

# Section M: PAVEMENT MARKING Plans

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
SOUTH DAKOTA	IM 0295(39)132, NH 014B(04)418 NH-P 0014(184)418	M1	M36
Plotting Date: 09/05/2014			

## INDEX OF SHEETS

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M2	Estimate of Quantities W/Plan Notes
M3	Table of Quantities
M4-M34	Pavement Marking Layouts
M35	Detail Drawings
M36	Standard Plates

### BEGIN NH-P 0014(184)418 PCN 035T

Sta. 415+80.8 (US 14E) Approximately  
4825.72 feet West and 161.12 feet  
South of the Southeast corner of  
Section 15 - Township 110 North -  
Range 50 West  
MRM 418.00 +0.056 (US 14E)

Sta. 412+29.7 (US 14W) Approximately  
6144.98 feet West and 205.21 feet  
South of the Southeast corner of  
Section 15 - Township 110 North -  
Range 50 West  
MRM 417.08 +0.726 (US 14W)

### BEGIN NH 014B(04)418 PCN 035U

Sta. 5+85.9 (US 14EB) Approximately 3997.22  
feet West and 131.41 feet South of the Southeast  
corner of Section 15 - Township 110 North -  
Range 50 West MRM 418.11 +0.103 (US 14EB)

Sta. 5+81.7 (US 14WB) Approximately 4102.76  
feet West and 136.94 feet South of the Southeast  
corner of Section 15 - Township 110 North -  
Range 50 West MRM 418.19 +0.003 (US 14WB)

### BEGIN EXCEPTION PCN 035U

#### BEGIN PCN 04D3

Sta 175+93.92

### END EXCEPTION PCN 035U

#### END PCN 04D3

Sta 192+71.47

### END SHOULDER WIDENING

Sta 221+38.80 (US 14B)  
MRM 422.00 + 0.097 (US 14B)

### END NH 014B(04)418 PCN 035U

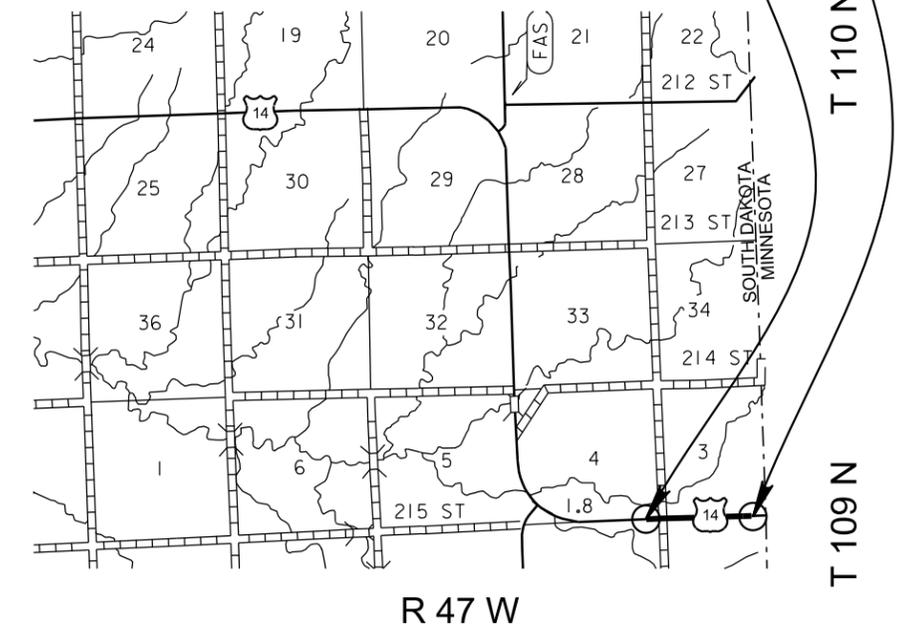
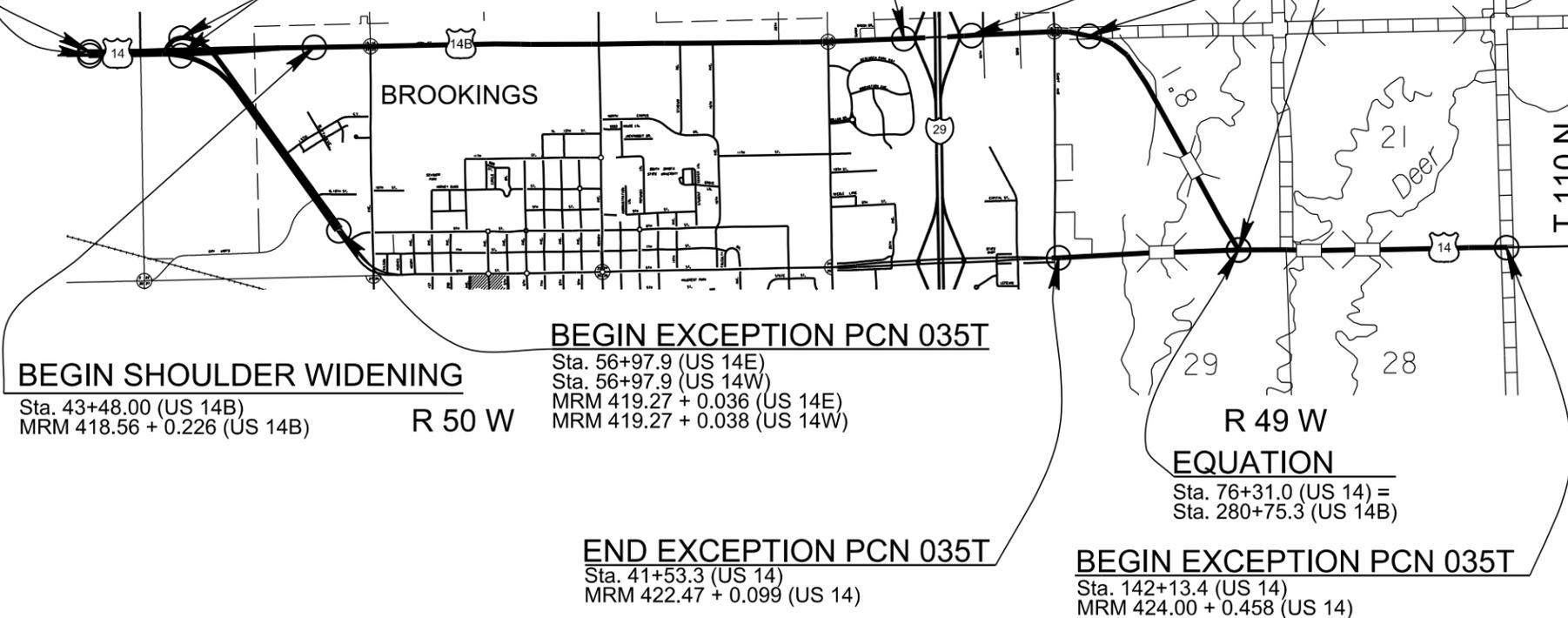
Sta. 280+75.3 (US 14B) Approximately  
1333.99 feet West and 29.6 feet north  
of the Southeast corner of Section 20 -  
Township 110 North - Range 49 West  
MRM 423.23 (US 14B)

### END NH-P 0014(184)418 PCN 035T

Sta. 815+29.83 (US 14) Approximately  
25.26 feet North of the Southeast corner  
of Section 3 - Township 109 North -  
Range 47 West  
MRM 439.75 (US 14)

### END EXCEPTION PCN 035T

Sta. 809+00 (US 14)  
MRM 439.00 + 0.628 (US 14)



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(39)132, NH 014B(04)418 NH-P 0014(184)418	M2	M36

Revised February 5, 2015 DLM

### SECTION M ESTIMATE OF QUANTITIES 035T

Bid Item Number	Item	Quantity	Unit
633E0030	Cold Applied Plastic Pavement Marking, 24"	165	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	113	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow	5	Each
633E1300	Pavement Marking Paint, White	105.0	Gal
633E1305	Pavement Marking Paint, Yellow	75.0	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	165	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	5	Each
633E5120	Grooving for Durable Pavement Marking, Area	113	SqFt

### SECTION M ESTIMATE OF QUANTITIES 035U

Bid Item Number	Item	Quantity	Unit
633E0030	Cold Applied Plastic Pavement Marking, 24"	1,478	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	13	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow	103	Each
633E1300	Pavement Marking Paint, White	139.0	Gal
633E1305	Pavement Marking Paint, Yellow	145.0	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	1,478	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	103	Each

### SECTION M ESTIMATE OF QUANTITIES 04D3

Bid Item Number	Item	Quantity	Unit
633E0030	Cold Applied Plastic Pavement Marking, 24"	115	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	235	SqFt
633E1300	Pavement Marking Paint, White	9.0	Gal
633E1305	Pavement Marking Paint, Yellow	16.0	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	115	Ft
633E5020	Grooving for Cold Applied Plastic Pavement Marking, Area	235	SqFt

### PAVEMENT MARKING

Cold Applied Plastic Pavement Marking shall be as defined in Section 983 of the Specifications.

Pavement Marking Paint shall be as defined in sections 980 and 981 of the Specifications.

### GROOVE PAVEMENT FOR PAVEMENT MARKING

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

### 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, lane drops, turn lanes, and taper sections. 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).

### PAVEMENT MARKING PAINT

All 24" yellow and solid area yellow from station 180+00 to 189+32 on US14B shall be paint.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(39)132, NH 014B(04)418 NH-P 0014(184)418	M3	M36

# Table of Quantities

(for information only)

Item	US14 NH-P 0014(184)418	US14B NH 014B(04)418	I29 & US14B IM 0295(39)132	Total	Units
Cold Applied Plastic Pavement Marking, 24" Yellow	165	628	115	908	Ft
Cold Applied Plastic Pavement Marking, 24" White		850		850	Ft
Cold Applied Plastic Pavement Marking, Arrow	5	103		108	Each
Cold Applies Plastic Pavement Parking Area	113		235	348	SqFt
Pavement Marking Paint. White	105	139	9	253	Gal
Pavement Marking Paint. Yellow	75	154	16	245	Gal
Grooving for Cold Applied Plastic Pavement Marking, 24"	165	1478	115	1758	Ft
Grooving for Cold Applied Plastic Pavement Marking, Arrow( Left)	5	85		90	Each
Grooving for Cold Applied Plastic Pavement Marking, Arrow(Right)		8		8	Each
Grooving for Cold Applied Plastic Pavement Marking, Area	113		235	348	SqFt

# Pavement Markings US14B

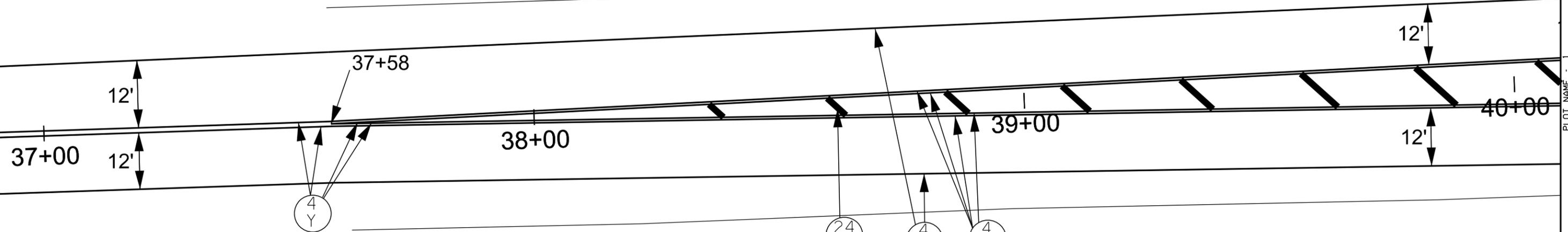
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M4	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

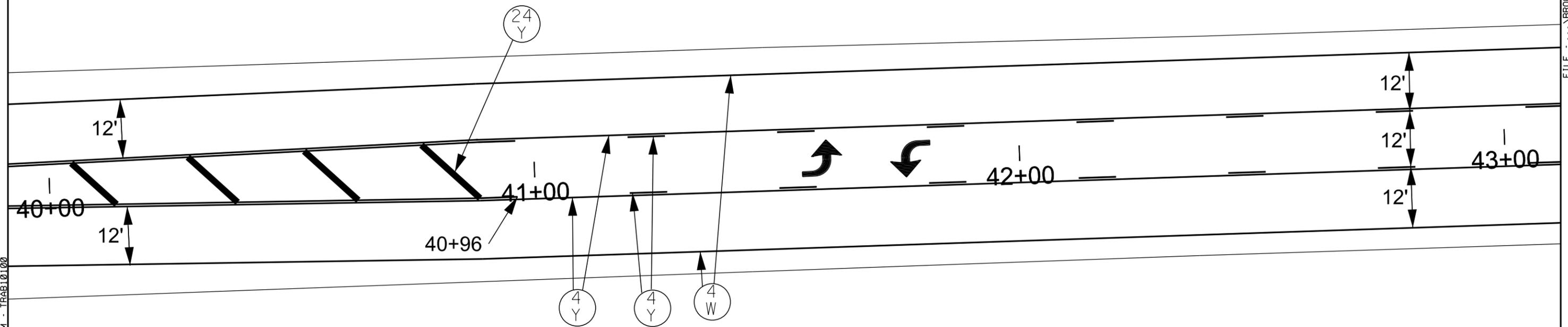
PLOTTED FROM - TRAB10100

PLOT NAME -

FILE - ... \BROK0350\SECTION M\37PM.DGN



-  : PAVEMENT MARKING PAINT, 4" WHITE
-  : PAVEMENT MARKING PAINT, 4" YELLOW
-  : PAVEMENT MARKING PAINT, 8" WHITE
-  : COLD APPLIED PAVEMENT MARKING, 24" Yellow
-  : COLD APPLIED PAVEMENT MARKING, 24" WHITE



# Pavement Markings US14B

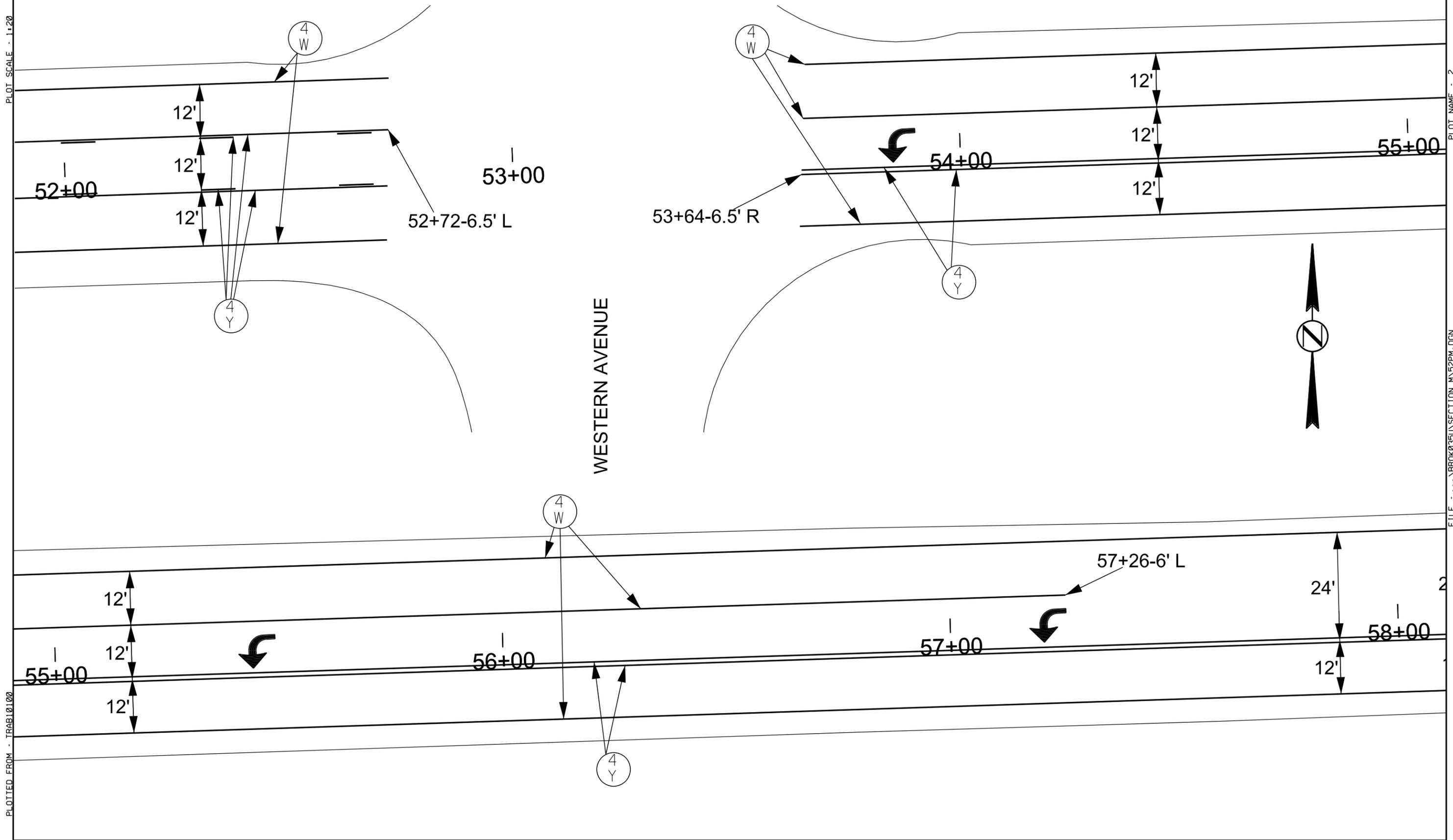
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M5	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 2

