

SECTION M: PAVEMENT MARKING PLANS

FOR BIDDING PURPOSES ONLY

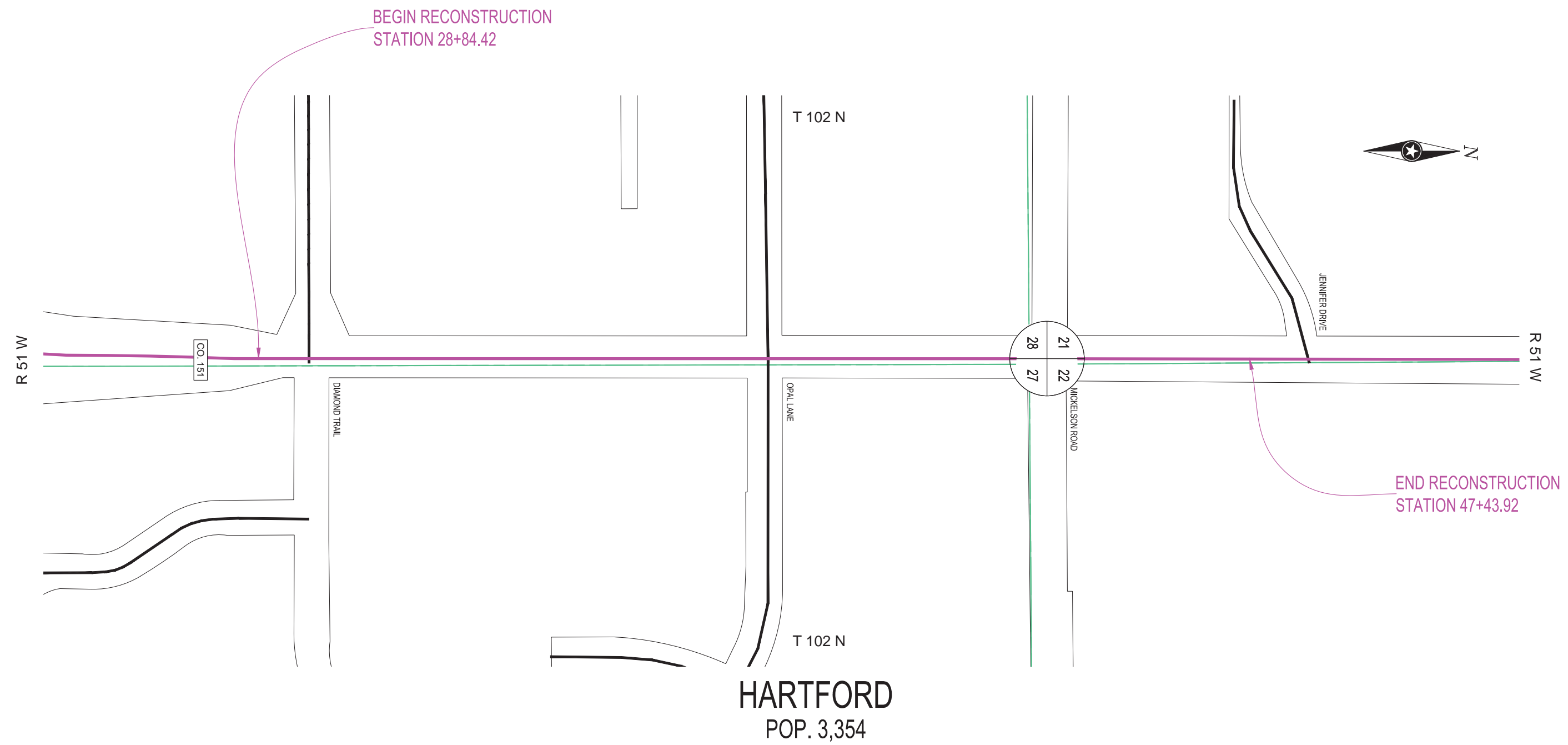
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6353(00)	M1	M7

Plotting Date: 1/7/2025



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- M1 Section Title Sheet
- M2 Estimated Quantities and Notes
- M3-M5 Pavement Marking Plan
- M6-M7 Standard Plates





SECTION M ESTIMATE OF QUANTITIES

SBI NBR	SBI DESC	ITEM QTY	UNITS
633E3000	Durable Pavement Marking, 4" White	1318	Ft
633E3005	Durable Pavement Marking, 4" Yellow	4985	Ft
633E3008	Durable Pavement Marking, 6" White	1015	Ft
633E3025	Durable Pavement Marking, 12" Yellow	121	Ft
633E3030	Durable Pavement Marking, 24" White	138	Ft
633E3045	Durable Pavement Marking, Arrow	27	Each
633E3050	Durable Pavement Marking, Combination Arrow	7	Each
633E5100	Grooving for Durable Pavement Marking, 4"	6303	Ft
633E5102	Grooving for Durable Pavement Marking, 6"	1015	Ft
633E5110	Grooving for Durable Pavement Marking, 12"	121	Ft
633E5115	Grooving for Durable Pavement Marking, 24"	138	Ft
633E5125	Grooving for Durable Pavement Marking, Arrow	27	Each
633E5130	Grooving for Durable Pavement Marking, Combination Arrow	7	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	208	Ft

PAVEMENT MARKING PAINT

Marking 8-inch edge lines and gore areas will require the use of 2 spray nozzles to achieve the required width. Marking 12-inch gore lines will require the use of 3 spray nozzles to achieve the required width.

