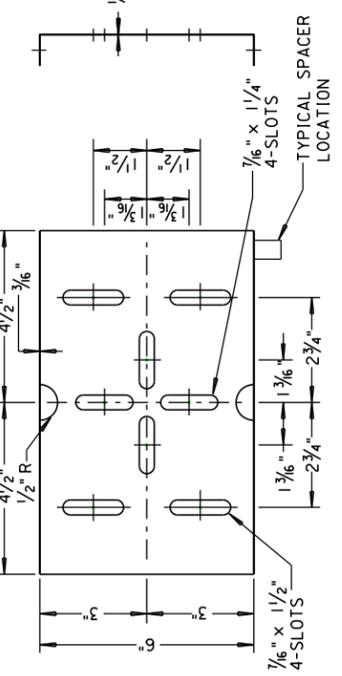
September 6, 2013

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0014(198)320	42	42



SHELF  
(Double Assemblies)



PLATFORM  
(All Assemblies)

BRACKET  
(All Assemblies)

March 31, 2000

Published Date: 4th Qtr. 2014

**SDDOT**

**MAILBOX SUPPORT HARDWARE**

PLATE NUMBER  
900.03

Sheet 1 of 1

PLOTTED FROM - TRAB10100