

SECTION M: PAVEMENT MARKING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	M1	M7

Plotting Date: 07/31/2024

INDEX OF SHEETS

M1	General Layout with Index
M2	Estimate with General Notes
M3	Pavement Marking Tables and Typical details
M4 -M6	Pavement Marking Layouts
M7	Standard Plate



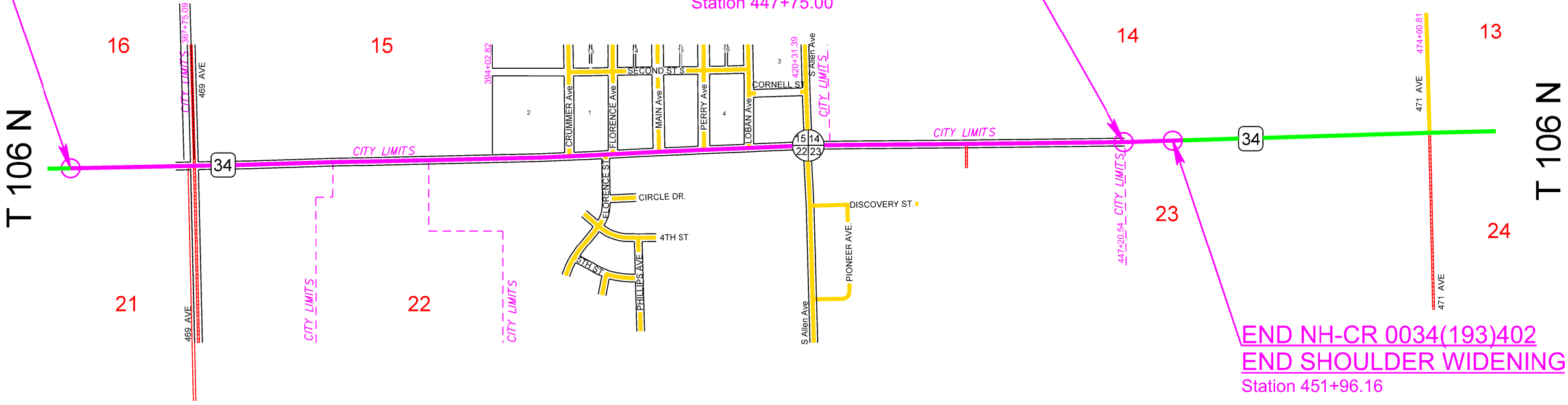
COLMAN

R 50 W

END GRADING
BEGIN SHOULDER WIDENING
Station 447+75.00

BEGIN NH-CR 0034(193)402
BEGIN GRADING
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END NH-CR 0034(193)402
END SHOULDER WIDENING
Station 451+96.16



R 50 W

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SectionB Page #: ###
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Section M - Pavement Marking

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E0010	Cold Applied Plastic Pavement Marking, 4"	36,130	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	336	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	34	Each
633E0225	Preformed Thermoplastic Pavement Marking, 24"	168	Ft
633E0230	Preformed Thermoplastic Pavement Marking, Area	180	SqFt
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	36,130	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	504	Ft
633E5020	Grooving for Cold Applied Plastic Pavement Marking, Area	180	SqFt
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	34	Each

COLD APPLIED PLASTIC PAVEMENT MARKING

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

Cold Applied Plastic Pavement Markings will be 3M Series 380 AW or an approved equal.

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.

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

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. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot & square foot for "Grooving for Cold Applied Plastic Pavement Marking" contract items.

PREFORMED THERMOPLASTIC PAVEMENT MARKING

General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire cross-sectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions;
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking;
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic markings when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the markings will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any markings on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

Color

- Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D, Tables 1 and 2).

Glass Beads

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement markings contain only clear beads.