EPOXY PAVEMENT MARKING PAINT

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

Epoxy pavement marking paint shall conform to the requirements set forth in the City of Sioux Falls Supplemental Specifications Section 633, Type 1. Any coning required for the placement of the marking shall be considered incidental to the pavement marking bid item.

Epoxy Pavement marking paint will be measured and paid for a contract unit price per color and width under the "Durable Pavement Marking" bid items.

Glass beads for use with pavement marking shall be moisture resistant and shall meet the requirements of AASHTO M 247, Type I. Glass beads shall be without floatation properties. The glass beads shall have dual surface treatment consisting of a moisture resistant silicone treatment, and silane adherence surface treatment. The glass beads shall have a minimum of 80 percent true spheres as tested in accordance with SD 510.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

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

Pavement markings not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15th in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced at no expense to the City. Deficient markings shall be completely removed by sandblasting to bare pavement or other approved methods prior to placing new markings.

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The City may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the City chooses to take retroreflectivity readings, three retroreflectivity 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 City chooses to take retroreflectivity 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 City chooses to take readings, the minimum retroreflectivity values will be 275 mc/m²/lux for white and 170 mc/m²/lux for yellow.

GROOVING FOR EPOXY PAVEMENT MARKING PAINT

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will 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, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot, square foot, each, or word for "Grooving for Durable Pavement Marking" contract items.

Unless otherwise specified in the plans, the Contractor will groove the surface for High Build Waterborne Pavement Marking Paint as specified in these plans and as per the manufacturer's instructions.

The grooving will be completed within the following tolerances:

Description	Specification	Tolerance
Depth of Groove	Marking Thickness ¹ + 1 mils	+ 5 mils
Width of 4" Groove	4 1/2 inches	± 1/8 inch
Width of 6" Groove	6 1/2 inches	± 1/8 inch
Width of 12" Groove	12 1/2 inches	± 1/8 inch
Width of 24" Groove	24 1/2 inches	± 1/8 inch
Length of Skip Lines ²	10 foot 6 inches	± 3 inch
Tapers at ends of lines	6 to 9 inches	
Between Double Lines	4 inches	± 1/2 inch

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

² Additional length may be required as specified in the plans.

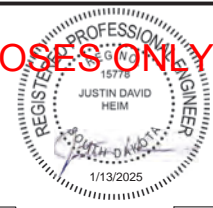
The equipment will be capable of the following:

- 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.

If damage occurs, including, but not limited to, joints, joint sealant material, and backer rod, the grooving operation will be stopped and modifications will be made to the grooving operation to prevent further damage. The Contractor will be required to use specially prepared circular diamond blade cutting heads to prevent damage at the joints. Damage caused will be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

Lane lines shall not be placed over a longitudinal pavement joint, and shall not be installed closer than 1/2 inch or more than 1 1/2 inches away from the joint. Lane lines shall not deviate more than 1 inch per 200 feet, nor shall any deviations be abrupt.

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STATE OF SOUTH DAKOTA	PROJECT P 6353(00)	SHEET M3	TOTAL SHEETS M7
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Plotting Date: 1/7/2025