PLOTTED FROM - TRAB10100

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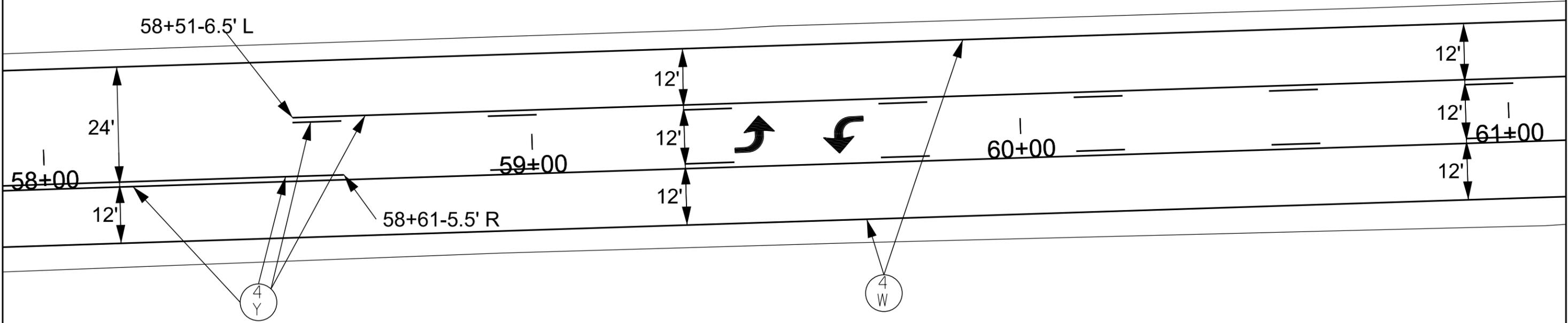
WESTERN AVENUE

# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M6	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 3



PLOTTED FROM - TRAB10100

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# Pavement Markings US14B

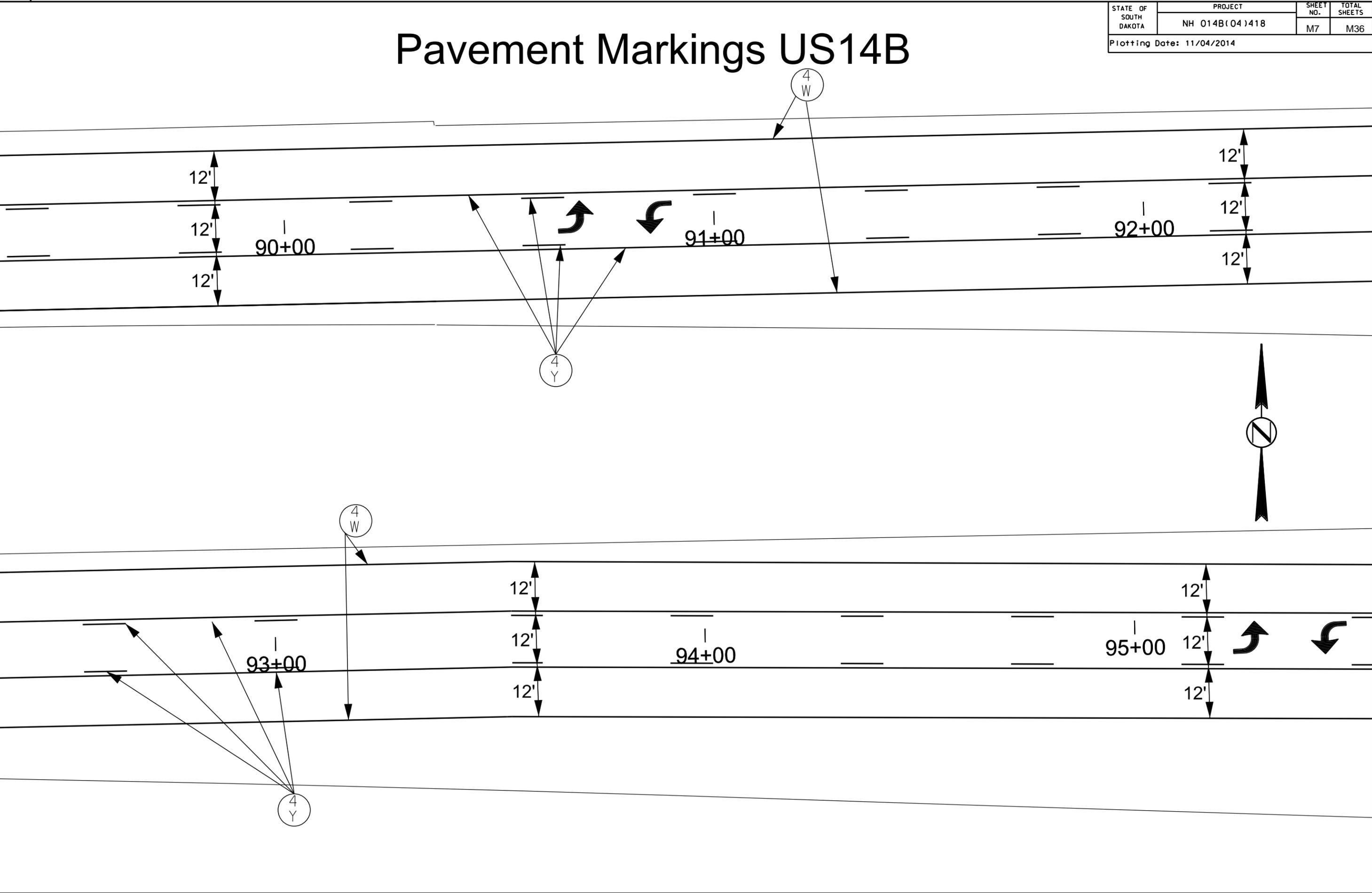
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	NH 014B(04)418	M7	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 4

FILE - ... \BROK035\SECTION M\90PM.DGN

PLOTTED FROM - TRAB10100



# Pavement Markings US14B

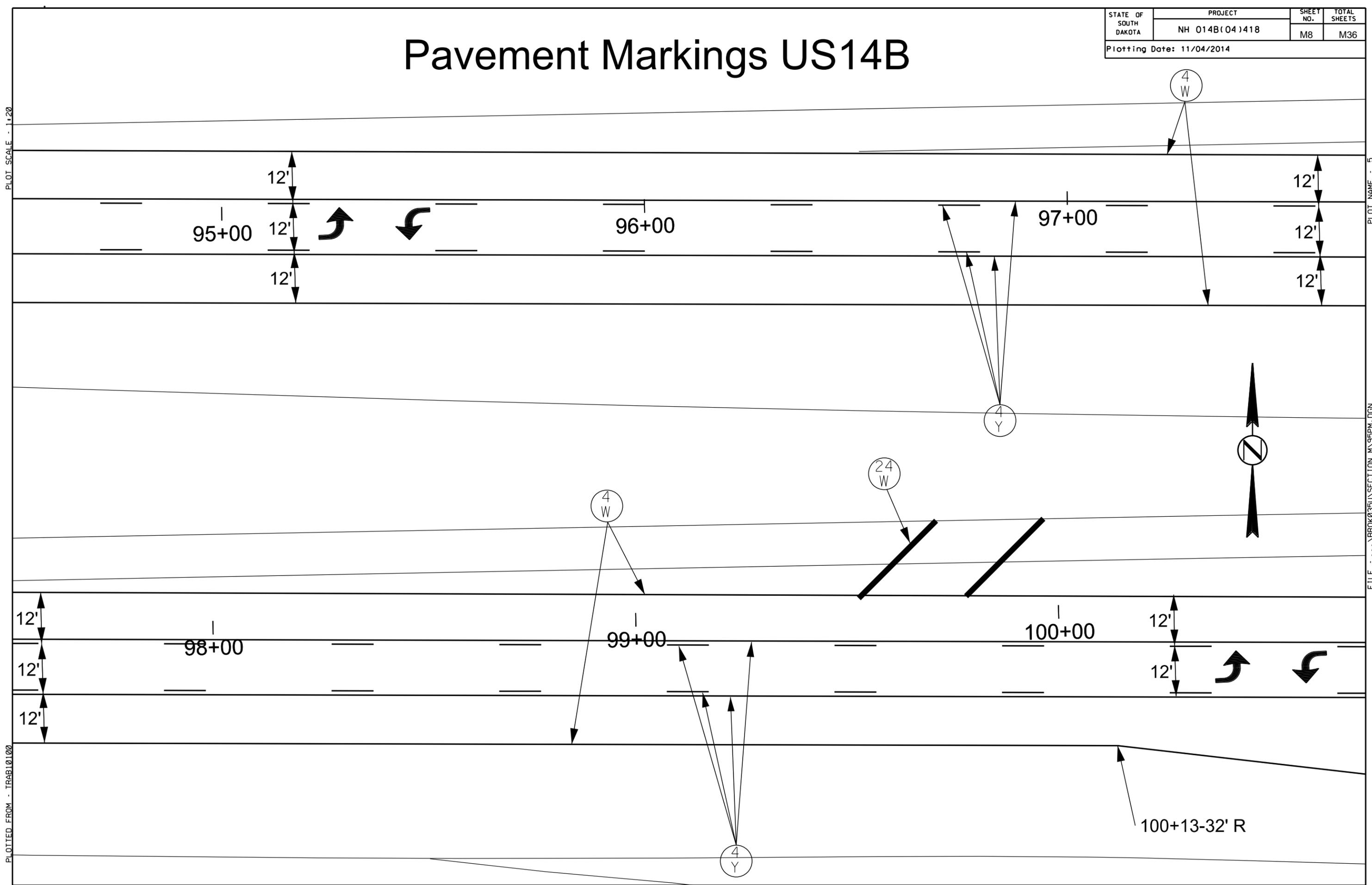
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	NH 014B(04)418	M8	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 5

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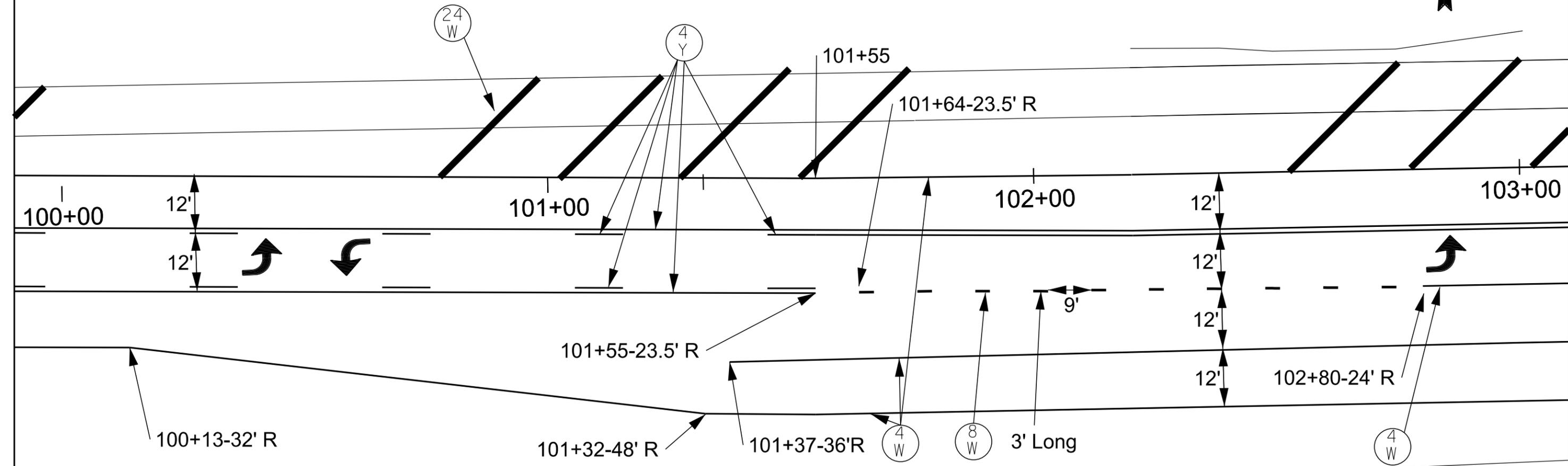


# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M9	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 6



PLOTTED FROM - TRAB10100

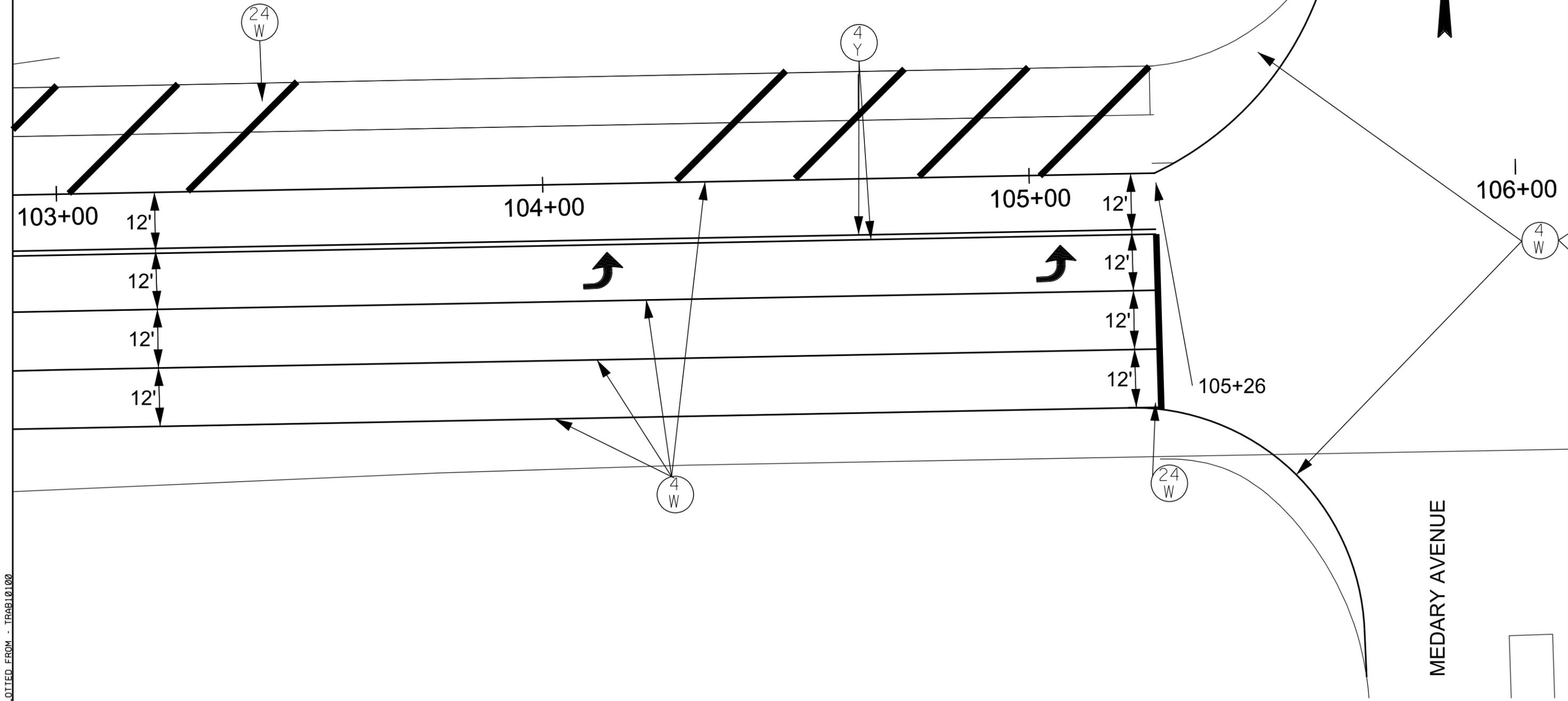
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 7