Skid Resistance

- Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

PREFORMED THERMOPLASTIC PAVEMENT MARKING (CONTINUED)

Retroreflectivity

- Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

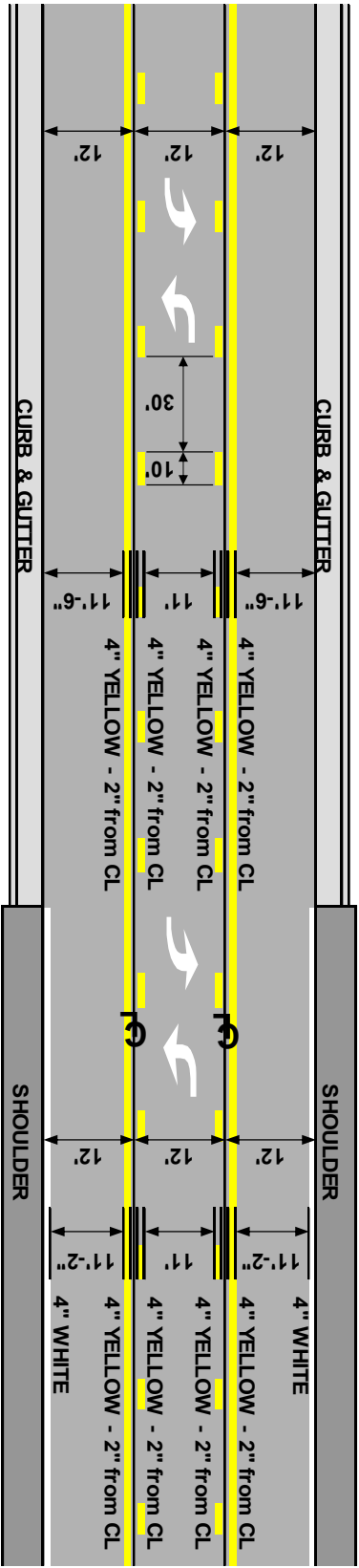
Minimum Initial Pavement Marking Retroreflectivity		
	White	Yellow
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.

Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse markings and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

Sample

- Prior to application, the Contractor will provide a sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer's approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer's approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.



TWO LANE ROADWAY WITH CENTER TURN LANE

PAVEMENT MARKING

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

Left Arrows, in sets of two, spaced 8' or 16' arrow tip to arrow tip, (when two are required) will be positioned in the center turn lane at 30' spacing, at a frequency of one set of arrows per block or at existing arrow locations.

ESTIMATED QUANTITIES

PLASTIC SOLID AREAS	4"	8"	12"	24"	10700'	-	-
WHITE	-	-	-	-	-	-	-
YELLOW	-	-	-	25430'	-	-	-

ESTIMATED QUANTITIES

THERMO SOLID AREAS	4"	8"	12"	24"	180 SQFT	-
WHITE	-	-	-	168'	-	-
YELLOW	-	-	-	-	-	-

Included in the above quantities are:

Description	Quantity	Description	Quantity
4" Lines	1200'	4" Lines	2 Ea 1680'
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Lines	-	24" Hatches	336'
24" Hatches	-	Solid Areas	-

