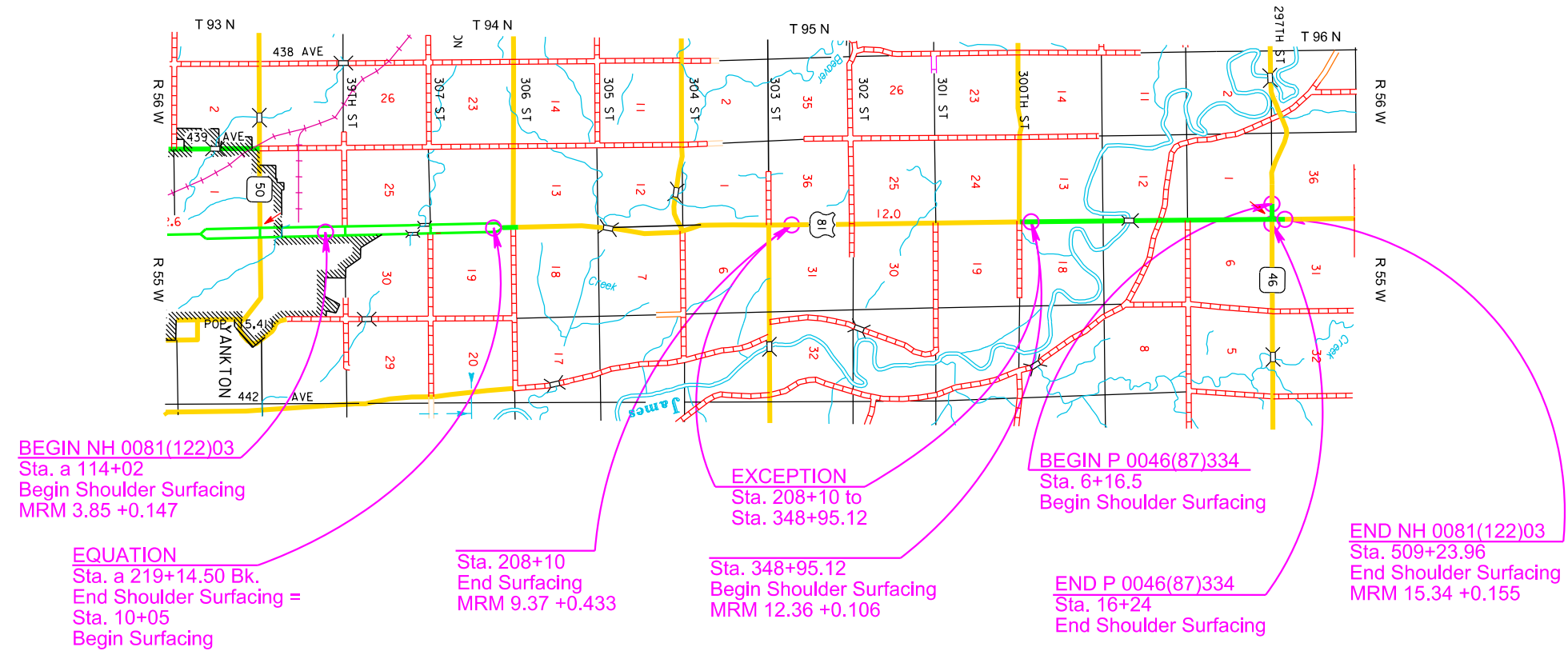


SECTION M: PAVEMENT MARKING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0081(122)3	M1	M6
Plotting Date:		08/26/2024	

INDEX OF SHEETS

M1	General Layout with Index
M2-M3	Estimate with General Notes and Marking Tables
M4-M6	Pavement Marking Layouts