PLOTTED FROM - TRAB10100

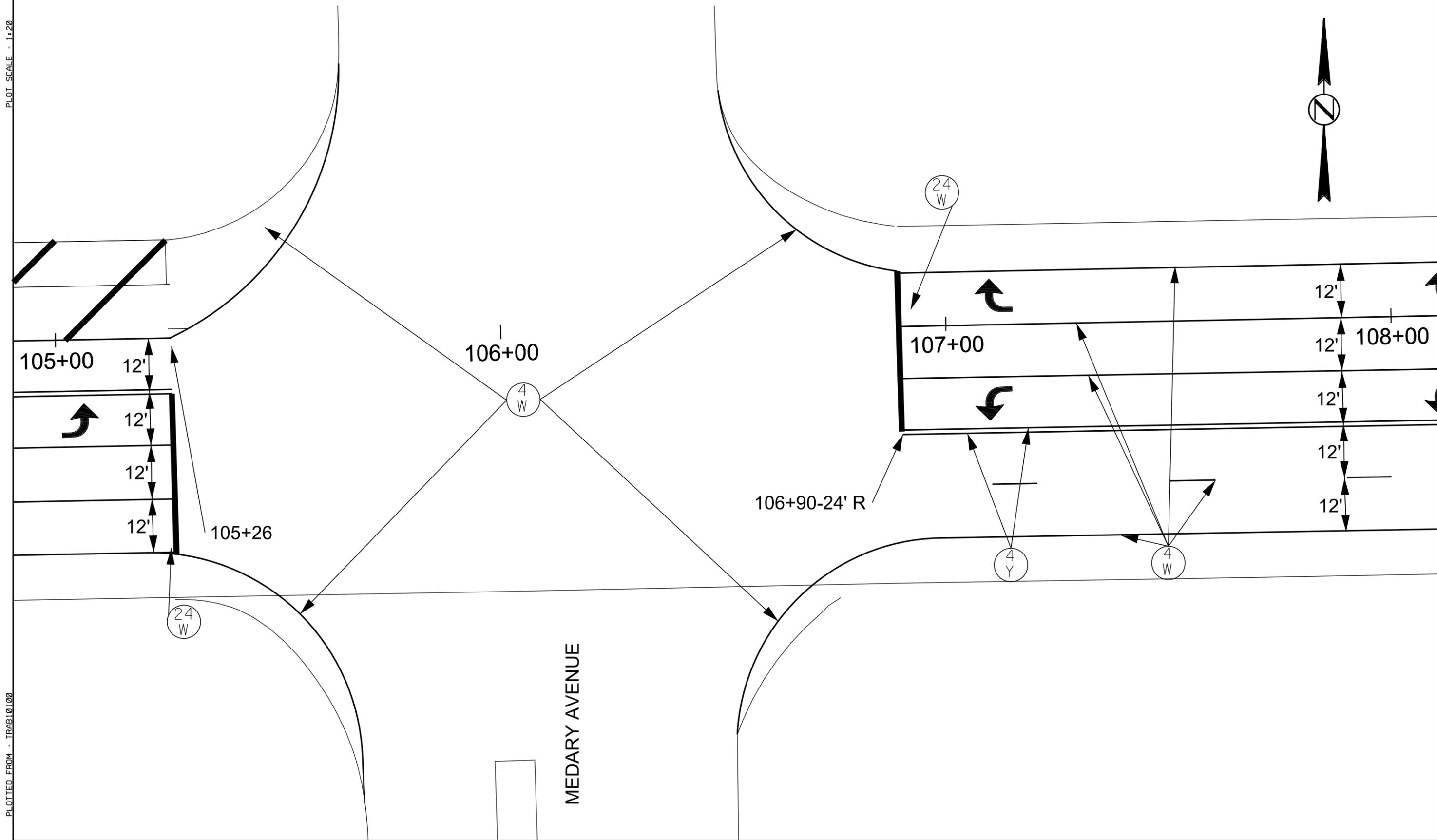
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M11	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 8



PLOTTED FROM - TRAB10100

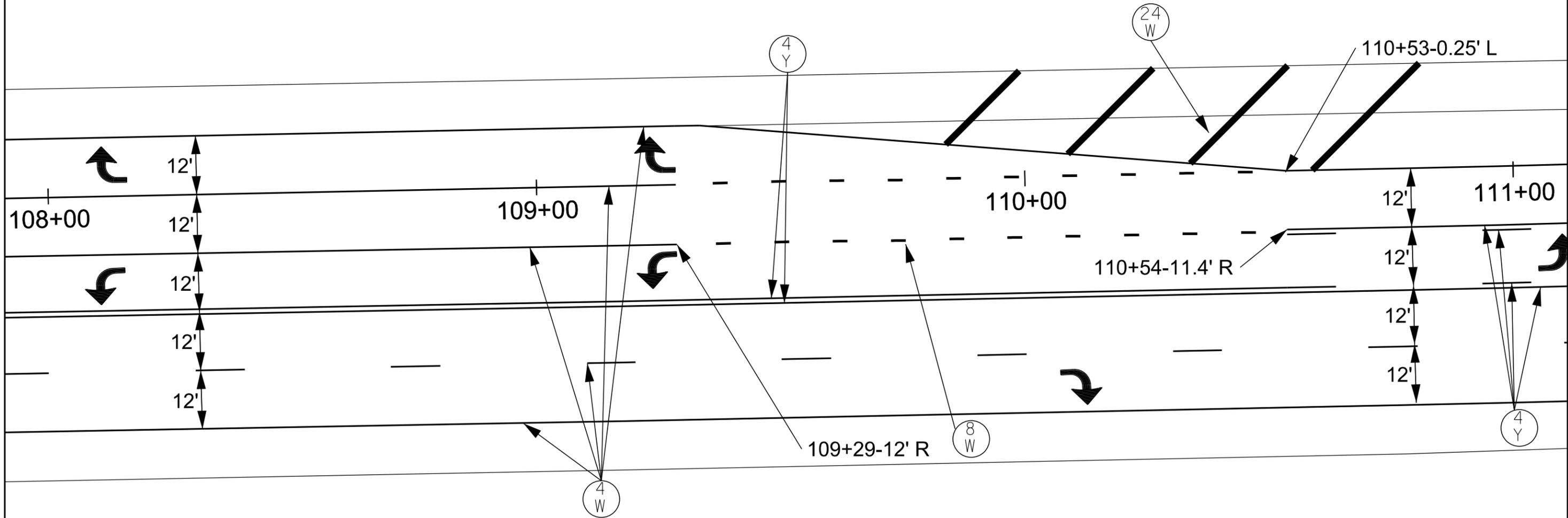
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M12	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 9



PLOTTED FROM - TRAB10100

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# Pavement Markings US14B

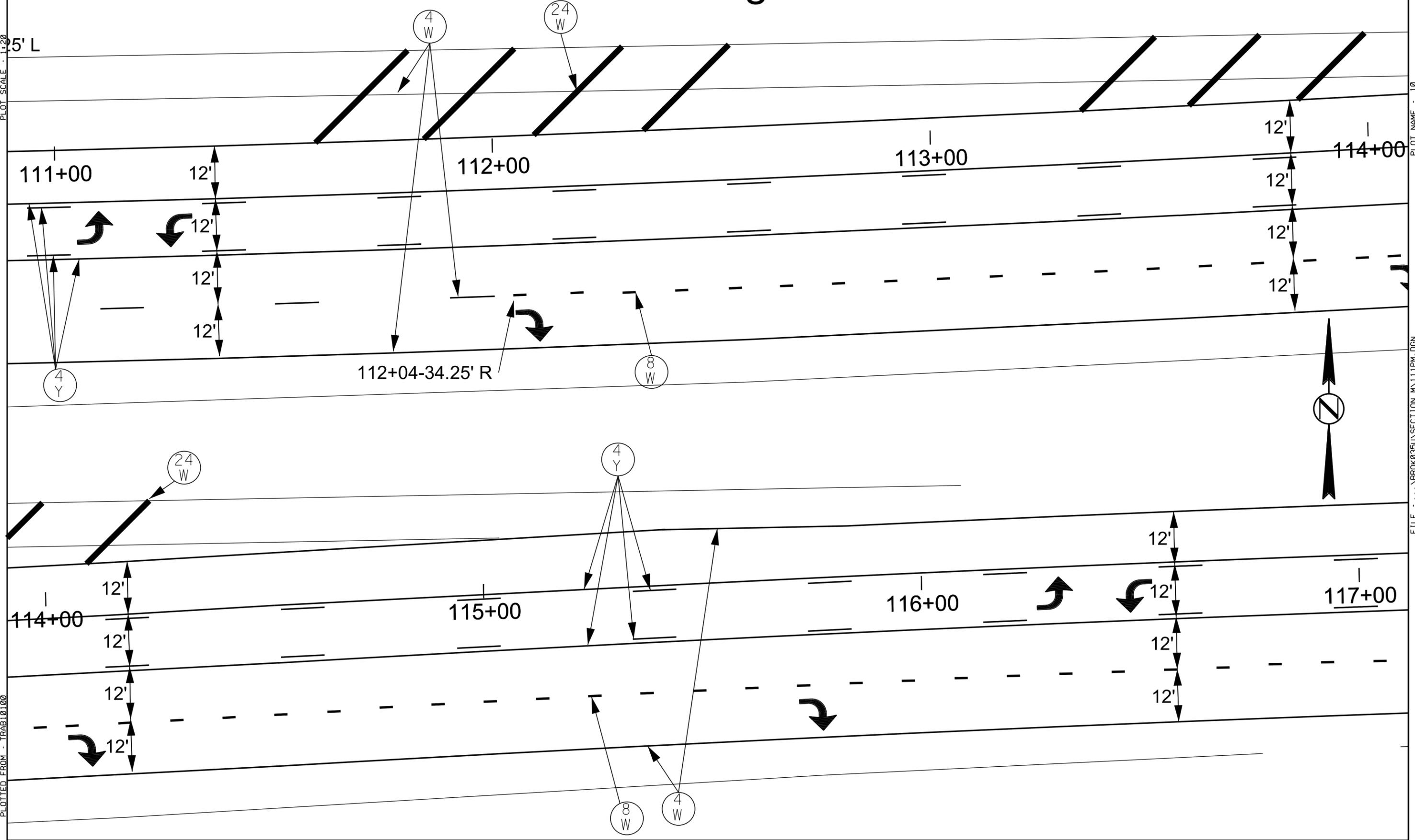
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M13	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOTTED FROM - TRAB10100

PLOT NAME - 10

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# Pavement Markings US14B

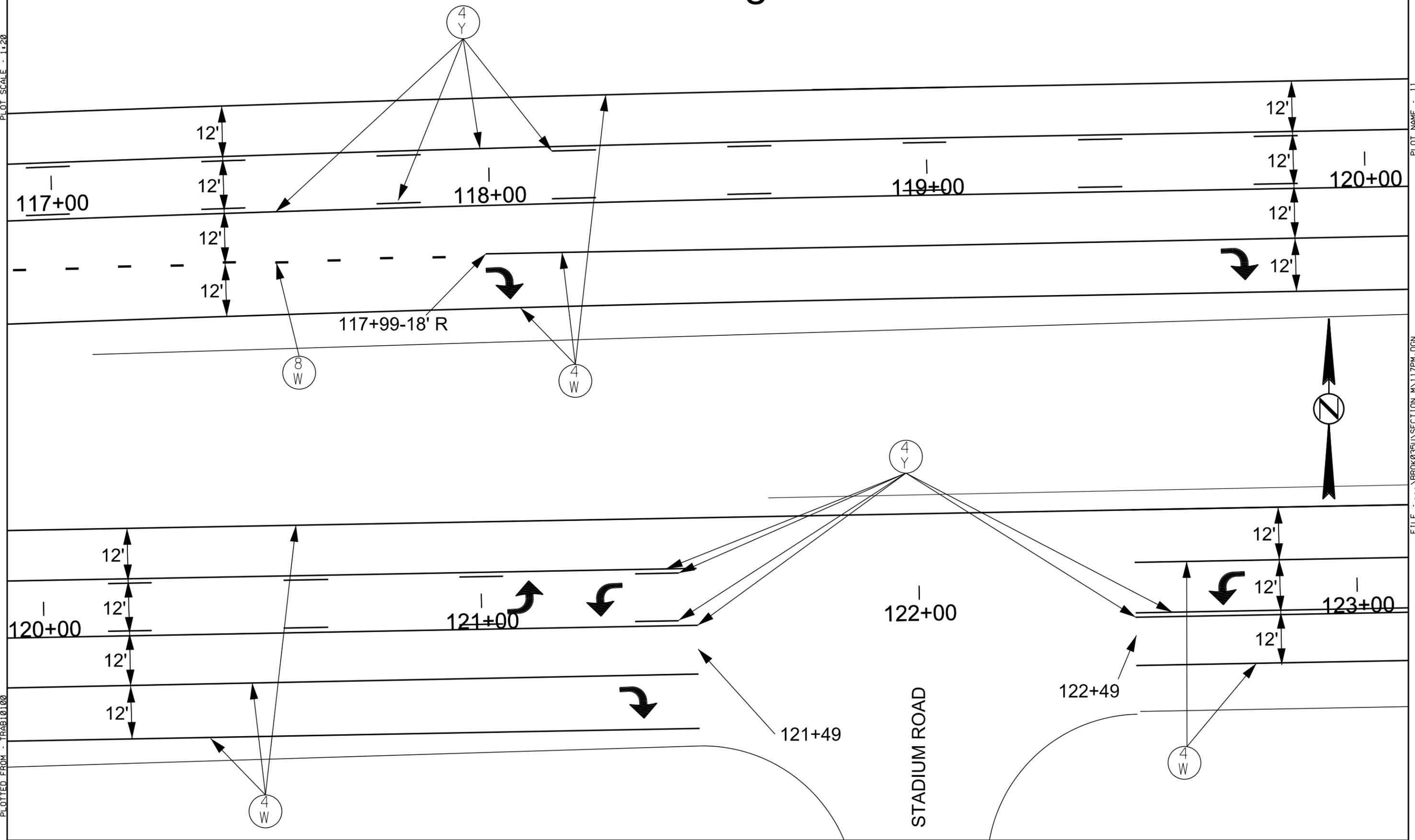
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M14	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 11