Additional White Items	Arrows
Additional Yellow Item	Symbols

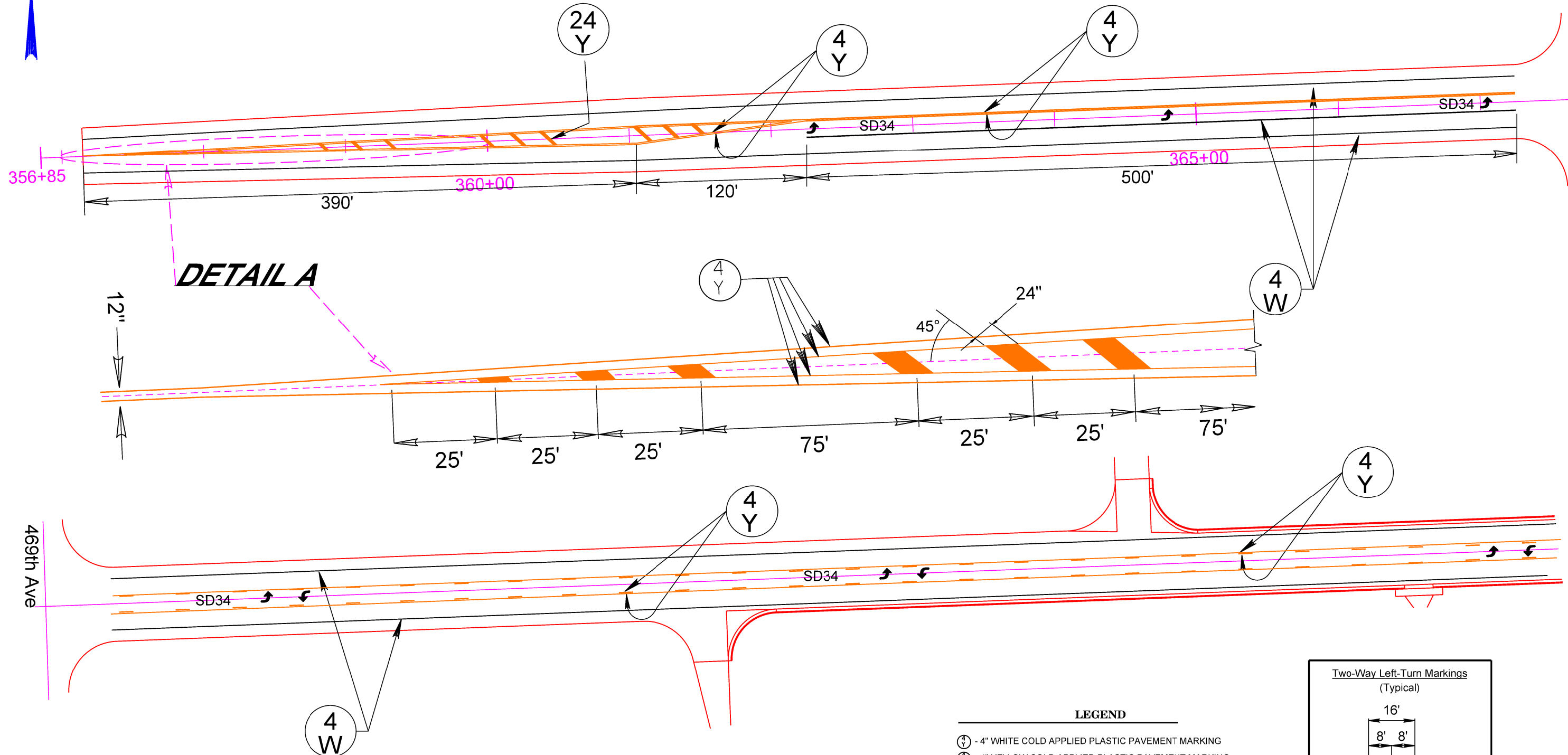
Arrows	30 Ea
Left Arrows	4 Ea
Right Arrows	-
Straight Arrows	-
Combo Arrows	-
Lane Drop Arrows	-
Messages	-
STOP	-
STOP AHEAD	-
R X R w/ Stop Lines	-
SCHOOL X-ING	-
Symbols	-
Symbols	-
Int'l Symbol of Accessibility	-