Section M - Pavement Marking PCN 07V2

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1200	High Build Waterborne Pavement Marking Paint, White	281	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	180	Gal
633E3000	Durable Pavement Marking, 4" White	50,525	Ft
633E3005	Durable Pavement Marking, 4" Yellow	43,600	Ft
633E3010	Durable Pavement Marking, 8" White	1,600	Ft
633E3030	Durable Pavement Marking, 24" White	784	Ft
633E3035	Durable Pavement Marking, 24" Yellow	420	Ft
633E3045	Durable Pavement Marking, Arrow	20	Each
633E3060	Durable Pavement Marking, Message	6	Word
633E5050	Surface Preparation for Pavement Marking	4,000	Ft
633E5052	Surface Preparation for Pavement Marking	10	Each
633E5100	Grooving for Durable Pavement Marking, 4"	91,700	Ft
633E5105	Grooving for Durable Pavement Marking, 8"	1,600	Ft
633E5115	Grooving for Durable Pavement Marking, 24"	540	Ft
633E5125	Grooving for Durable Pavement Marking, Arrow	14	Each

Section M - Pavement Marking PCN 09P4

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E3000	Durable Pavement Marking, 4" White	2,423	Ft
633E3005	Durable Pavement Marking, 4" Yellow	2,842	Ft
633E3030	Durable Pavement Marking, 24" White	96	Ft
633E3035	Durable Pavement Marking, 24" Yellow	400	Ft
633E3045	Durable Pavement Marking, Arrow	3	Each
633E3060	Durable Pavement Marking, Message	6	Word
633E5050	Surface Preparation for Pavement Marking	5,761	Ft
633E5052	Surface Preparation for Pavement Marking	7	Each

PAVEMENT MARKING PAINT

High build Waterborne pavement marking paint will be applied prior to the interim project completion date in the fall of that year. The paint will be surface applied immediately upon the completion of the project prior to opening roadway for traffic.

The Contractor will groove in Durable Pavement Marking prior to the final project completion date in the spring of the following year.

The Contractor will be required to repaint all existing pavement markings including centerline, edge line, lane lines, word messages, turn arrows and stop bars for the concrete sections at the intersection of highway 46 and 81. Surface preparation will be done for this section be prior to the application of durable markings.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads.

Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 22.5 Gals/Mile
Dashed 4" line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal

All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retro-reflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retro-reflectometer that conforms to 30-meter geometry. If the Department chooses to take retro-reflectivity readings, three retro-reflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retro-reflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application.

For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retro-reflectivity values will be 275 mc/m²/lux for white and 170 mc/m²/lux for yellow.

SURFACE PREPARATION FOR PAVEMENT MARKING

The Contractor will prepare the pavement surface prior to applying the durable pavement marking in accordance with the following.

In areas where the existing groove meets the required depth and existing markings are still in place, the Contractor will clean the existing groove without adding additional depth beyond the required depth for the new pavement marking, including reflective media as noted below.

Description	Specification	Tolerance
Depth of Groove	Marking Thickness ¹ + 15 mils	+ 5 mils

¹ Marking thickness will include the thickness of marking material and reflective media.

The cleaning will result in the existing pavement marking being adequately scuffed, abraded, and removed by light grinding or abrasive blasting or both to allow proper adhesion of the new durable pavement marking as per the manufacturer's recommendations to comply with product warranties.

Existing grooves not meeting the required depth will be re-grooved to the required depth for the new pavement marking, including reflective media. Equipment for grooving will be capable of the following:

SURFACE PREPARATION FOR PAVEMENT MARKING (CONTINUED)

- Grooving the total width of the groove in one pass or uniform depths with multiple passes.
- Grooving without causing damage to the pavement joints or joint sealant material.
- Provide uniform alignment and depth.
- Moving continuously to permit a mobile traffic work operation.

All costs associated with cleaning of the existing groove, including re-grooving, if needed, will be included in the contract unit price per foot for "Surface Preparation for Pavement Marking" and per each for "Surface Preparation for Pavement Marking".