STRIPING & SIGNAGE LEGEND

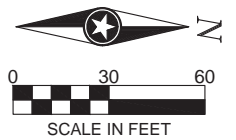
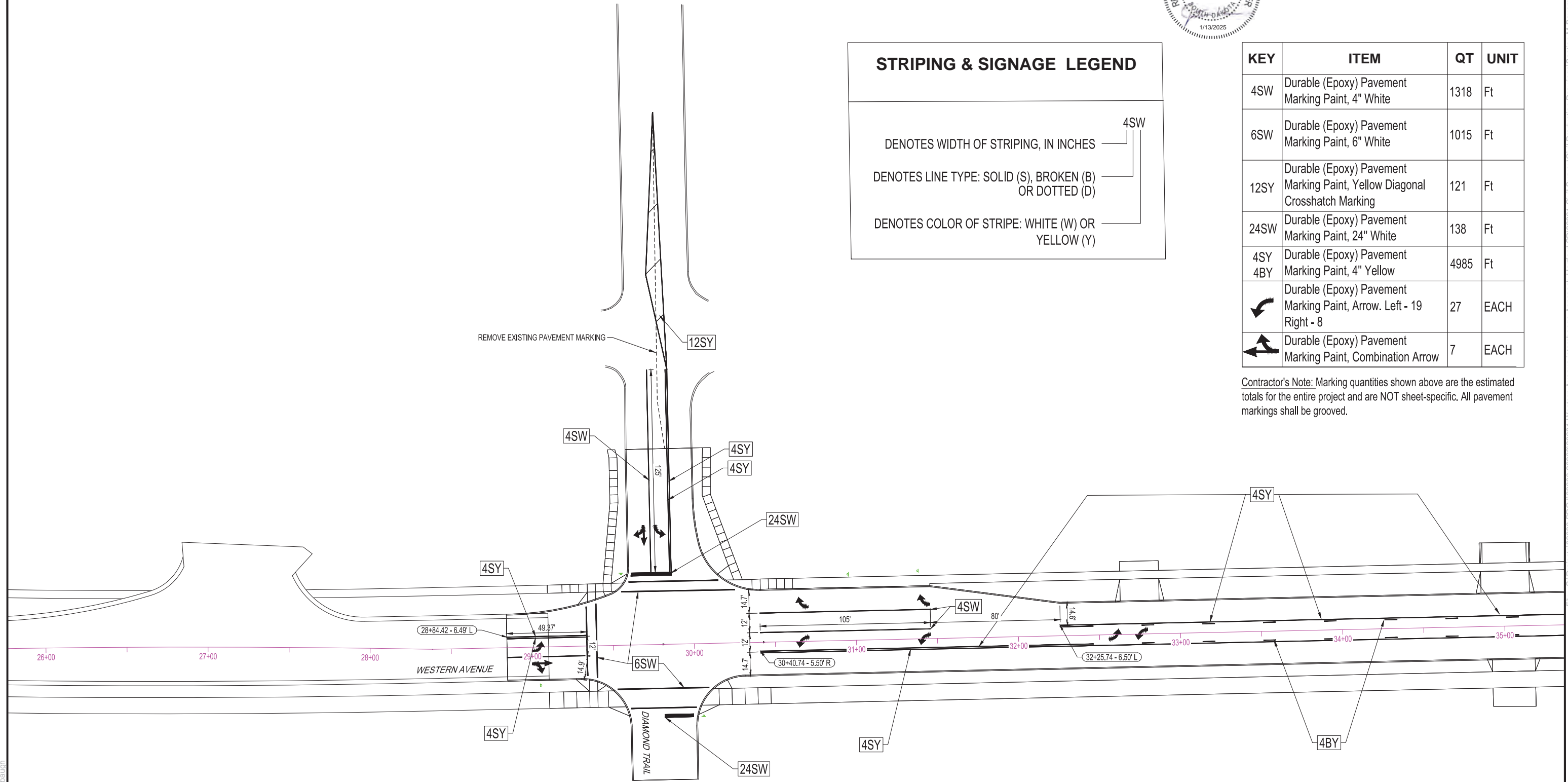
DENOTES WIDTH OF STRIPING, IN INCHES ——— 4SW

DENOTES LINE TYPE: SOLID (S), BROKEN (B) OR DOTTED (D) ———

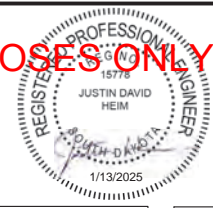
DENOTES COLOR OF STRIPE: WHITE (W) OR YELLOW (Y) ———

KEY	ITEM	QT	UNIT
4SW	Durable (Epoxy) Pavement Marking Paint, 4" White	1318	Ft
6SW	Durable (Epoxy) Pavement Marking Paint, 6" White	1015	Ft
12SY	Durable (Epoxy) Pavement Marking Paint, Yellow Diagonal Crosshatch Marking	121	Ft
24SW	Durable (Epoxy) Pavement Marking Paint, 24" White	138	Ft
4SY 4BY	Durable (Epoxy) Pavement Marking Paint, 4" Yellow	4985	Ft
↩ ↪	Durable (Epoxy) Pavement Marking Paint, Arrow. Left - 19 Right - 8	27	EACH
↻	Durable (Epoxy) Pavement Marking Paint, Combination Arrow	7	EACH

Contractor's Note: Marking quantities shown above are the estimated totals for the entire project and are NOT sheet-specific. All pavement markings shall be grooved.