PERMANENT PAVEMENT MARKING LAYOUT

Plot Scale - 1:200



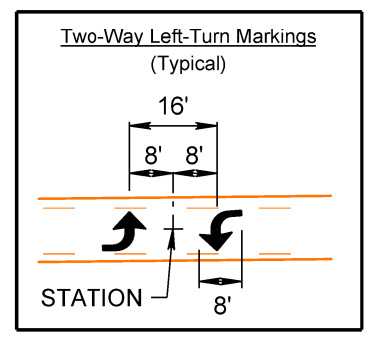
469th Ave



DETAIL A

LEGEND

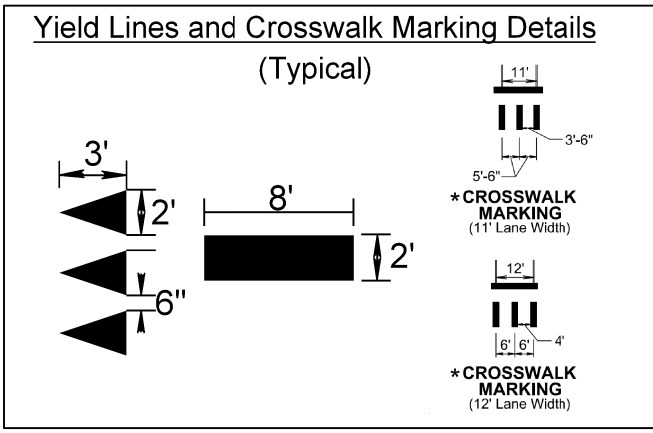
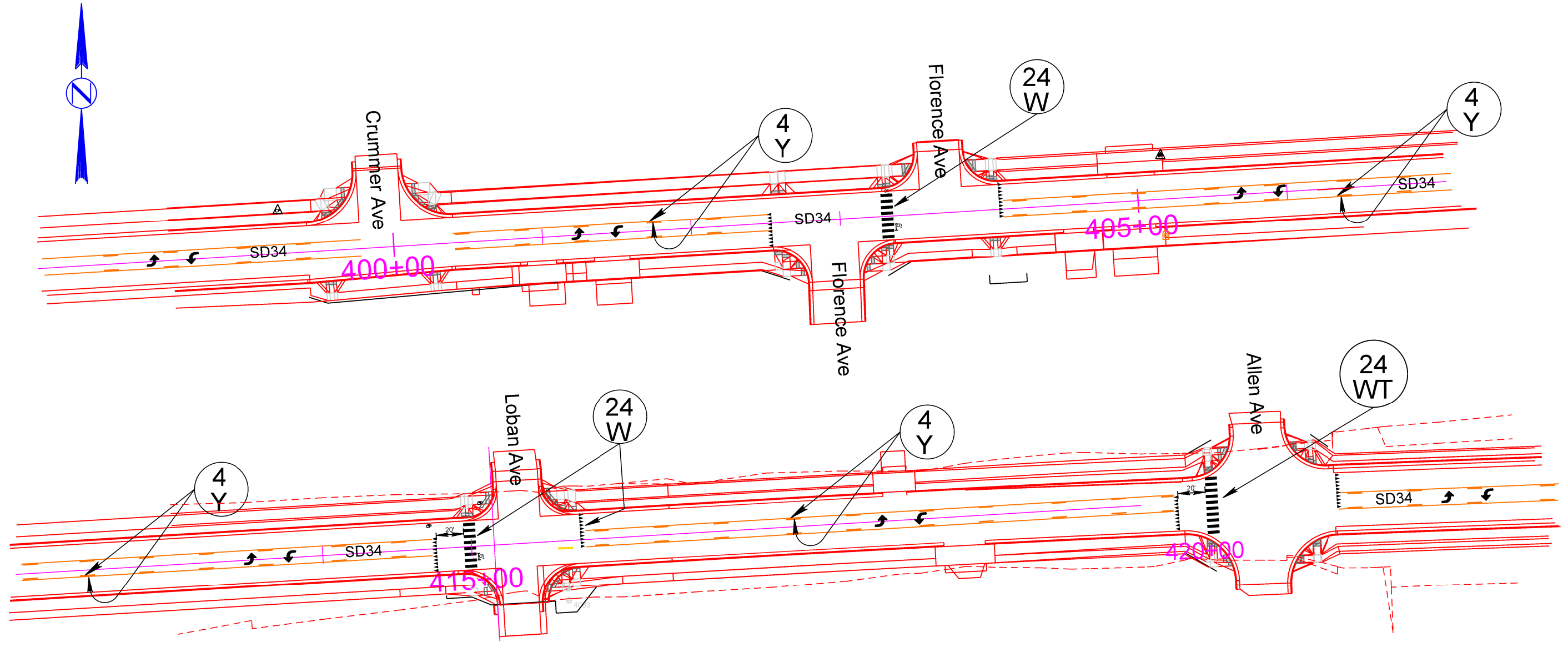
- ⊕ - 4" WHITE COLD APPLIED PLASTIC PAVEMENT MARKING
- ⊕ - 4" YELLOW COLD APPLIED PLASTIC PAVEMENT MARKING
- ⊕ - 24" YELLOW THERMOPLASTIC PAVEMENT MARKING
- ↩ - WHITE COLD APPLIED PLASTIC PAVEMENT MARKING, ARROW