MARKING QUANTITIES - PCN 09P4

DIVIDED ROADWAY (Rates for one line)	
Solid Yellow Edgeline	
Rate = 27.8 Gals./Pass-Mile	
Dashed White Centerline	
Rate = 7.6 Gals./Pass-Mile	
Solid White Edgeline	
Rate = 27.8 Gals./Pass-Mile	

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)					
DURABLE	4"	8"	12"	24"	SOLID AREAS
WHITE	2713'	-	-	96'	-
YELLOW	2842'	-	-	400'	-

Included in the above quantities are:			
Additional White		Additional Yellow	
Description		Description	
4" Lines	100'	Transitions	2 Ea 1680'
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Lines	96'	24" Hatches	400'
24" Hatches	-	Solid Areas	-
Solid Areas	-		

Additional White Items		Additional Yellow Item	
Arrows		Symbols	-
Left Arrows	3 Ea		
Right Arrows	-		
Straight Arrows	-		
Combo Arrows	-		
Lane Drop Arrows	-		
Messages			
STOP	2 Ea 2 Word	All pavement marking dimensions	
STOP AHEAD	2 Ea 4 Word	are based on 12' driving lanes.	
R X R w/ Stop Lines	-		
SCHOOL X-ING	-		
Symbols			
Symbols	-		
Int'l Symbol of Accessibility	-		

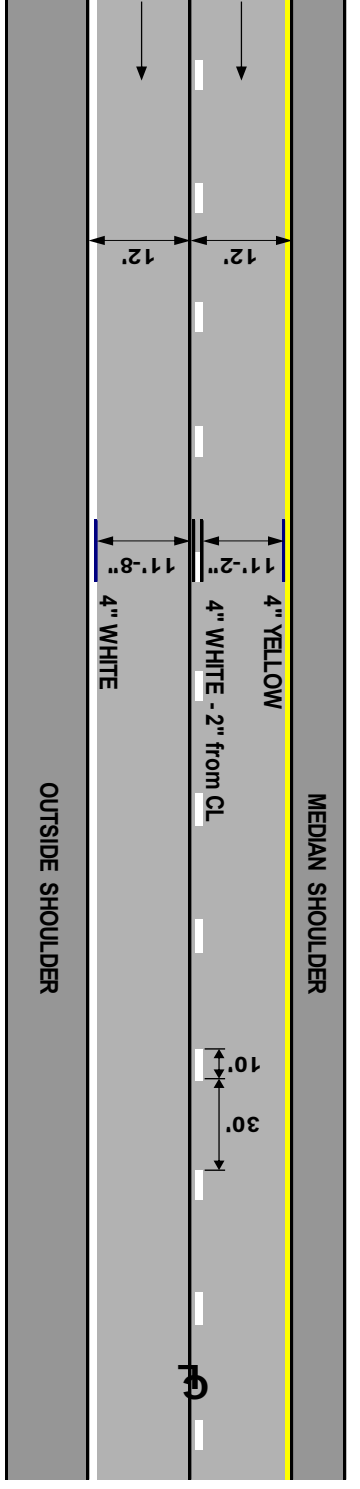
Typical pavement marking as shown on this sheet will be applied throughout the entire length of divided roadway.

Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights and advance warning arrow board.

Application rates will be as follows:

DIVIDED ROADWAY	
(Rates for one line)	Solid Yellow Edgeline
Rate = 22.5 Gals./Pass-Mile	
(Rates for one line)	Dashed White Centerline
Rate = 6.2 Gals./Pass-Mile	
(Rates for one line)	Solid White Edgeline
Rate = 22.5 Gals./Pass-Mile	

DIVIDED ROADWAY	
(Rates for one line)	Solid Yellow Edgeline
Rate = 27.8 Gals./Pass-Mile	
(Rates for one line)	Dashed White Centerline
Rate = 7.6 Gals./Pass-Mile	
(Rates for one line)	Solid White Edgeline
Rate = 27.8 Gals./Pass-Mile	



DIVIDED ROADWAY (ONE DIRECTION SHOWN)