PLOTTED FROM - TRAB10100

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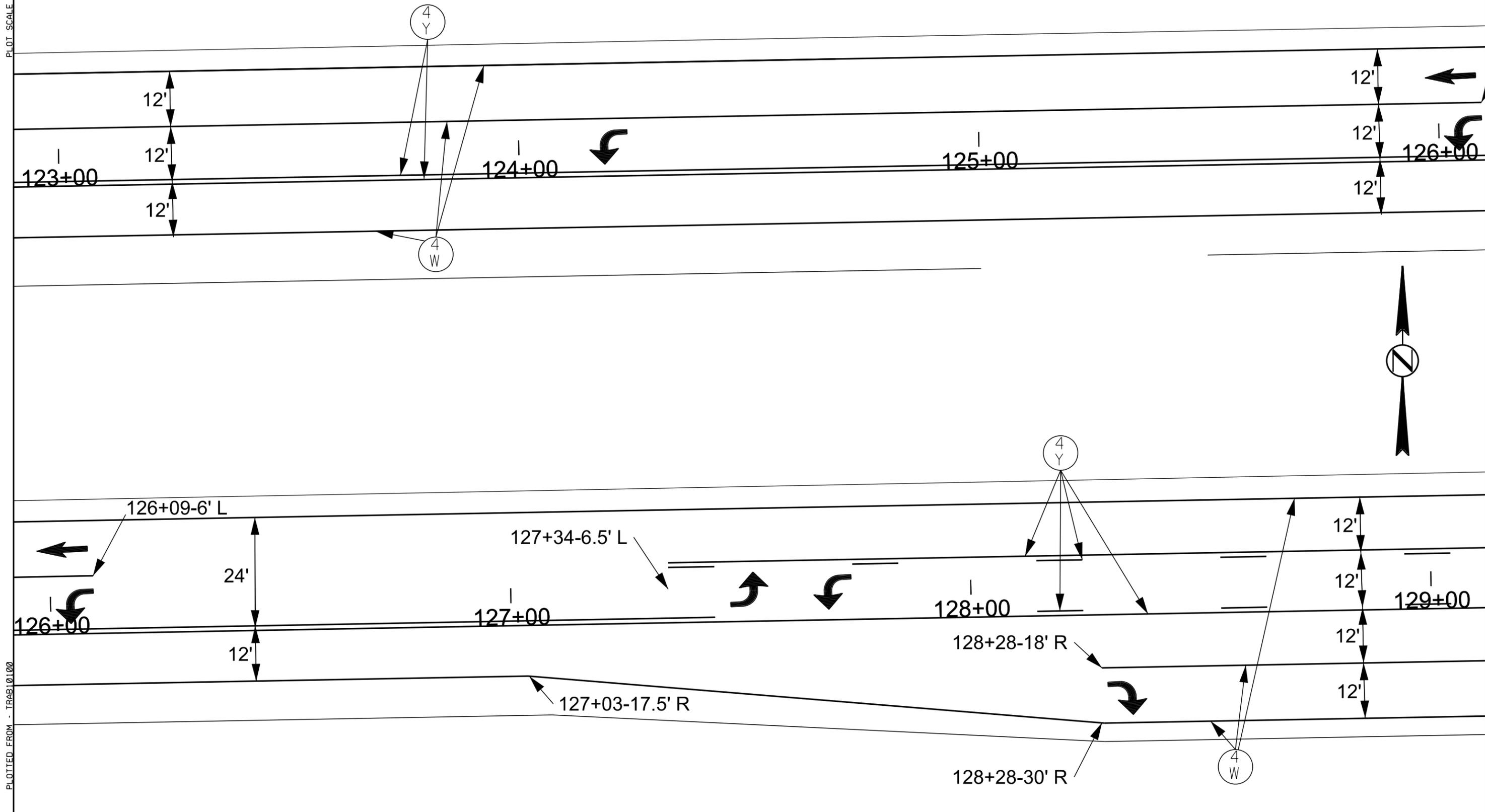


# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M15	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 12



PLOTTED FROM - TRAB10100

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# Pavement Markings US14B

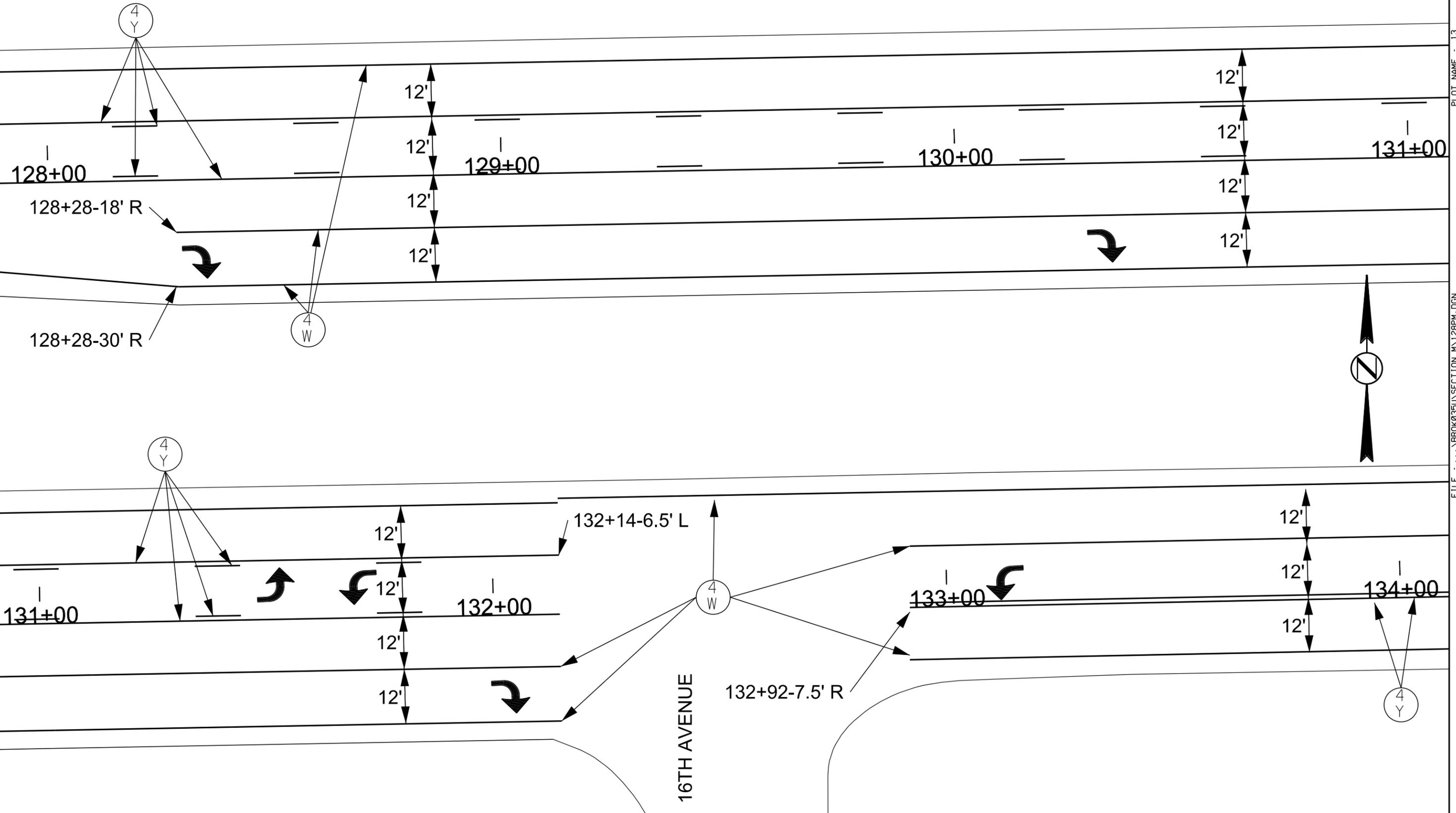
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	NH 014B(04)418	M16	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 13

PLOTTED FROM - TRAB10100

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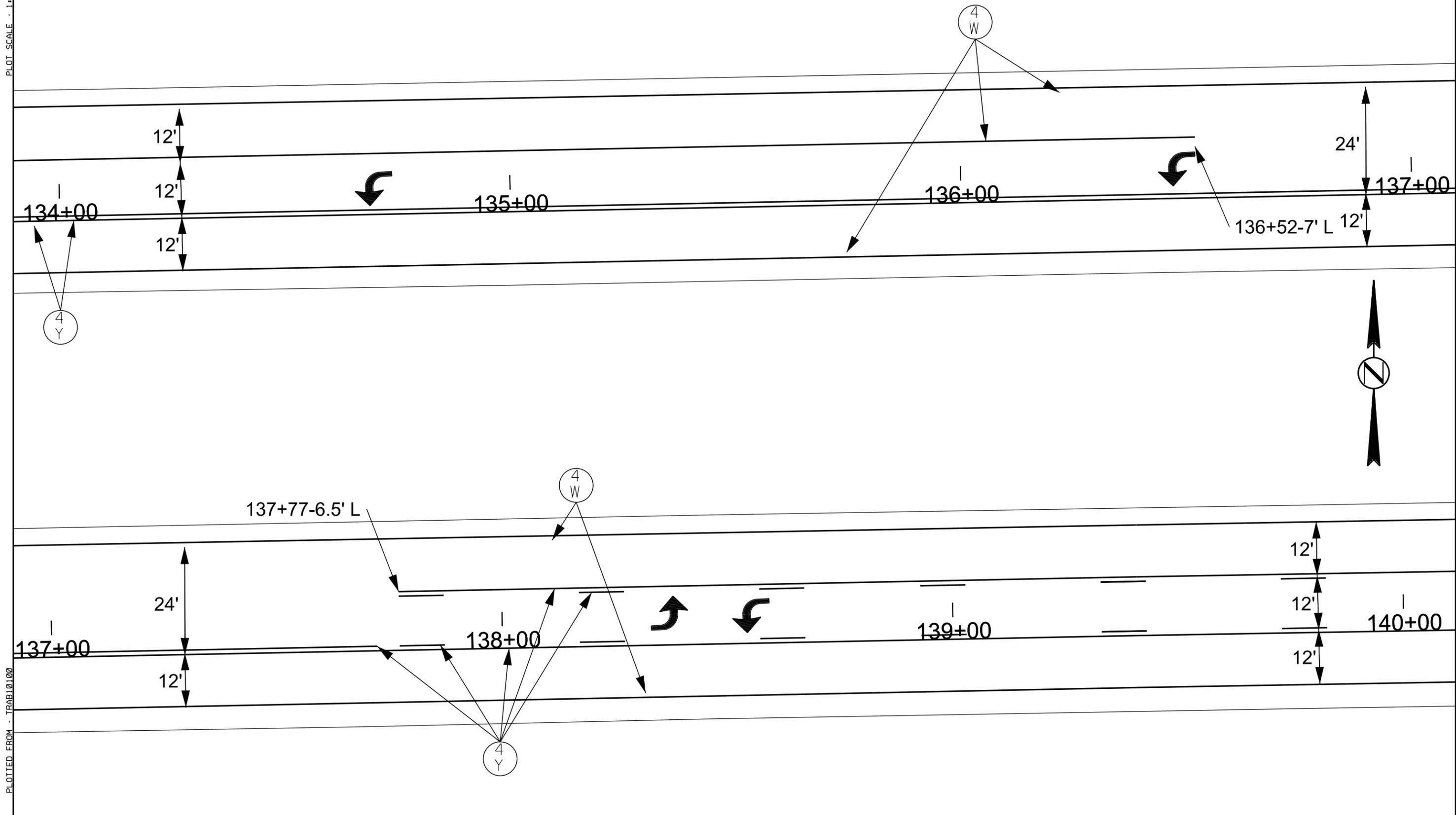


# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M17	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 14



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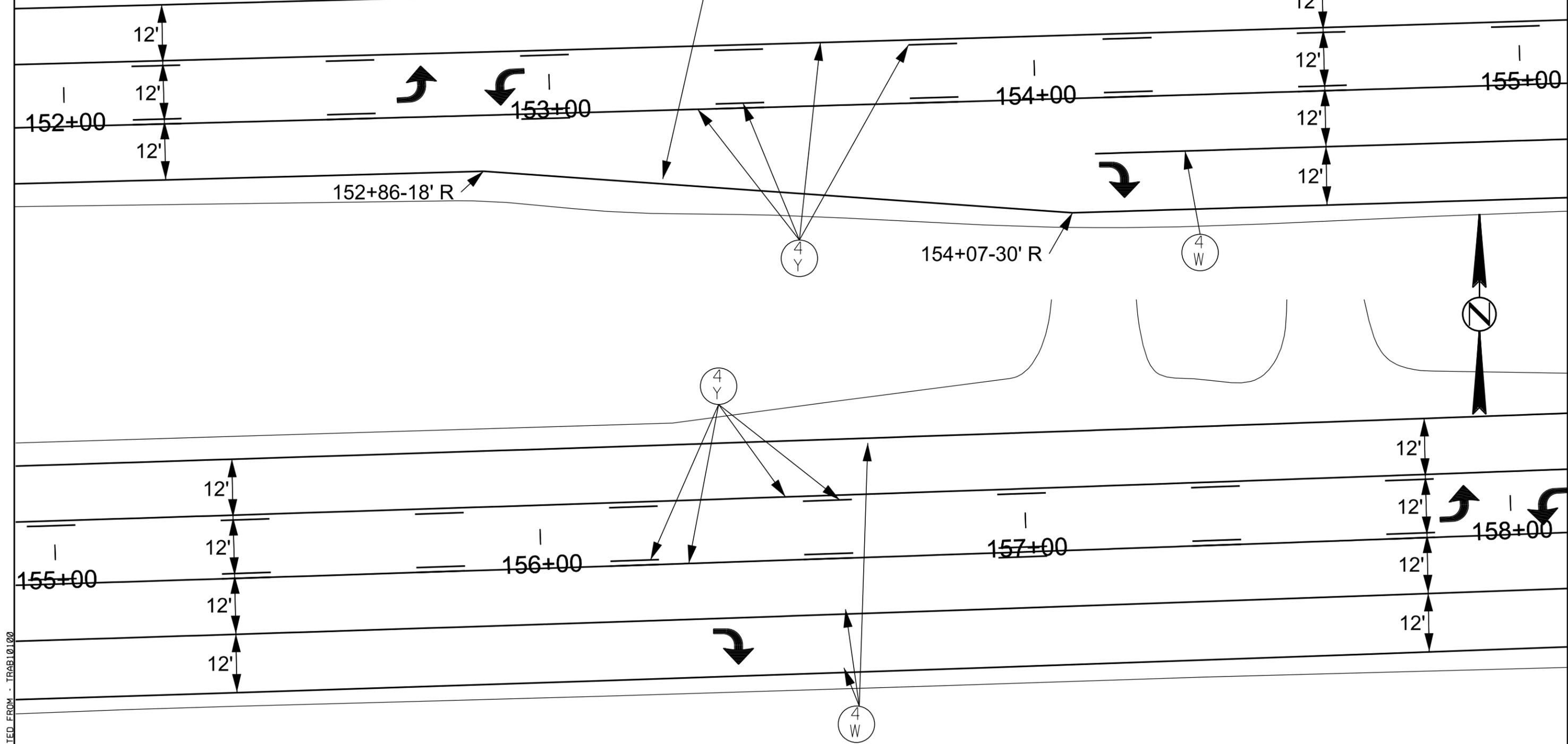
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M18	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 15