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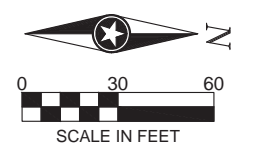
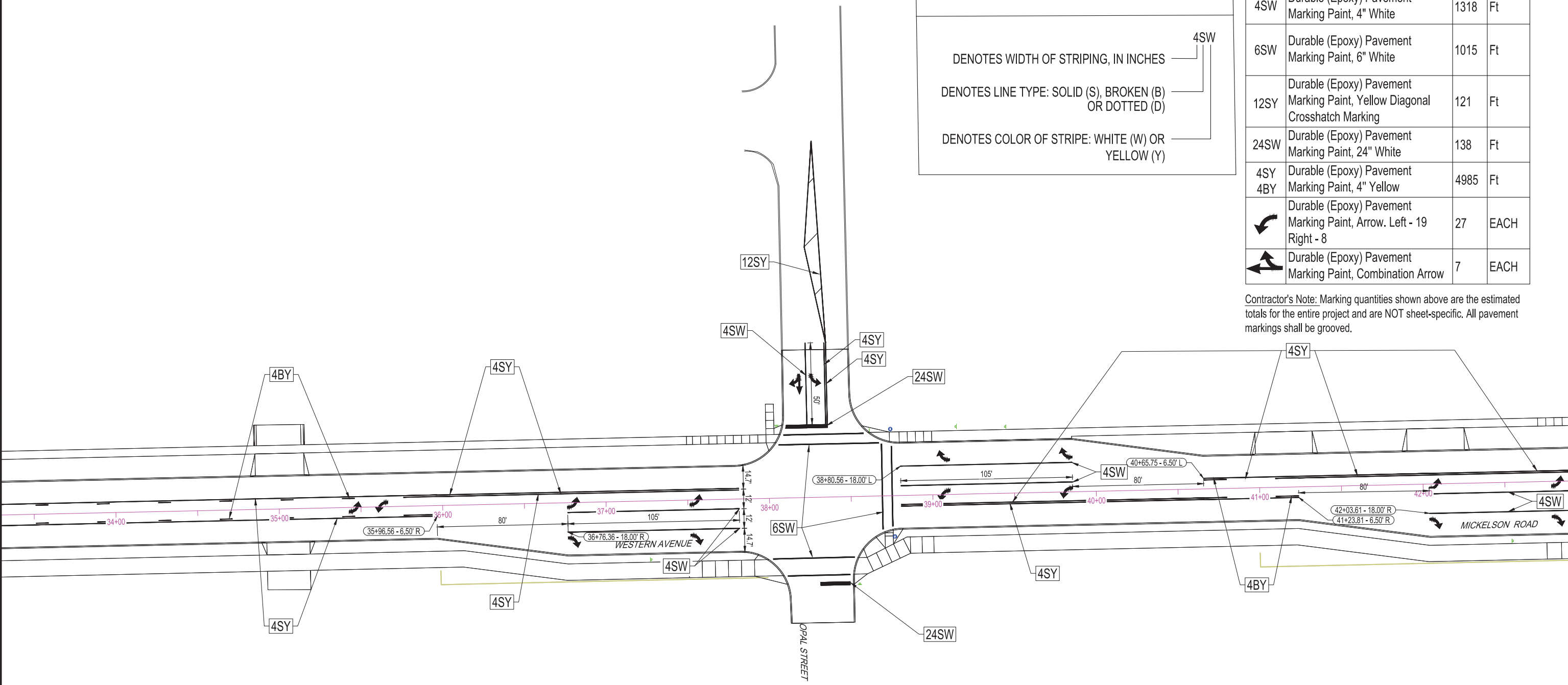
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