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)	
HIGH BUILD	QUANTITY
WHITE	281 GALLONS
YELLOW	180 GALLONS

Included in the above quantities are:	
Description	Gallons
4" Lines	600'
8" Lines	1600'
12" Gore Lines	-
8" Lines	-
12" Lines	-
24" Stop Lines	-
24" Hatches	540'
Solid Areas	200sf
Arrows	14 Ea
Left Arrows	14 Ea
Right Arrows	-
Combo Arrows	-
24" Lines & Hatches	-
4", 8" & 12" Lines	-
Arrows, Messages and Solid Areas	25
Additional Quantities	SqFt/Gal
Additional White:	65

Included in the above quantities are:	
Description	Gallons
Transitions 2 Ea	2000'
4" Lines	11
Additional Yellow (1 Application)	Gallons

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)				
DURABLE	4"	8"	12"	24"
WHITE	50525'	1600'	-	784'
YELLOW	43600'	-	-	420'

Included in the above quantities are:	
Description	Additional White
4" Lines	1025'
8" Lines	1600'
12" Gore Lines	-
8" Lines	-
12" Lines	-
Crosswalks	-
24" Stop Lines	64'
24" Hatches	720'
Solid Areas	-

Additional White Items	
Arrows	20 Ea
Left Arrows	-
Right Arrows	-
Straight Arrows	-
Combo Arrows	-
Lane Drop Arrows	-
Messages	-
STOP	2 Ea
STOP AHEAD	2 Ea
R X R w/ Stop Lines	-
SCHOOL X-ING	-
Symbols	-
Int'l Symbol of Accessibility	-

Additional Yellow Item	Symbols
-	-

PERMANENT PAVEMENT MARKING LAYOUT

INTERSECTION OF US HIGHWAY 81 & 303RD ST.

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0081(122)3	SHEET M4	TOTAL SHEETS M6
-----------------------	-----------------------------	-------------	--------------------

Plotting Date: 10/02/2024

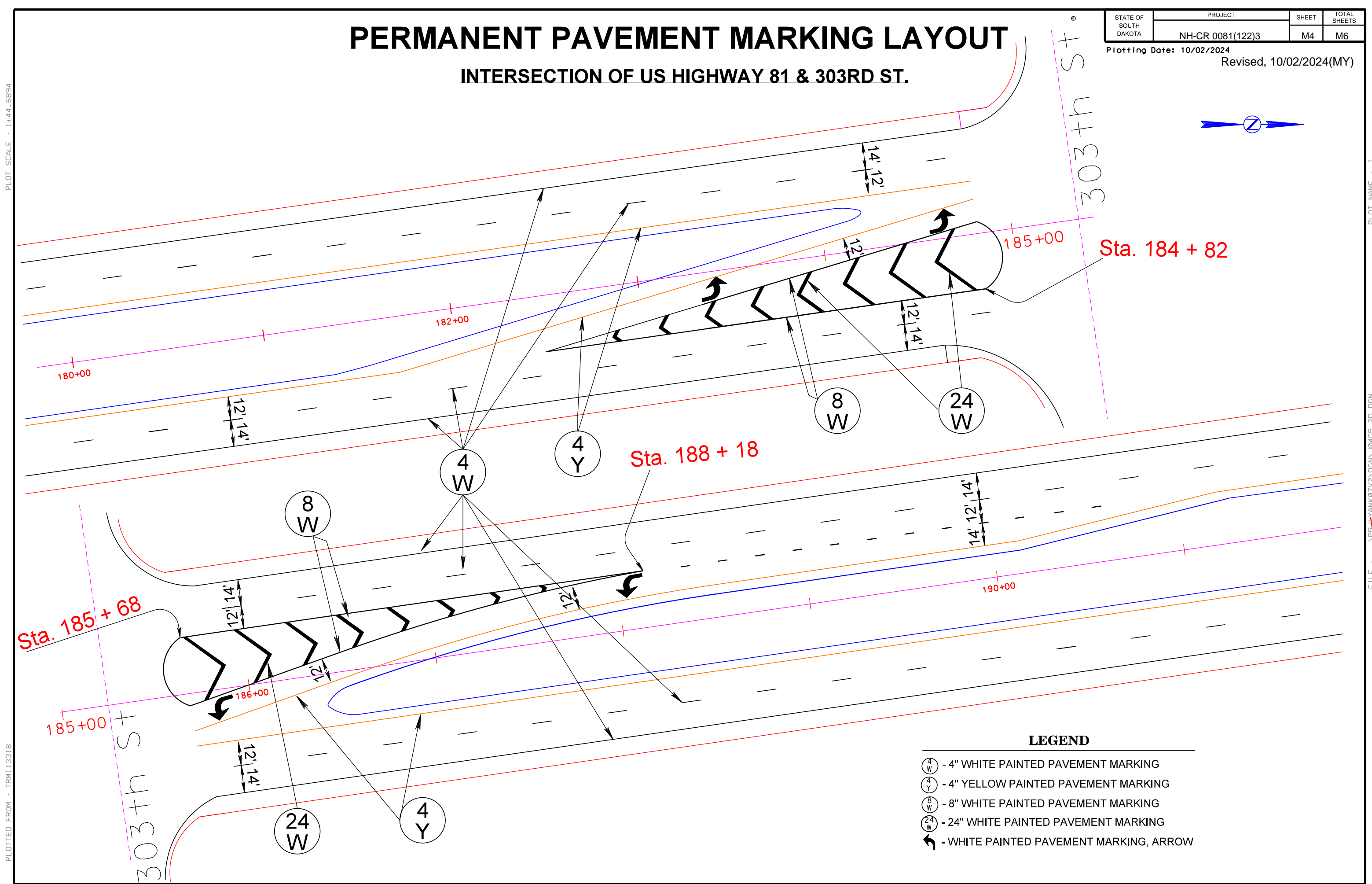
Revised, 10/02/2024(MY)