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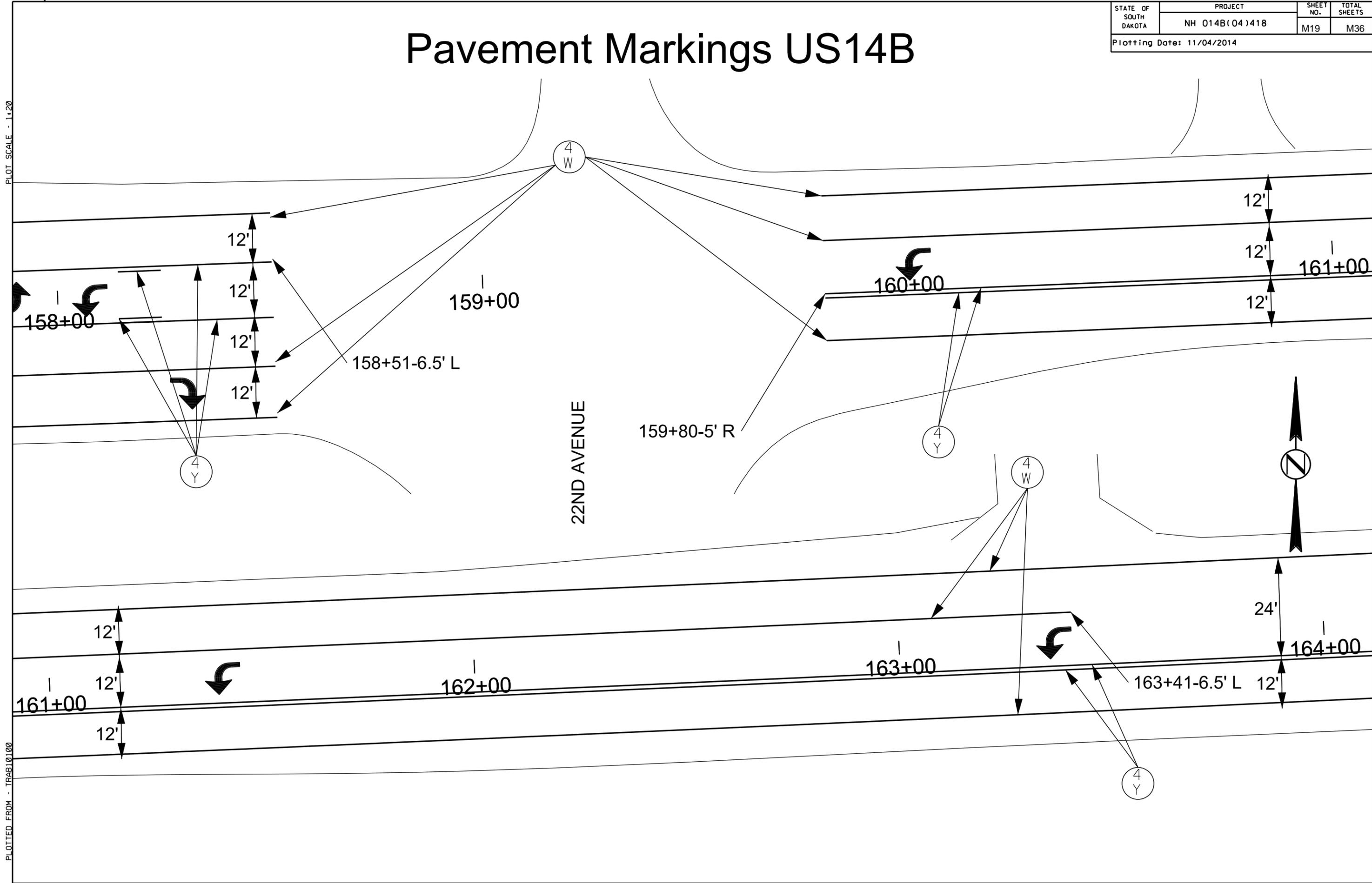
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M19	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 16



PLOTTED FROM - TRAB10100

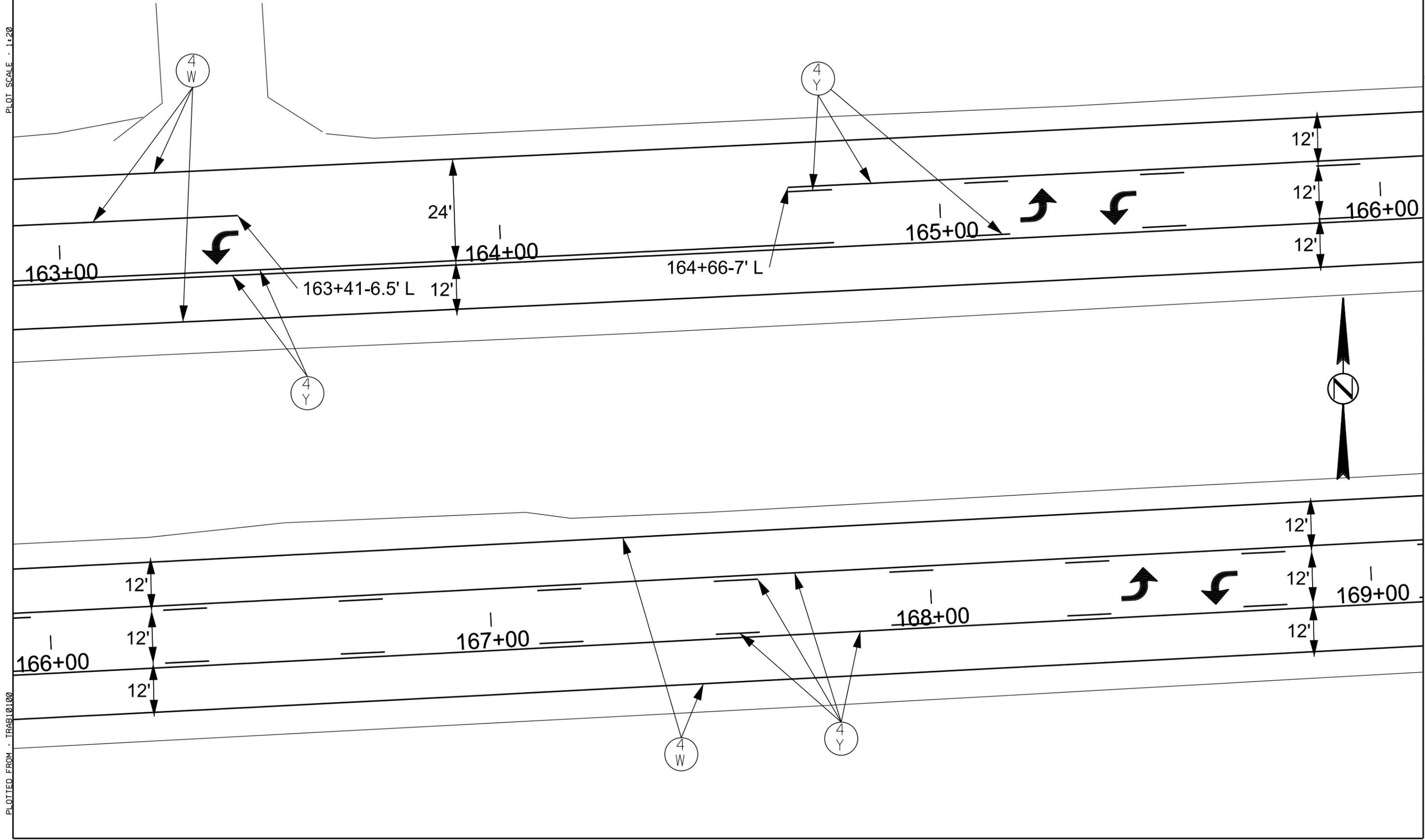
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M20	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 17



PLOTTED FROM - TRAB10100

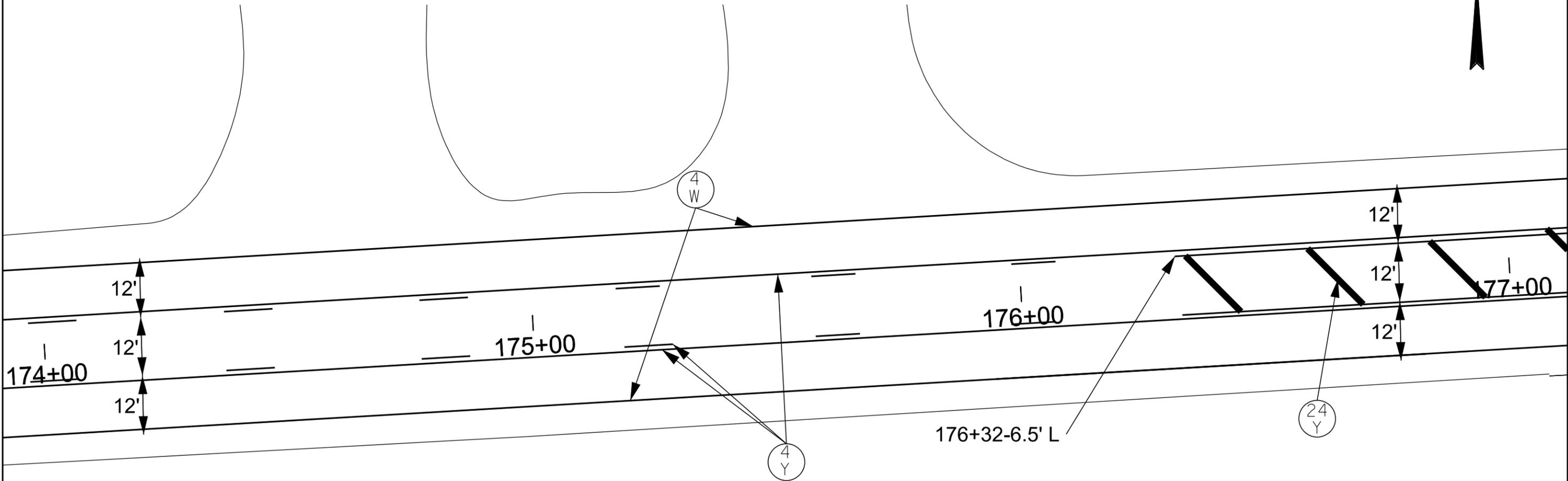
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M21	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 18



PLOTTED FROM - TRAB10100

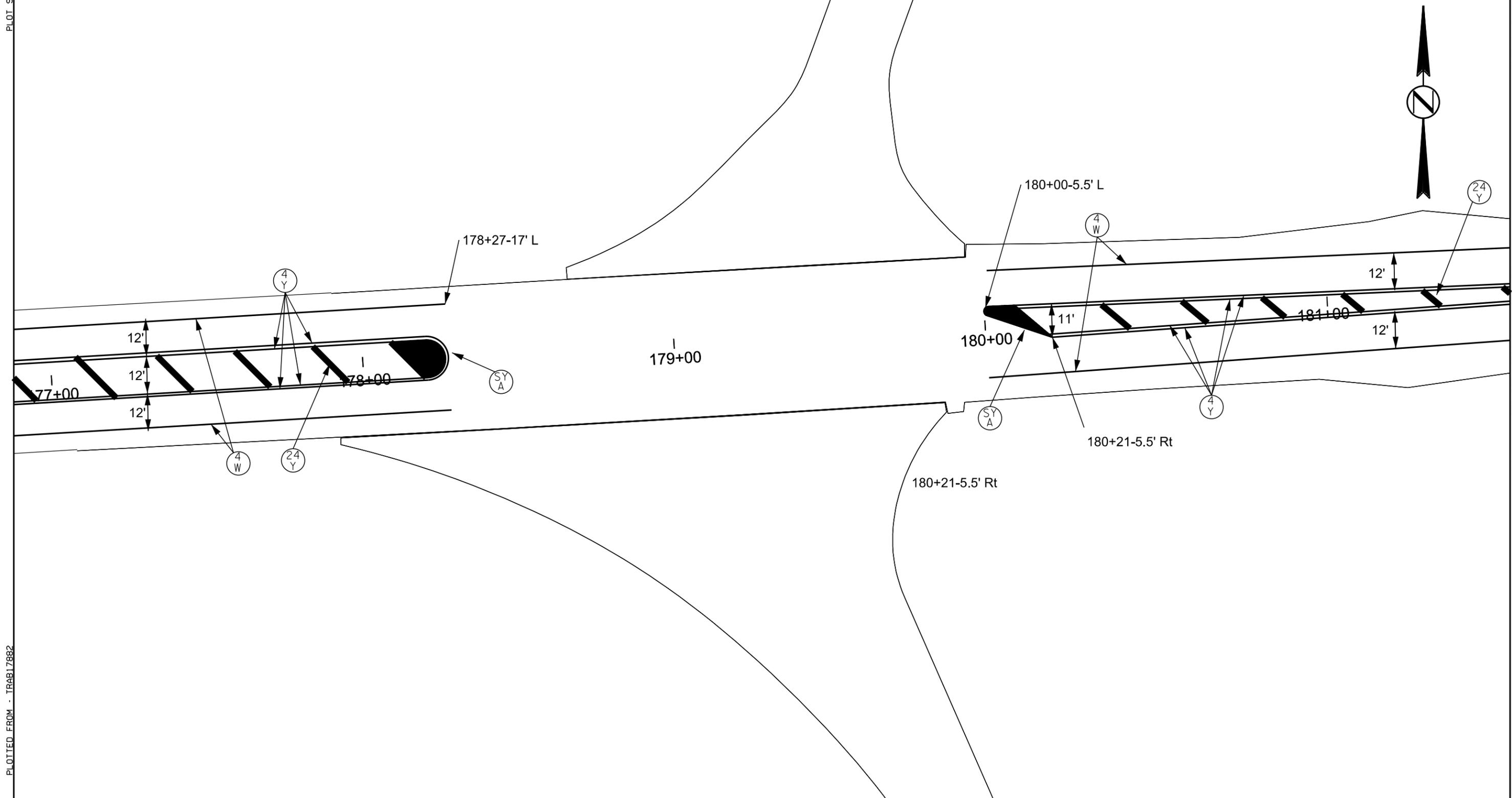
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(39)132	M22	M36
Plotting Date: 01/13/2015			

PLOT SCALE - 1"=30'

PLOT NAME - 1



PLOTTED FROM - TRAB17882

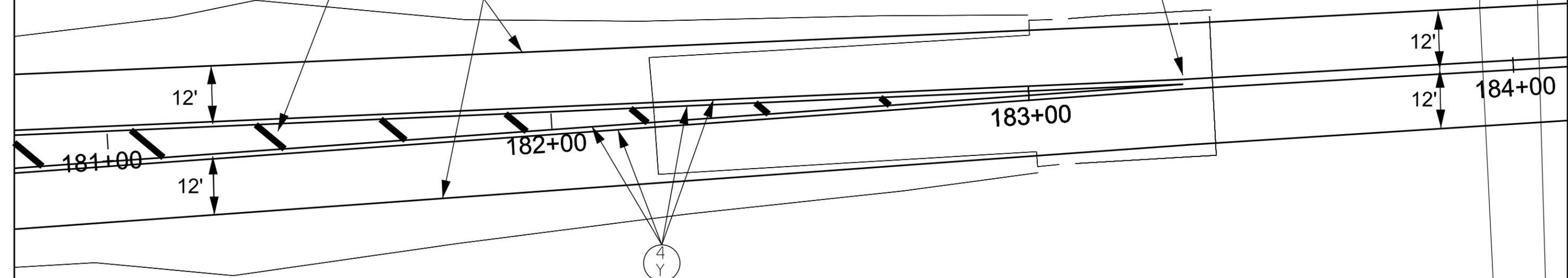
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(29)132	M23	M36
Plotting Date: 01/13/2015			