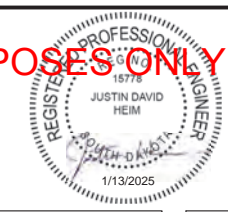
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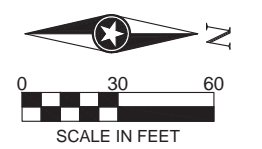
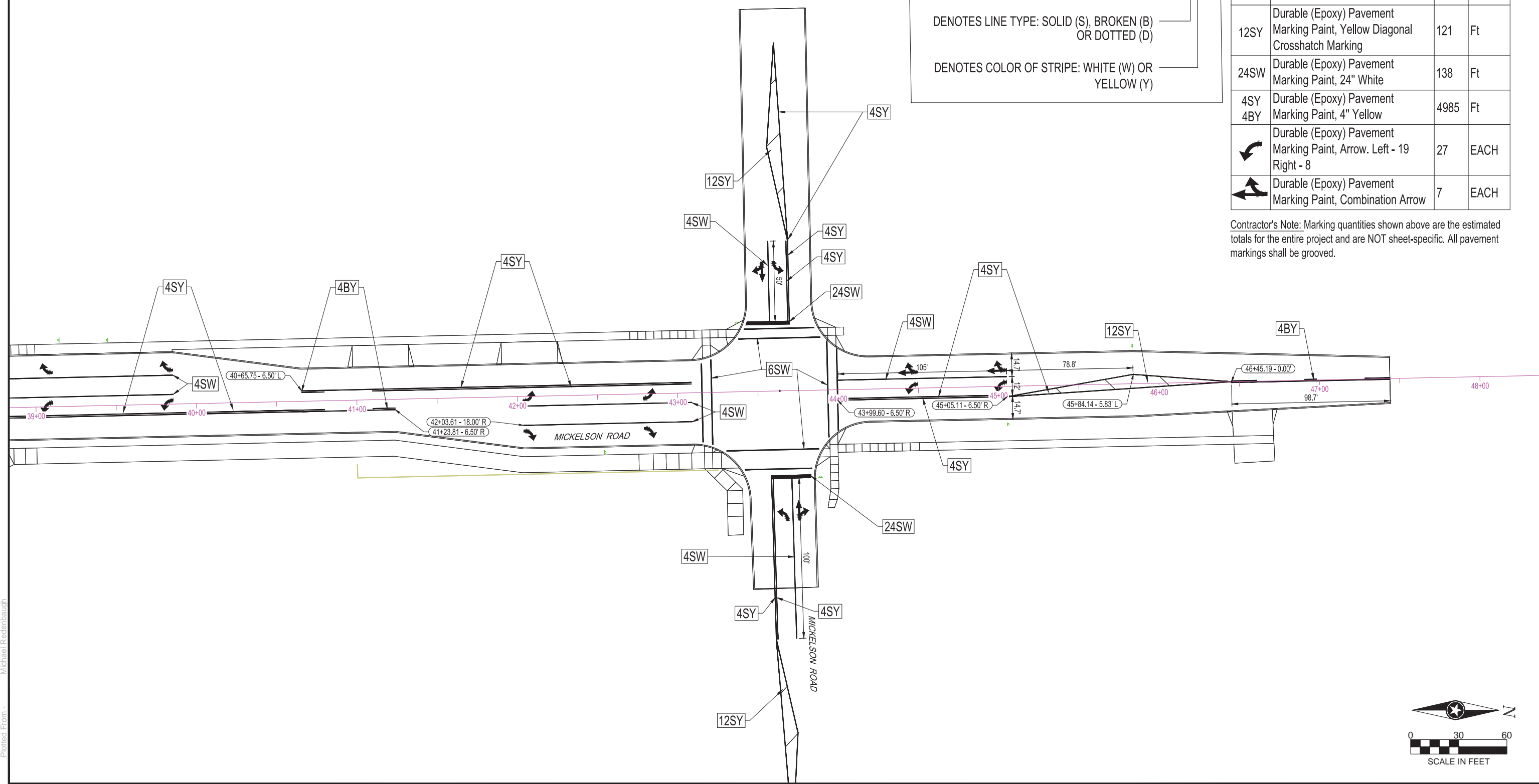