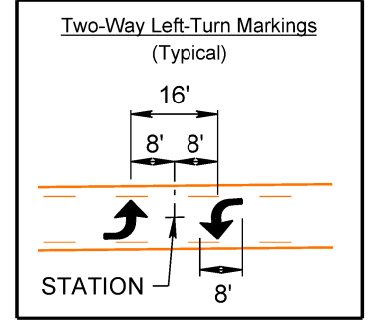
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PERMANENT PAVEMENT MARKING LAYOUT



- ### LEGEND
- ④ - 4" YELLOW COLD APPLIED PLASTIC PAVEMENT MARKING
 - ②④ - 24" WHITE THERMOPLASTIC PAVEMENT MARKING
 - ↔ - WHITE COLD APPLIED PLASTIC PAVEMENT MARKING, ARROW
 - ▬ - SOLID AREA WHITE THERMOPLASTIC PAVEMENT MARKING



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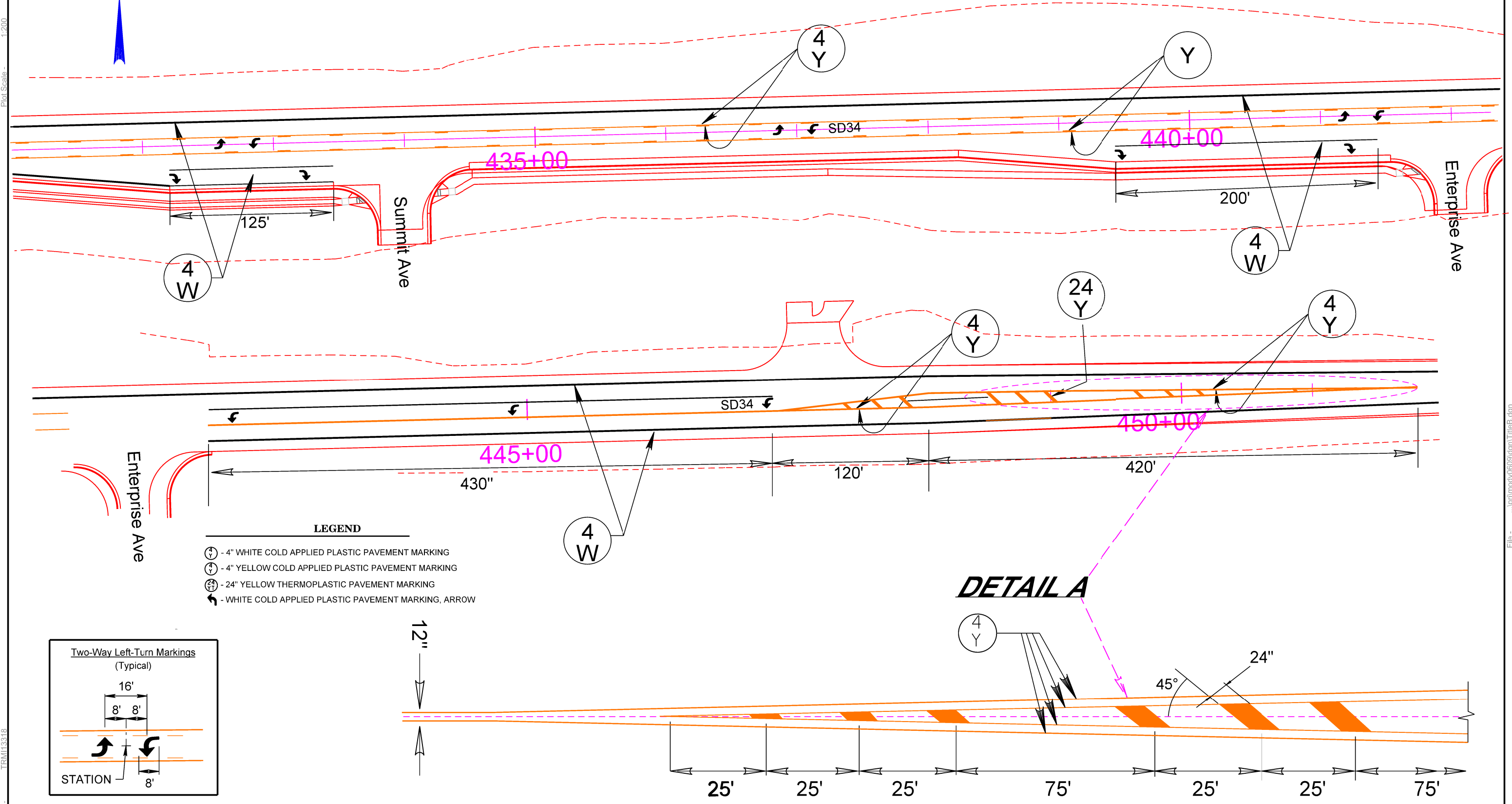
PERMANENT PAVEMENT MARKING LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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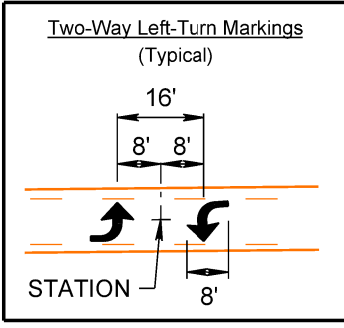