PLOT SCALE - 1:20

PLOT NAME - 2



PLOTTED FROM - TRAB17882

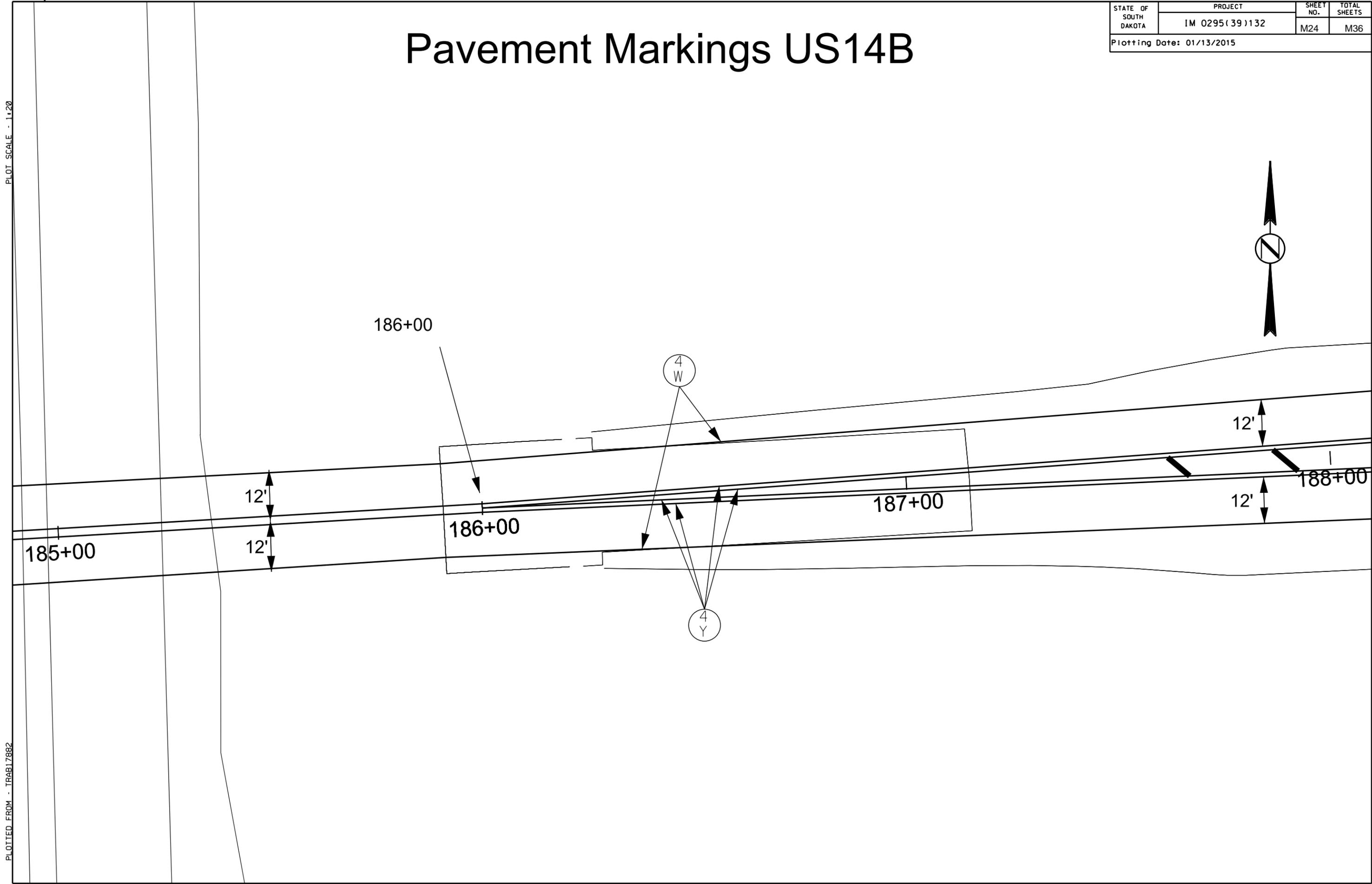
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(39)132	M24	M36
Plotting Date: 01/13/2015			

PLOT SCALE - 1:20

PLOT NAME - 3



PLOTTED FROM - TRAB17882

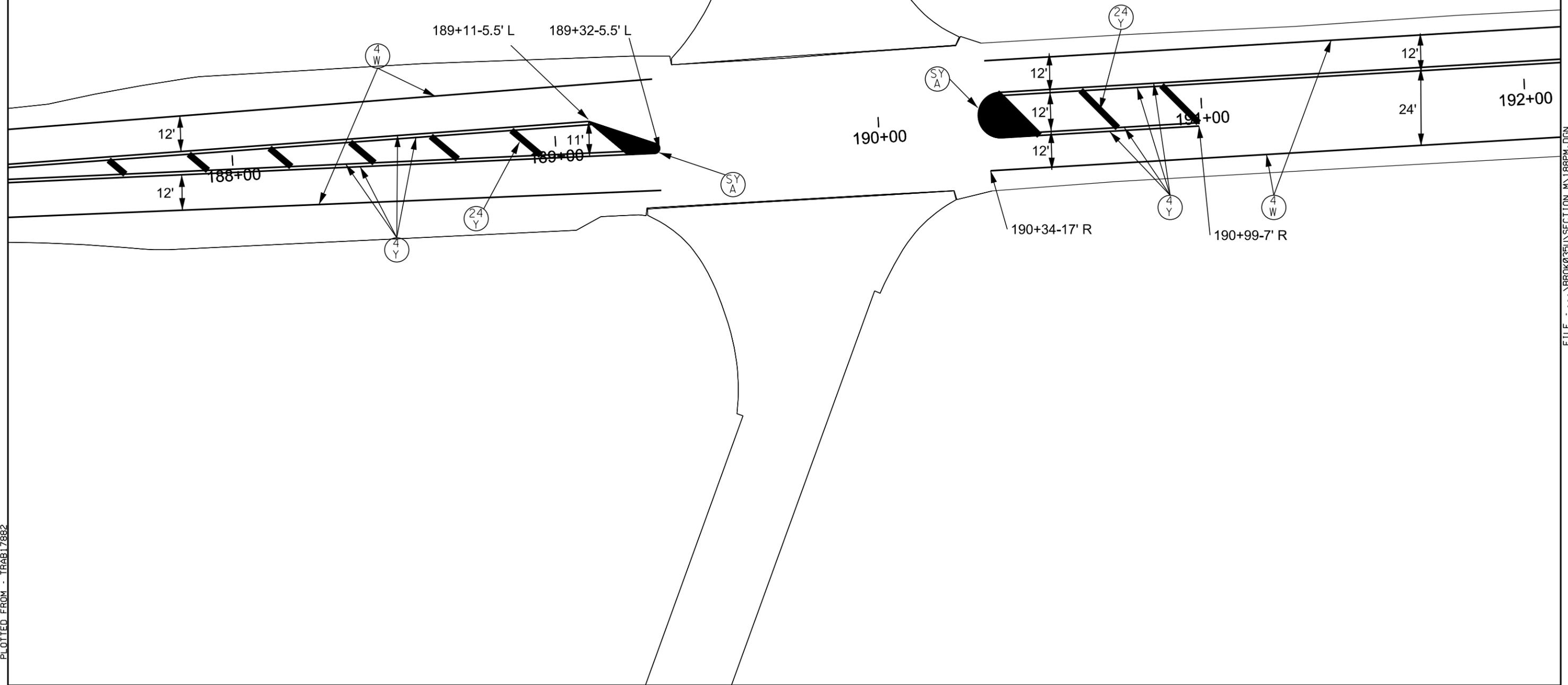
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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(39)132	M25	M36
Plotting Date: 01/13/2015			

# Pavement Markings US14B

PLOT SCALE - 1"=30'

PLOT NAME - 4



PLOTTED FROM - TRAB17882

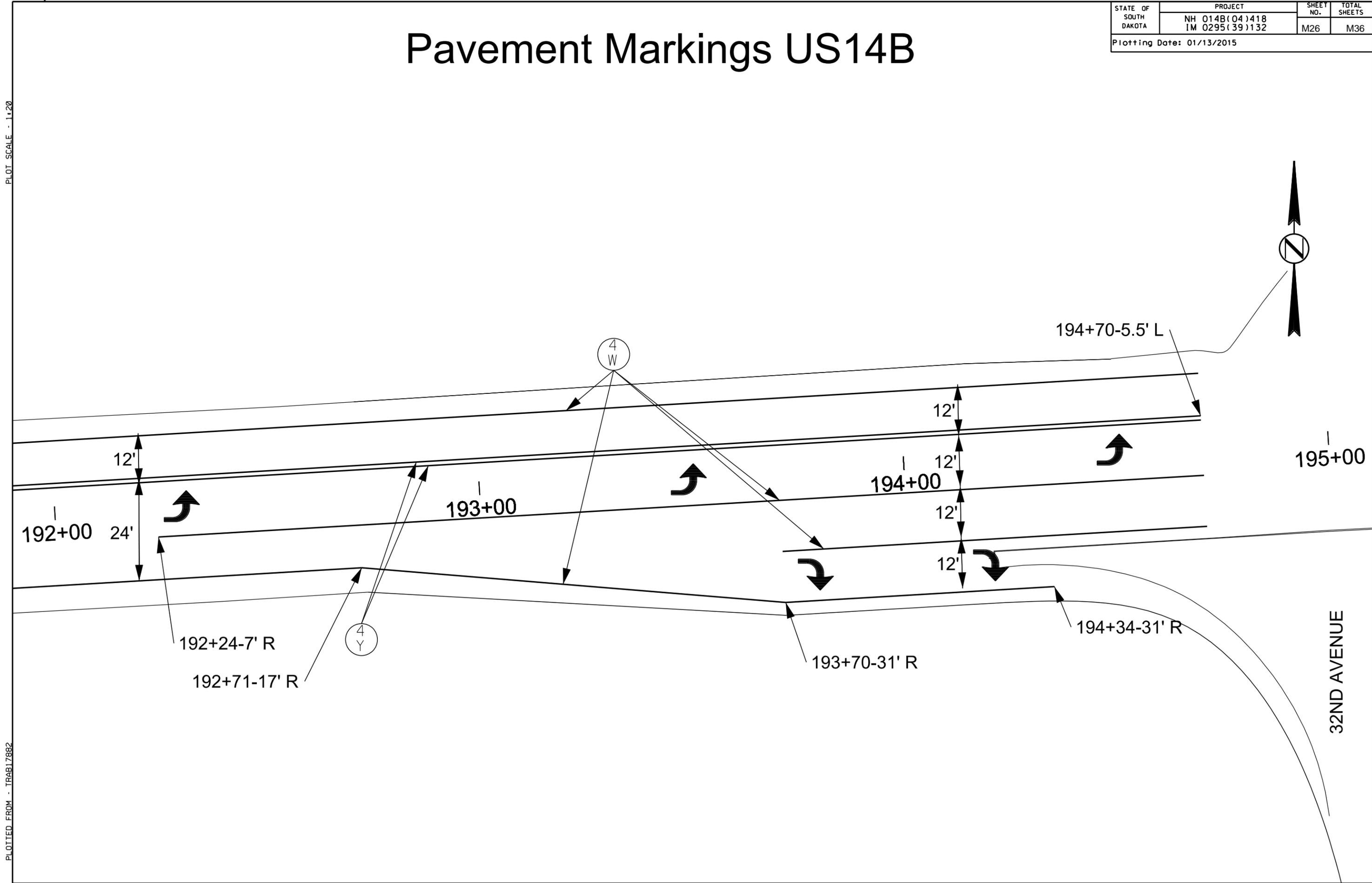
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418 IM 0295(39)132	M26	M36
Plotting Date: 01/13/2015			

PLOT SCALE - 1:20

PLOT NAME - 5



PLOTTED FROM - TRAB17882

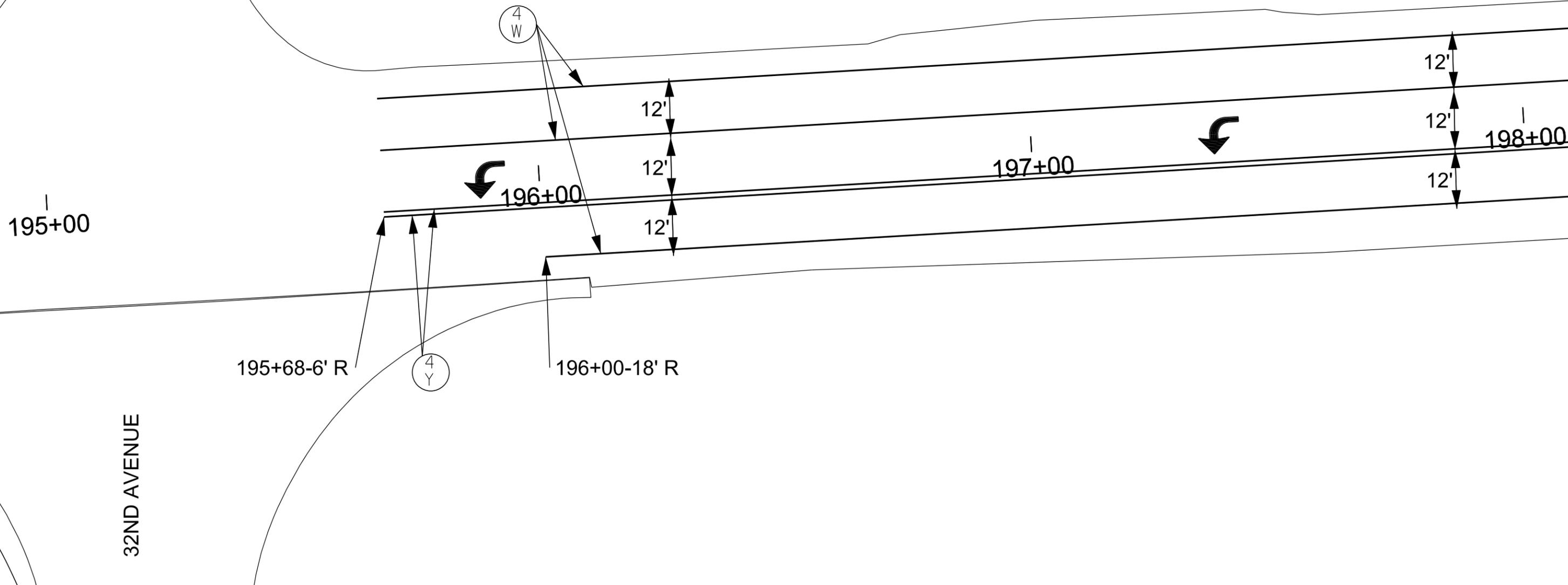
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M27	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 24



PLOTTED FROM - TRAB10100

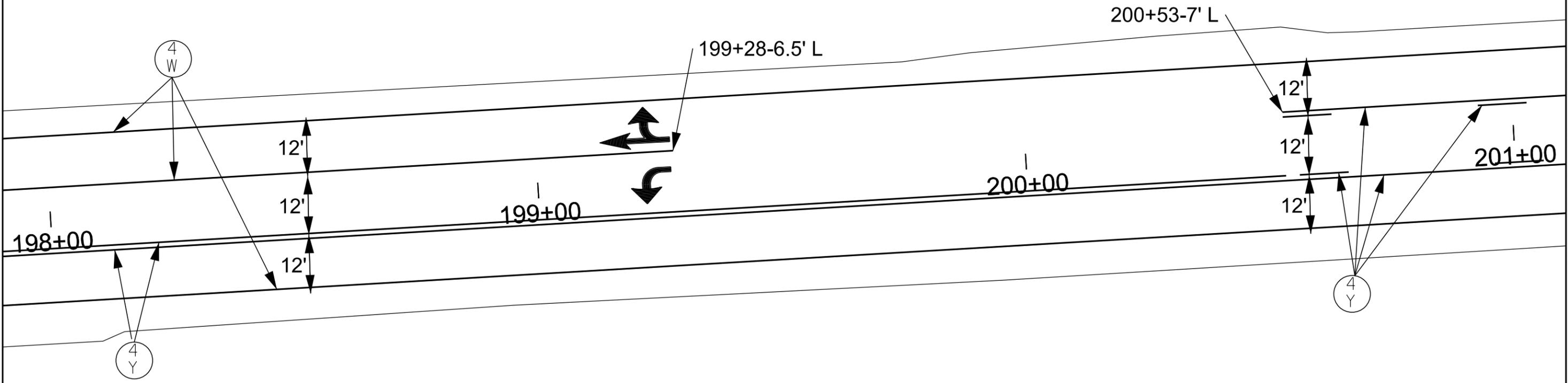
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M28	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 25