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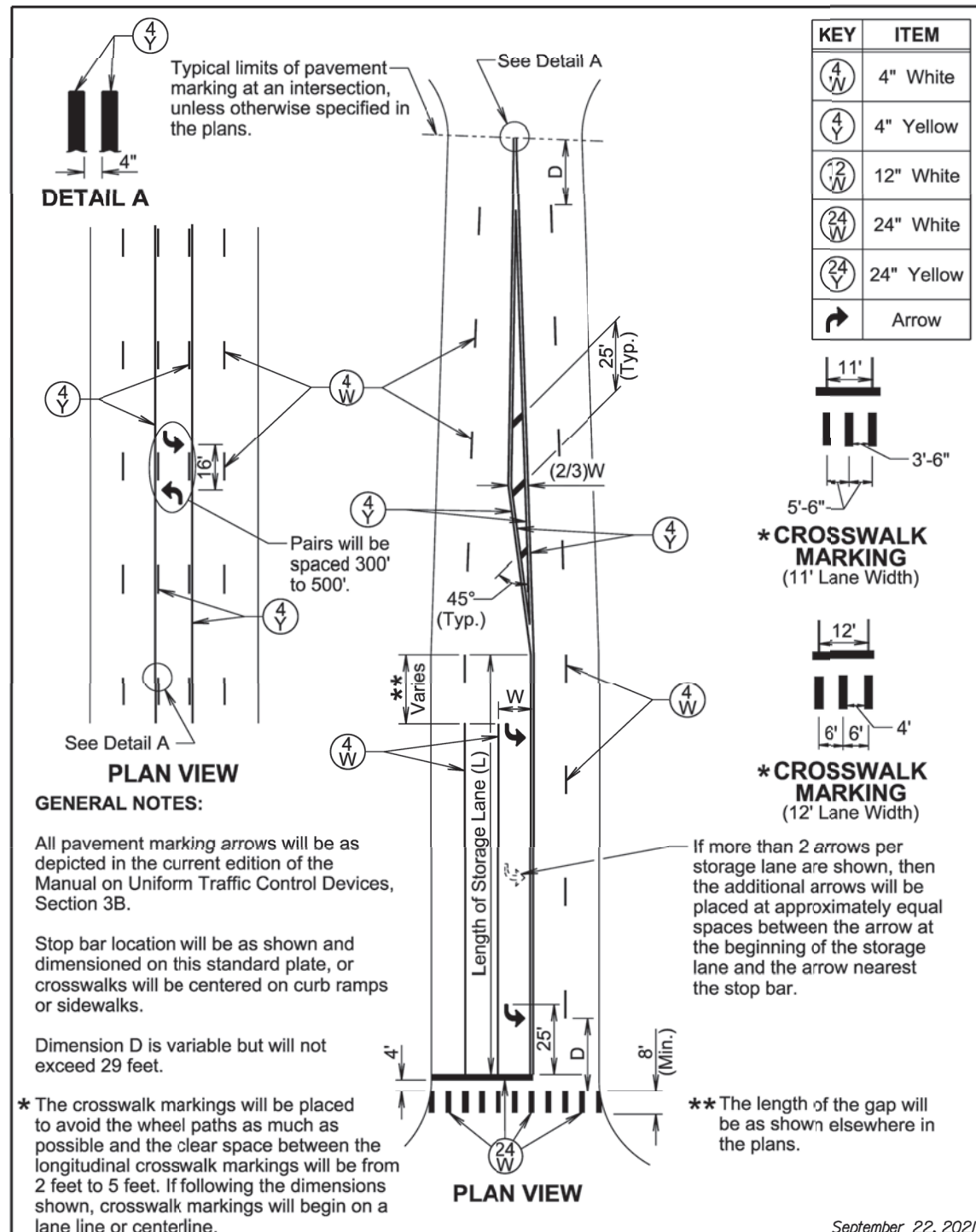
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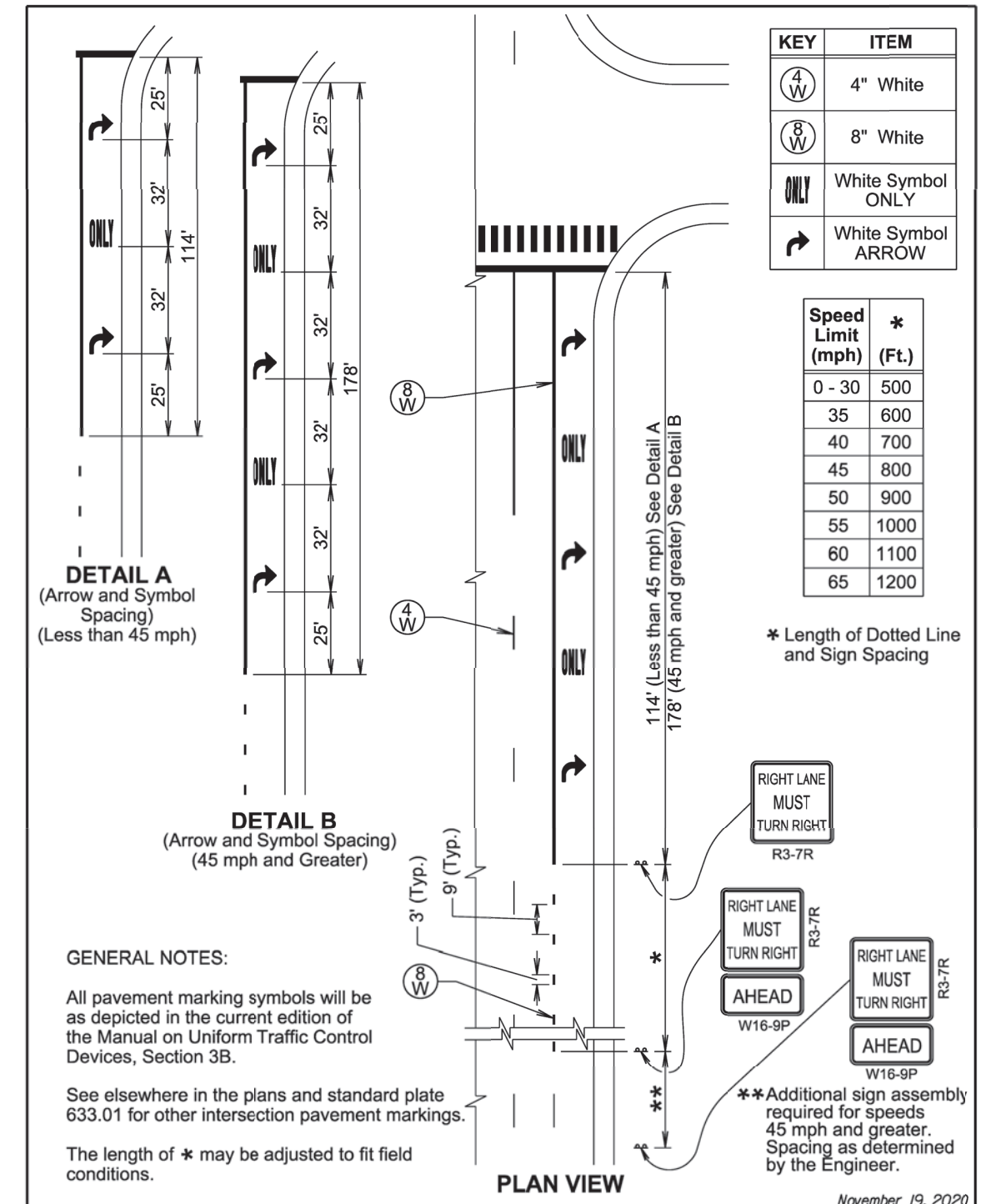