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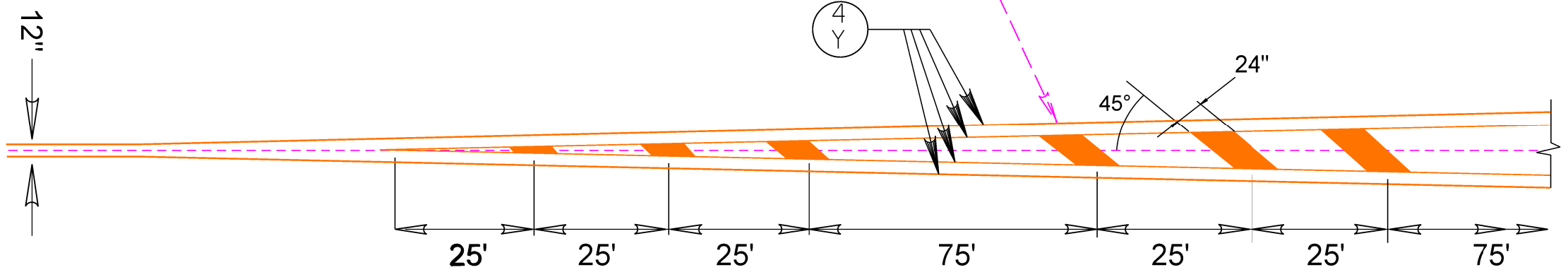
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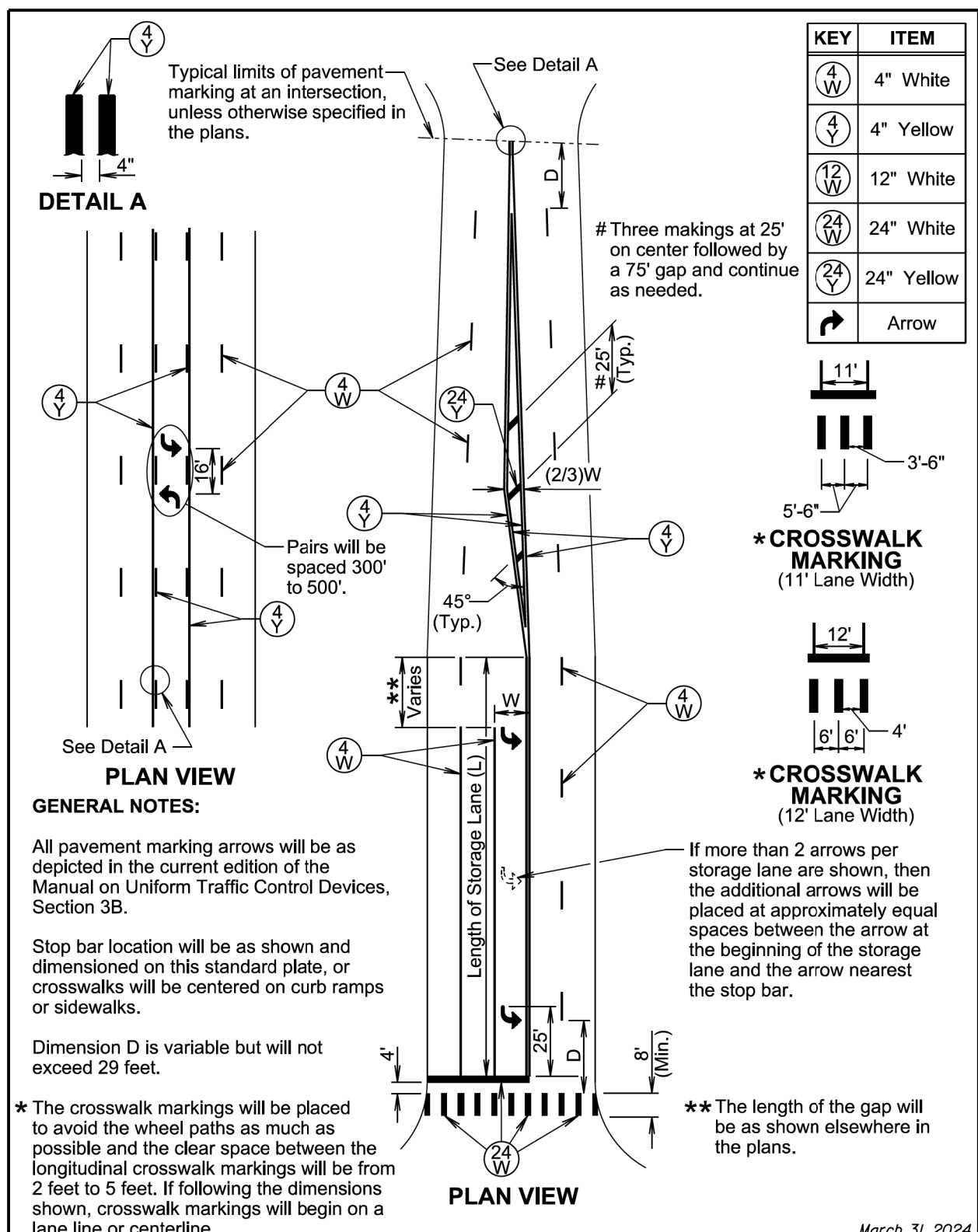
- LEGEND**
- ⊕ - 4" WHITE COLD APPLIED PLASTIC PAVEMENT MARKING
 - ⊕ - 4" YELLOW COLD APPLIED PLASTIC PAVEMENT MARKING
 - ⊕ - 24" YELLOW THERMOPLASTIC PAVEMENT MARKING
 - ↔ - WHITE COLD APPLIED PLASTIC PAVEMENT MARKING, ARROW



DETAIL A



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S D D O T	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01
	Published Date: 2025	Sheet 1 of 1

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