PLOT SCALE - 1"=44.6894'

PLOT NAME - 1

FILE - ... \PPR\YANK\7V2\DCN\J04G5 2D.DGN



LEGEND

-  - 4" WHITE PAINTED PAVEMENT MARKING
-  - 4" YELLOW PAINTED PAVEMENT MARKING
-  - 8" WHITE PAINTED PAVEMENT MARKING
-  - 24" WHITE PAINTED PAVEMENT MARKING
-  - WHITE PAINTED PAVEMENT MARKING, ARROW

PLOTTED FROM - TRM113318

303th St

303th St

PERMANENT PAVEMENT MARKING LAYOUT

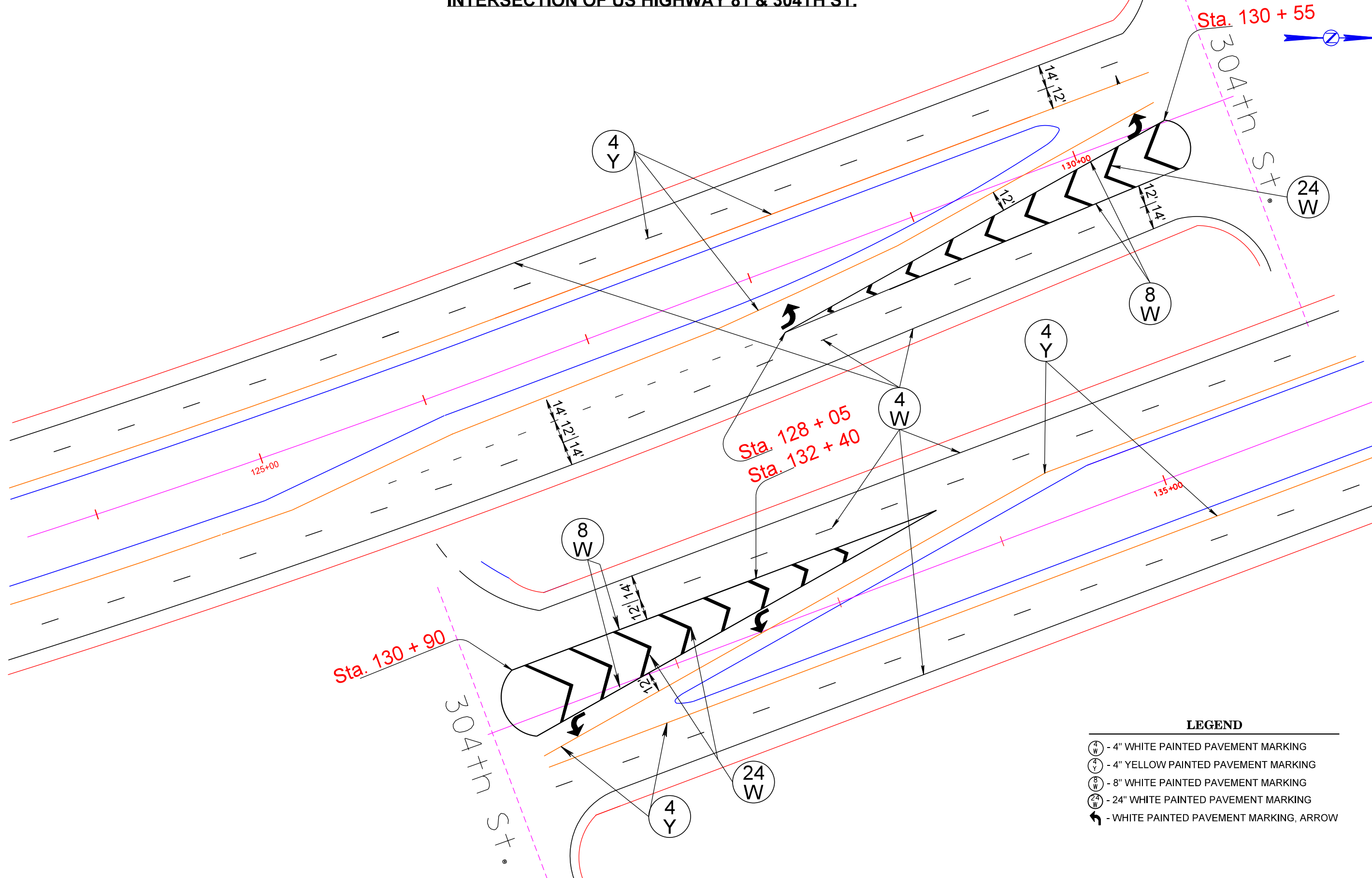
INTERSECTION OF US HIGHWAY 81 & 304TH ST.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0081(122)3	M5	M6

Plotting Date: 10/02/2024
Revised, 10/02/2024(MY)

PLOT SCALE - 1:53,4292

PLOT NAME - 2



LEGEND

- (4W) - 4" WHITE PAINTED PAVEMENT MARKING
- (4Y) - 4" YELLOW PAINTED PAVEMENT MARKING
- (8W) - 8" WHITE PAINTED PAVEMENT MARKING
- (24W) - 24" WHITE PAINTED PAVEMENT MARKING
- ↪ - WHITE PAINTED PAVEMENT MARKING, ARROW