PLOTTED FROM - TRAB10100

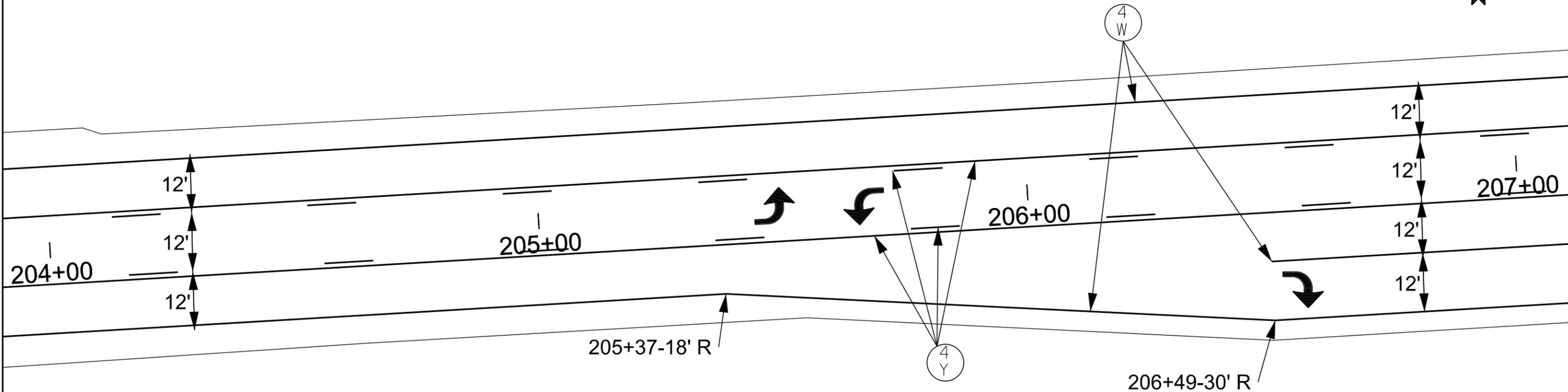
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M29	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 26



PLOTTED FROM - TRAB10100

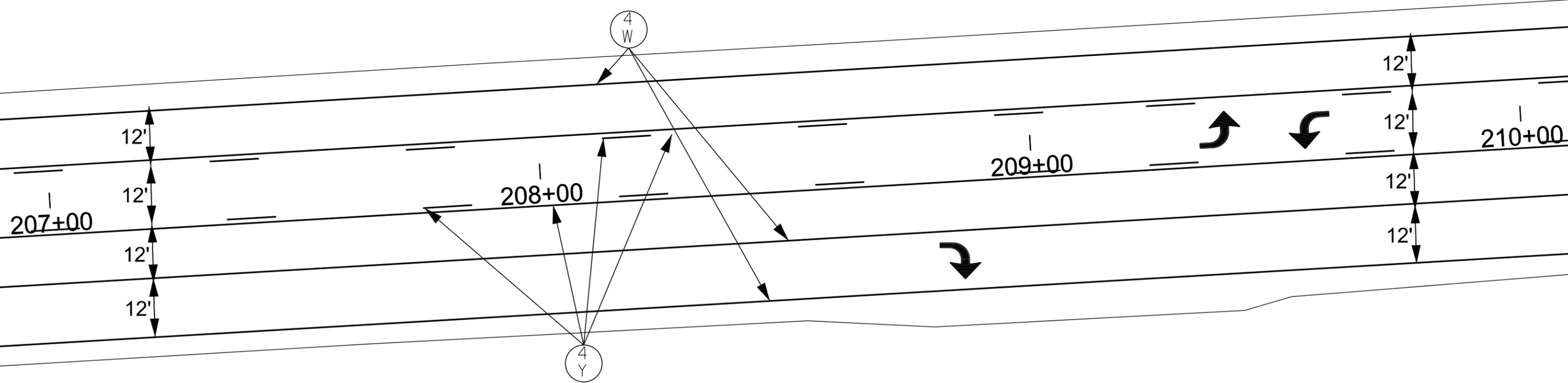
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# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M30	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 27



PLOTTED FROM - TRAB10100

FILE - ... \BROK0350\SECTION M\207PM.DGN

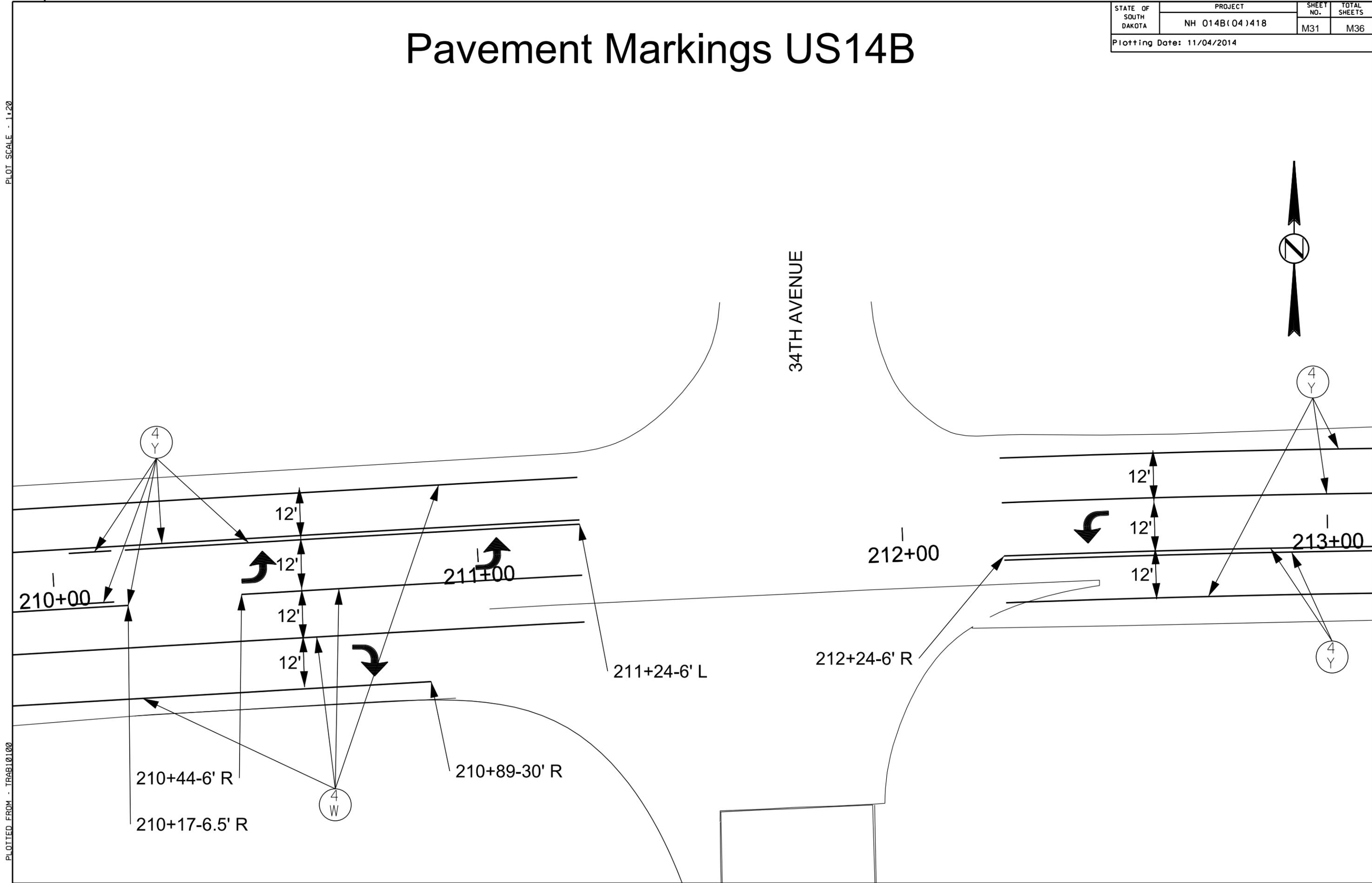
# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M31	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 28

FILE - ... \BROK035\SECTION M\210PM.DGN



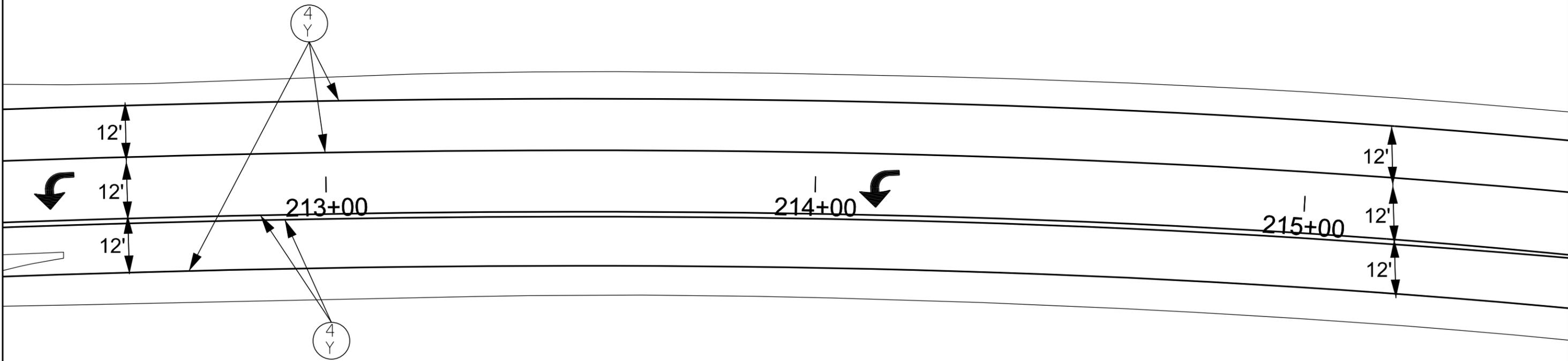
PLOTTED FROM - TRAB10100

# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M32	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 29



PLOTTED FROM - TRAB10100

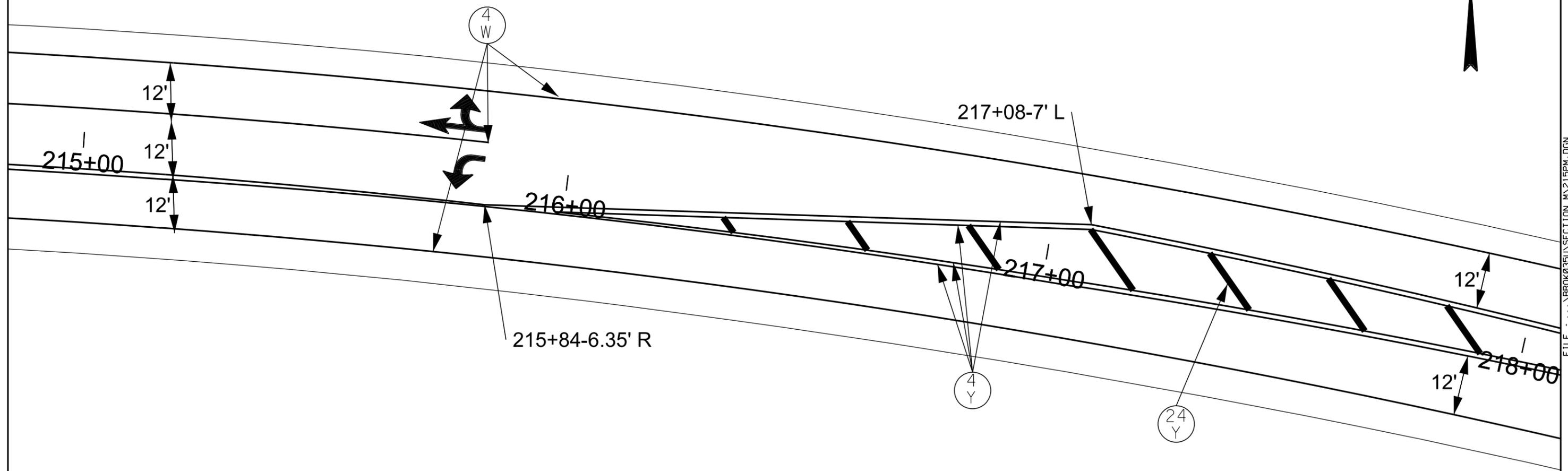
FILE - ... \BROK0350\SECTION M\213PM.DGN

# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M33	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

PLOT NAME - 30



PLOTTED FROM - TRAB10100

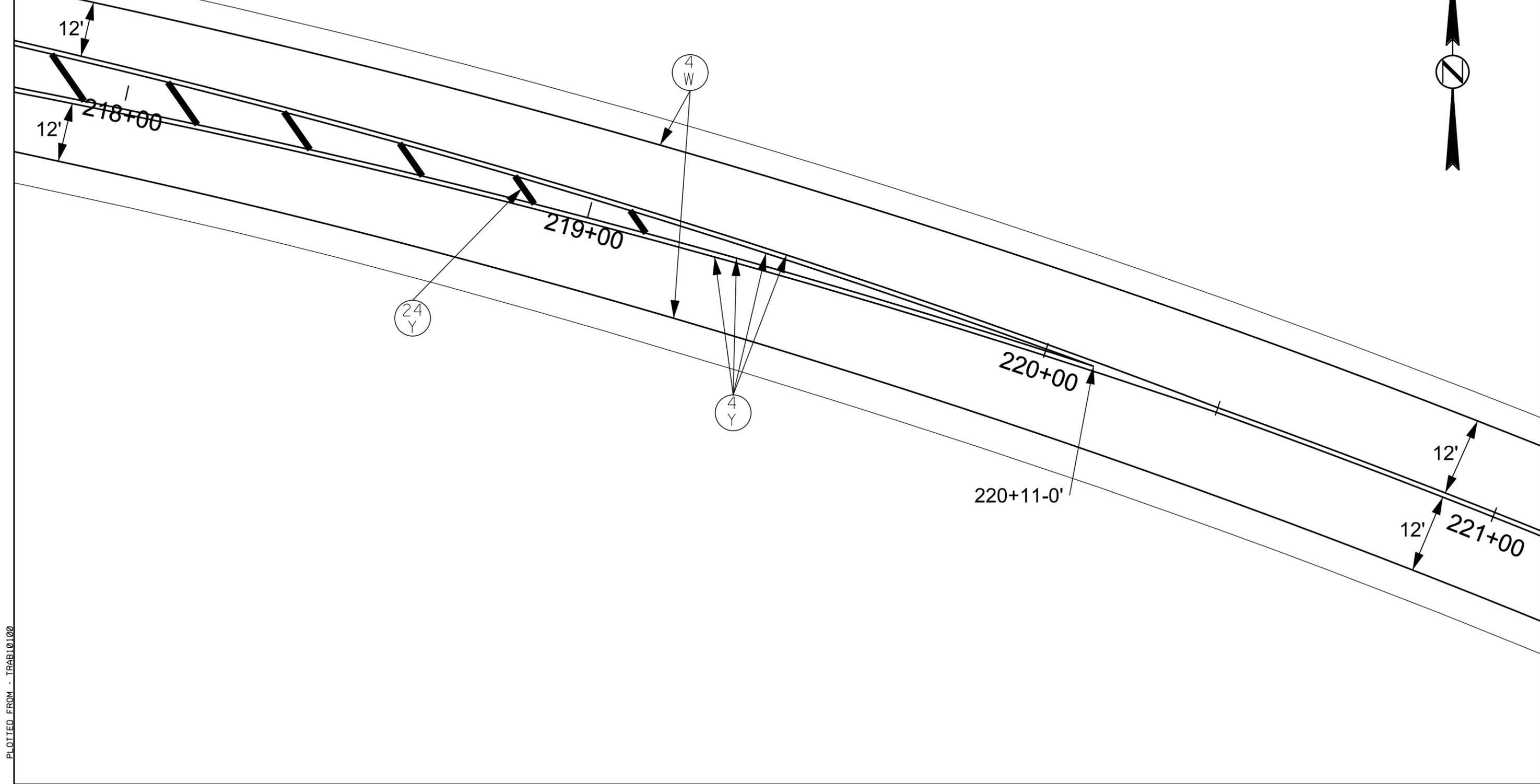
FILE - ... \BROK0350\SECTION M\215PM.DGN