Plotted From: Michael Redenbaugh

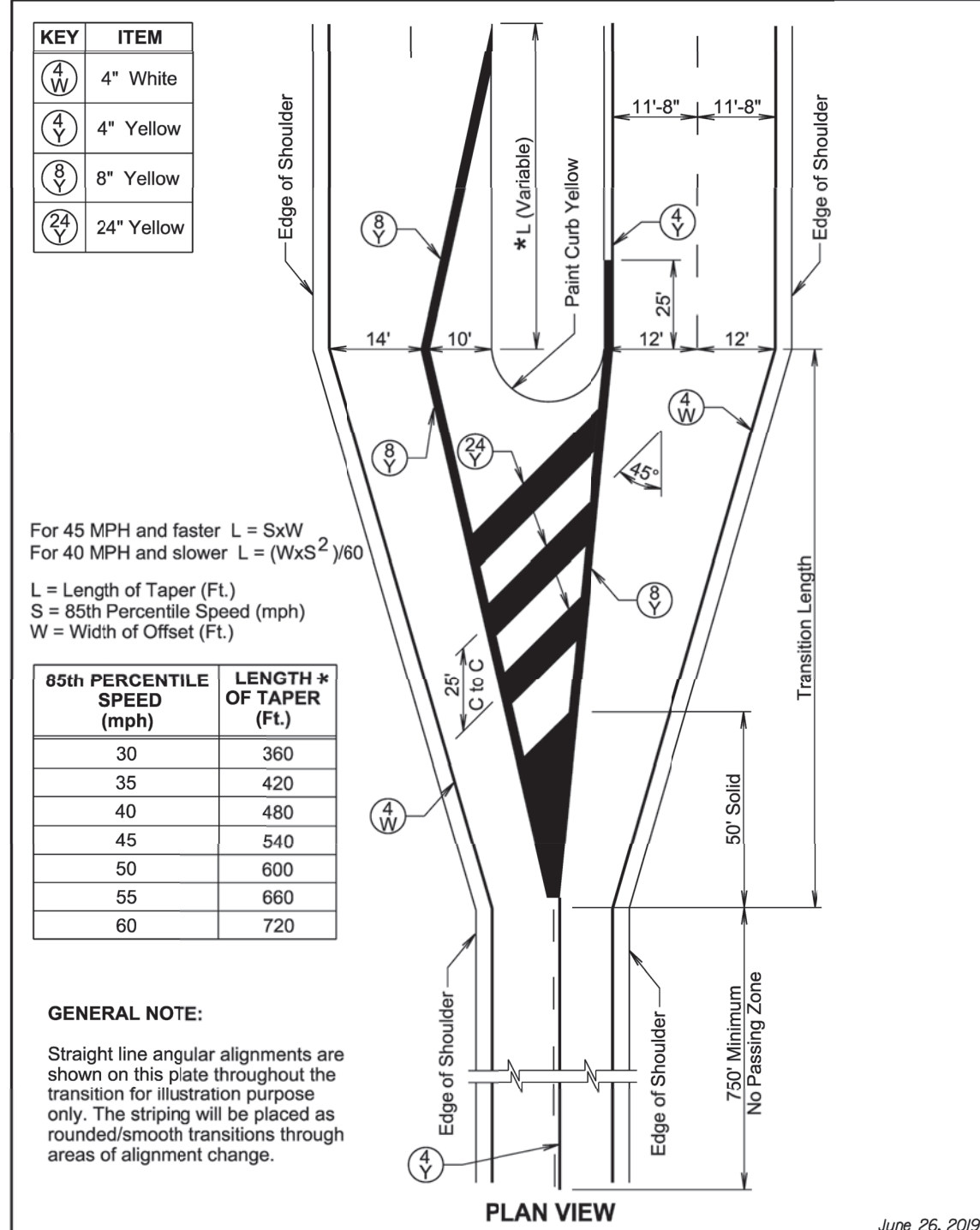
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		Sheet 1 of 1