PLOTTED FROM - TRM113318

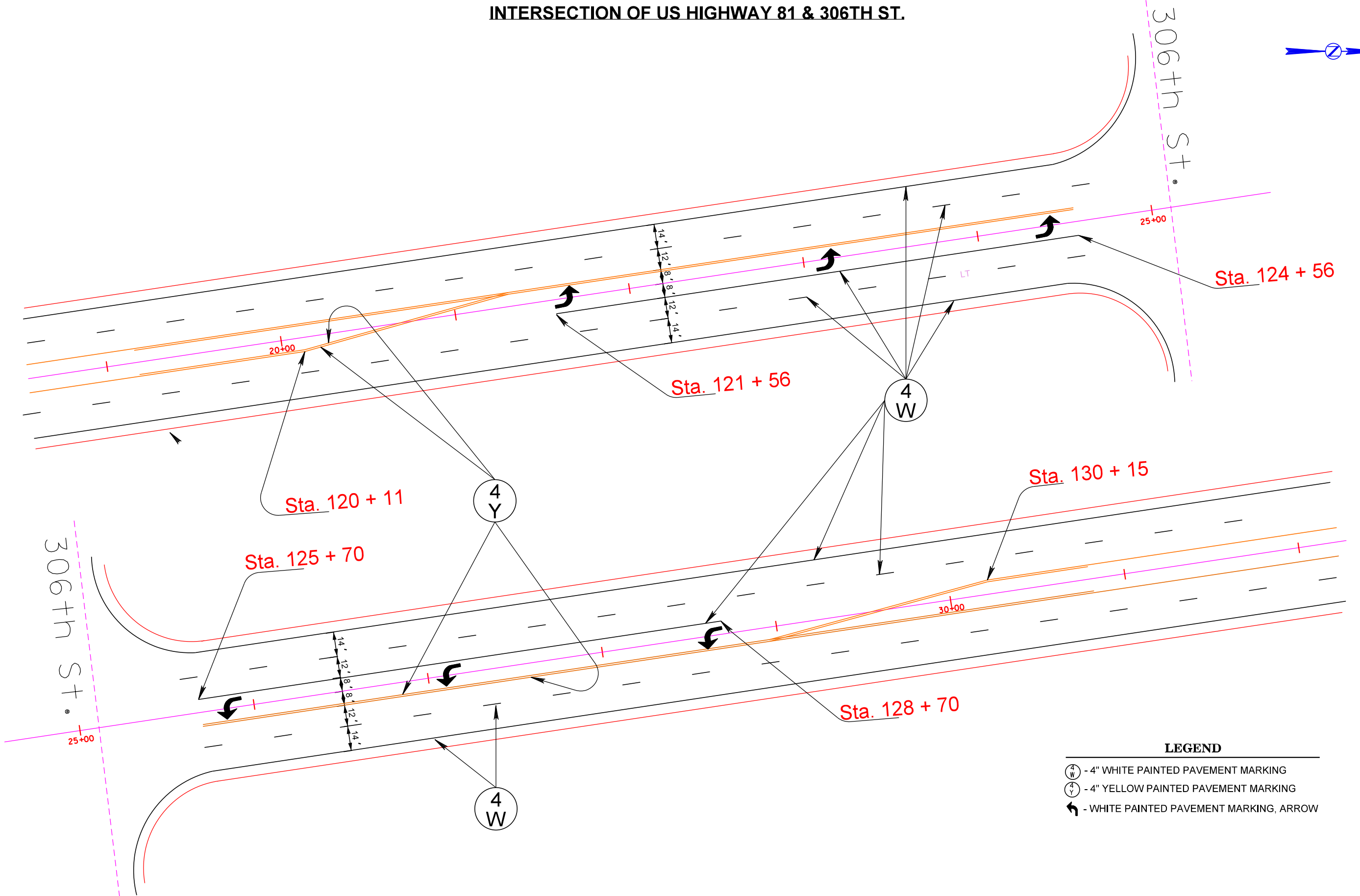
FILE - ... \PRJ\YANK07V2\DGN\J064G5 2D.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0081(122)3	M6	M6

Plotting Date: 10/02/2024
Revised, 10/02/2024(MY)

PERMANENT PAVEMENT MARKING LAYOUT

INTERSECTION OF US HIGHWAY 81 & 306TH ST.



LEGEND

	- 4" WHITE PAINTED PAVEMENT MARKING
	- 4" YELLOW PAINTED PAVEMENT MARKING
	- WHITE PAINTED PAVEMENT MARKING, ARROW

PLOT SCALE - 1:53,4292

PLOTTED FROM - TRM113318

PLOT NAME - 3
FILE - ... \PRJ\YANK07V2\DCN\J04G5 2D.DGN