# Pavement Markings US14B

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 014B(04)418	M34	M36
Plotting Date: 11/04/2014			

PLOT SCALE - 1:20

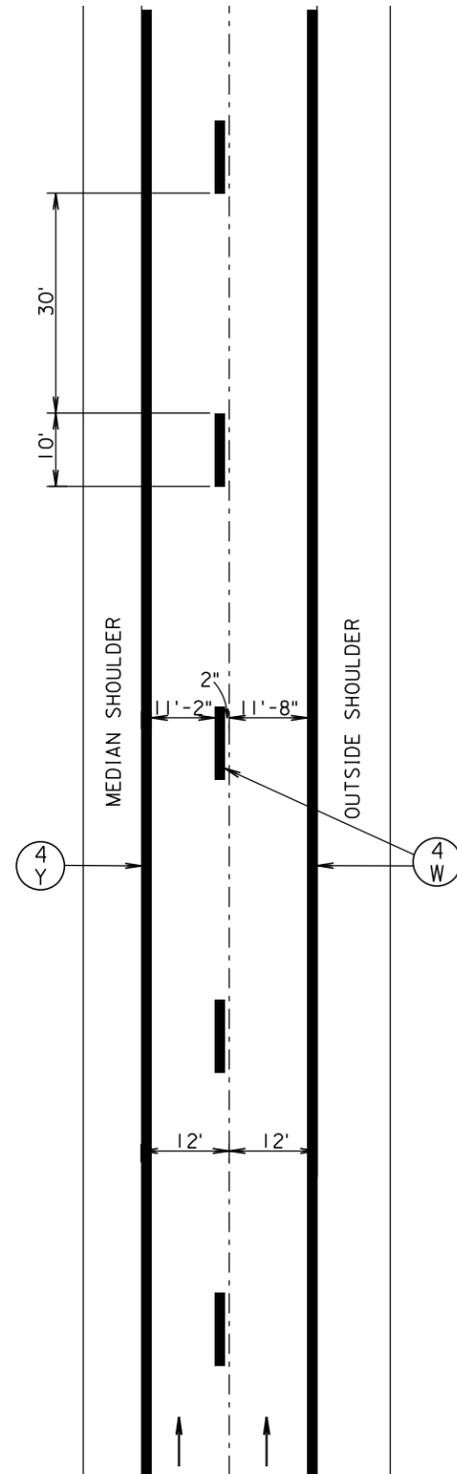
PLOT NAME - 31



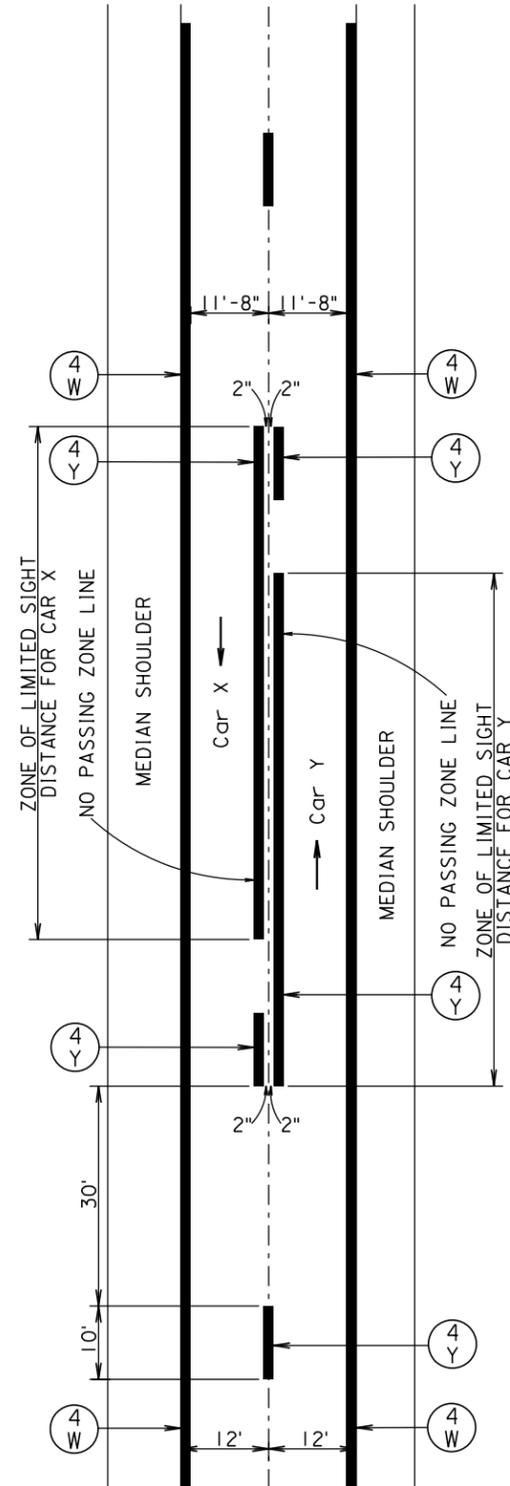
PLOTTED FROM - TRAB10100

FILE - ... \BROK0350\SECTION M\218PM.DGN

**DIVIDED ROADWAY  
(ONE DIRECTION SHOWN)**



**TWO LANE  
UNDIVIDED ROADWAY**



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

**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

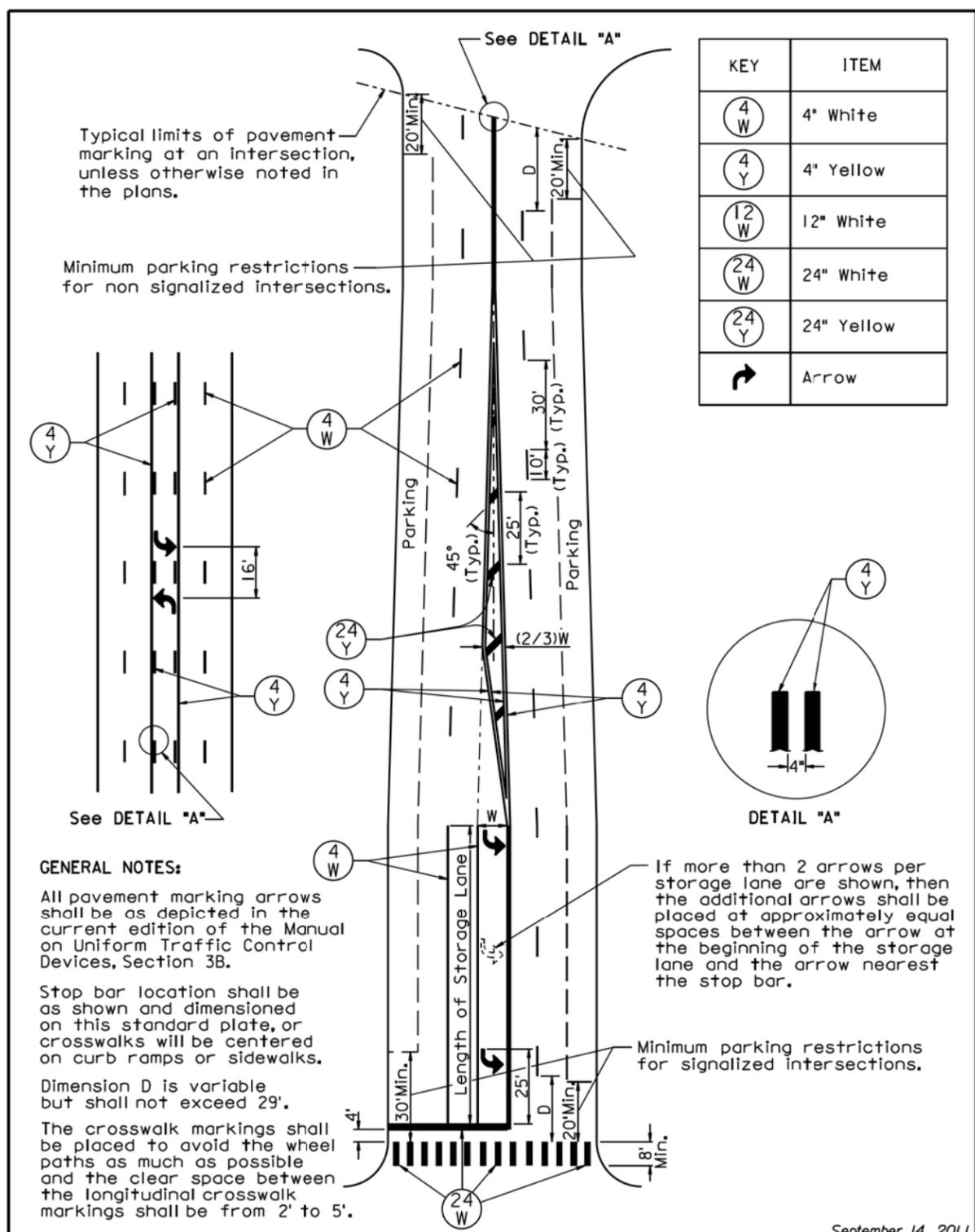
- The pavement marking paint and glass beads will be furnished and applied by the Contractor. Material shall meet the requirements of Section 980 and 981 of the Specifications.
- Construction requirements, methods of measurement, and basis of payment shall conform to the requirements of Section 633 of the Specifications.
- The approximate paint application rates shall be as follows:

Undivided Roadway	Divided Roadway
Yellow Centerline 12± Gallons/Pass-Mile (Includes No-passing lines)	White Centerline 4.60 Gallons/Pass-Mile
White Edgeline 16.90 Gallons/Pass-Mile (Solid Line)	Yellow or White Edgeline 16.90 Gallons/Pass-Mile (Solid Line)
- The typical pavement markings are as shown on the following sheet.
- Exact location of the NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending NO PASSING ZONE lines.
- Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

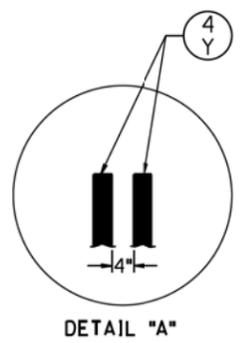
Plotting Date: 09/05/2014

PLOT SCALE - 1:200

PLOT NAME - 1



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow
(12 W)	12" White
(24 W)	24" White
(24 Y)	24" Yellow
↶	Arrow



**GENERAL NOTES:**

All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but shall not exceed 29'.

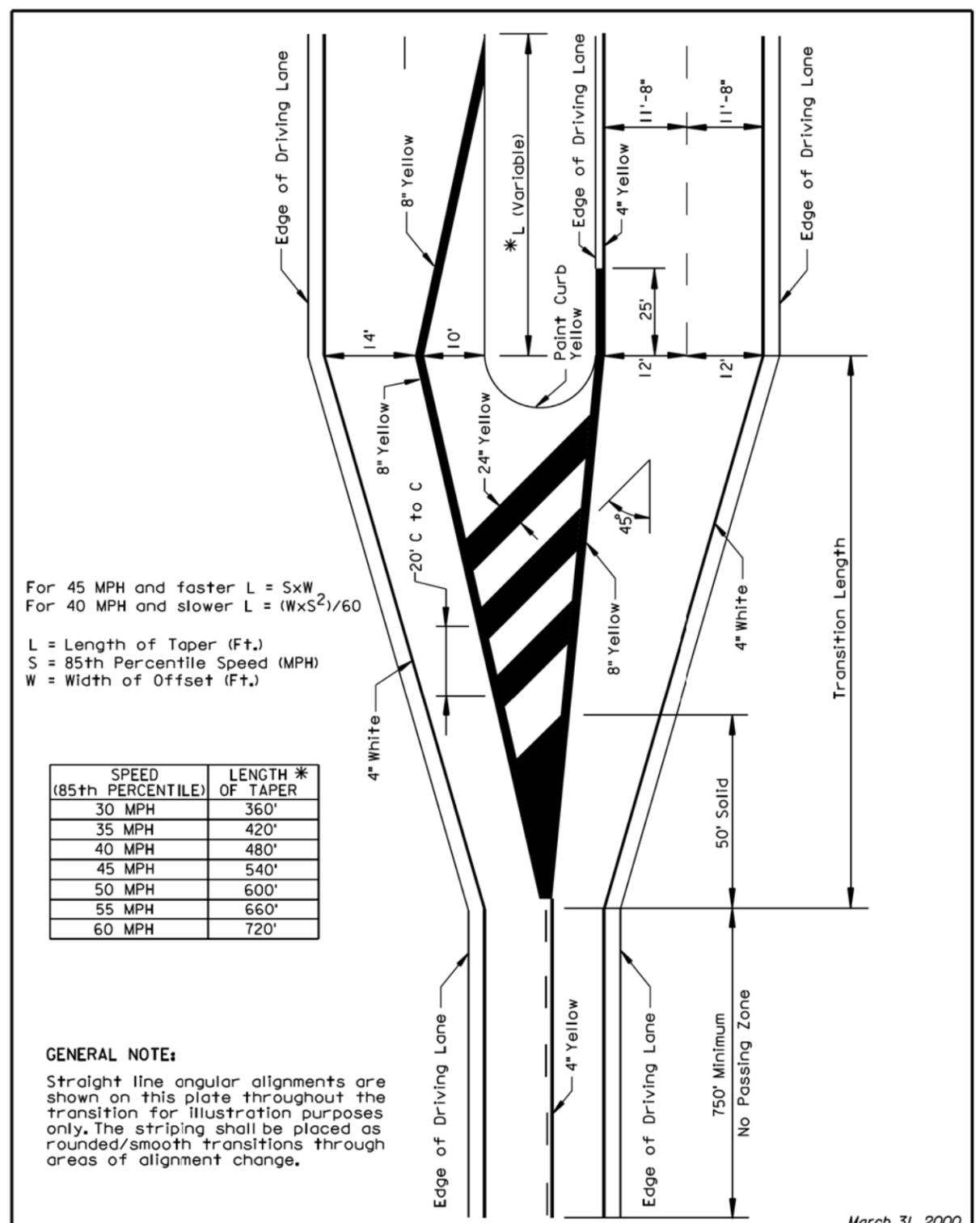
The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'.

If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

Minimum parking restrictions for signalized intersections.

September 14, 2011

<b>S D D O T</b>	<b>PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE</b>	PLATE NUMBER <b>633.01</b>
	Published Date: 3rd Qtr. 2014	Sheet 1 of 1



For 45 MPH and faster  $L = S \times W$   
 For 40 MPH and slower  $L = (W \times S^2) / 60$

L = Length of Taper (Ft.)  
 S = 85th Percentile Speed (MPH)  
 W = Width of Offset (Ft.)

SPEED (85th PERCENTILE)	LENGTH * OF TAPER
30 MPH	360'
35 MPH	420'
40 MPH	480'
45 MPH	540'
50 MPH	600'
55 MPH	660'
60 MPH	720'

**GENERAL NOTE:**

Straight line angular alignments are shown on this plate throughout the transition for illustration purposes only. The striping shall be placed as rounded/smooth transitions through areas of alignment change.

March 31, 2000

<b>S D D O T</b>	<b>STANDARD APPROACH MARKINGS FOR TWO LANE TO FOUR LANE DIVIDED HIGHWAYS</b>	PLATE NUMBER <b>633.02</b>
	Published Date: 3rd Qtr. 2014	Sheet 1 of 1