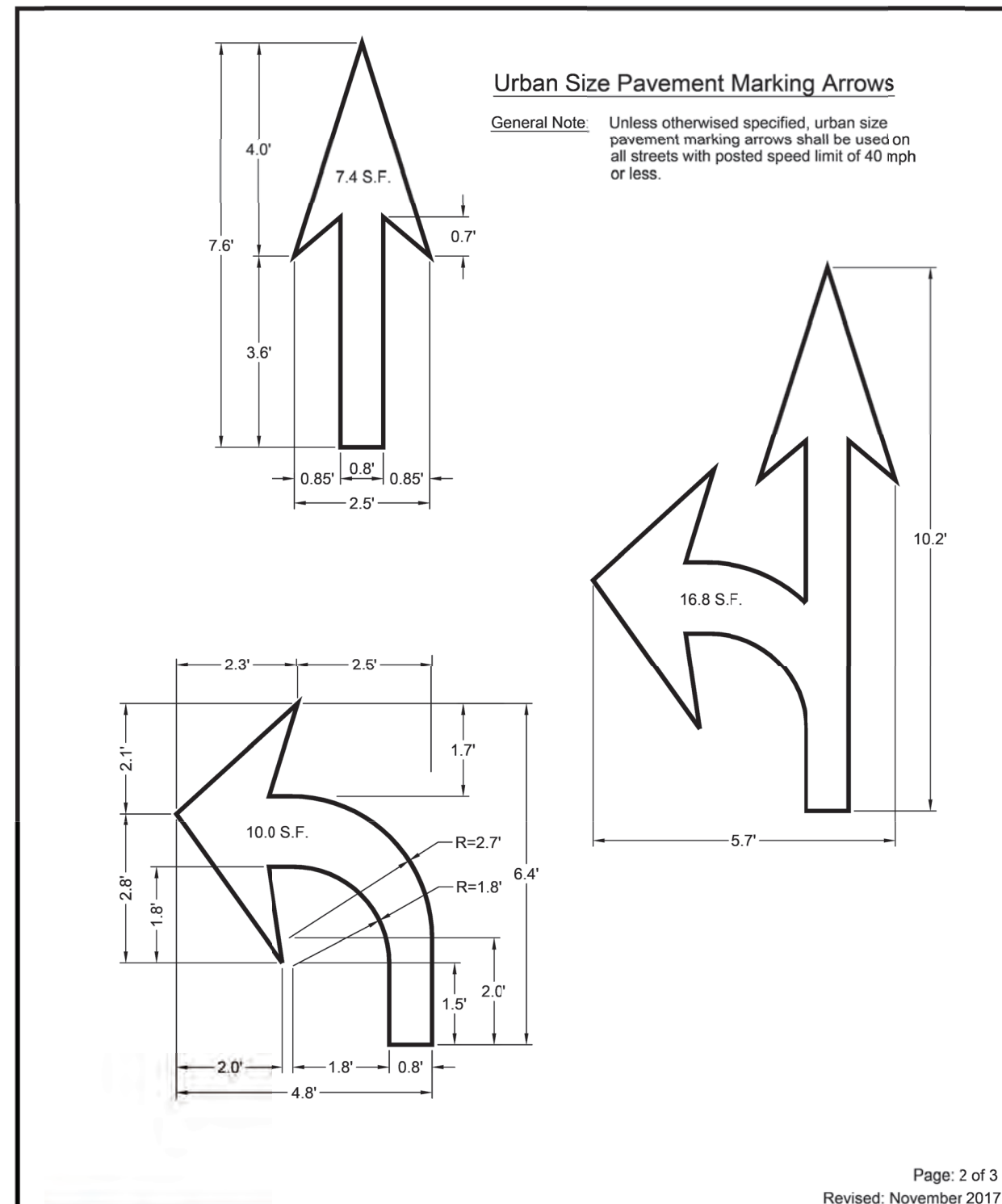


Published Date: 2024	S D D O T	PLATE NUMBER 633.02
		Sheet 1 of 1



June 26, 2019

Published Date: 2024	S D D O T	APPROACH PAVEMENT MARKINGS FOR TWO-LANE TO FOUR-LANE DIVIDED HIGHWAYS	PLATE NUMBER 633.03
			Sheet 1 of 1



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Revised: November 2017

CITY OF SIOUX FALLS PUBLIC WORKS Providing a Better Quality of Life for You.	Pavement Marking Arrows	Specification Reference	Plate Number
		No. 633	633.20