

## Sample Plan

### PERMANENT PAVEMENT MARKING PLAN ----- NARRATIVE

#### References:

- Design Scene: Chapter 16 - Traffic
- Road Design Manual: Chapter 10-3
- Technical Memorandum: No. 14-11-T-02  
Mn/DOT Provisions for Pavement Marking Operations
- Traffic Engineering Pavement Marking Web Site:  
<http://www.dot.state.mn.us/trafficeng/pavement/plansandspecialprovisions.html>
- Miscellaneous: <http://lhub.metro/design/coordination.html> Traffic-Design Coordination Guidance

#### General Information:

During the roadway plan development, designers must be aware of the need for a Permanent Pavement Marking Plan. There are three general types of markings in use - pavement markings, object markings, and delineators. The Pavement Marking Plan may contain any or all of these markings.

To develop the Pavement Marking Plan, coordination meetings between Design and the Traffic Engineering Section are recommended throughout the duration of the project. Construction may also be a valuable resource. The number and extent of these meetings will depend on the complexity, length, and duration of the project. In some instances, the Permanent Pavement Marking Plan may be done by Maintenance and not included in the Grading Plan.

The Designer will likely need to provide construction sheets or general layout sheets (hard copy or electronic copy) to the Traffic Engineering Section for them to use as a base map to draft their Pavement Marking Plan.

Pavement Marking plan sheets to be inserted into the final plan should include a list of construction pay items and quantities so that the designer can include these items in the Estimated Quantities tabulation.

The Pavement Marking Plan sheets should also be included in the plan as shown on the Title Sheet's Index. Page numbers for the Pavement Marking Plan sheets will be numbered PM1 to PM\*.

## Sample Plan

### PERMANENT PAVEMENT MARKING PLAN ----- CHECKLIST

- \_\_\_ 1. Items correspond with those shown in TRNS\*PORT
- \_\_\_ 2. Tab Letter, Sheet Numbers and correct S.P.'s
- \_\_\_ 3. Traffic Engineer's signature

# PERMANENT PAVEMENT MARKING PLAN

## NOTES & GUIDELINES

### GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

### EPOXY:

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE. ON LOW SPEED (SPEED LIMIT 35 OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS, SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

FOR 15 MIL APPLICATIONS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES °F OR GREATER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

### POLY PREFORM INLAY APPLICATION:

MAT TEMPERATURE SHALL BE CHECKED USING A THERMOMETER TO MAKE SURE THE INLAY IS BEING DONE IN THE PROPER TEMPERATURE RANGE. THE TEMPERATURE SHOULD MEASURE BETWEEN 150° F (ASPHALT FIRM ENOUGH TO WALK ON) AND 120° F. APPLICATION BELOW 120° F MAY NOT GET A PROPER INLAY. INLAYS ARE NOT RECOMMENDED AFTER SEPTEMBER 15th AS THE ASPHALT COOLS TOO FAST AT THIS TIME OF THE YEAR.

NO PRIMERS ARE USED FOR INLAY APPLICATION. DO NOT INSTALL LANE LINES ON AN ASPHALT SEAM. ROLLING OF ALL THE MARKINGS SHOULD BE LENGTHWISE IN THE DIRECTION THEY WERE LAID. FOR CROSSWALKS AND STOP BARS, INITIAL TAMPING WITH THE TAMPING CART IS RECOMMENDED USING ONLY 100 LBS. OF WEIGHT.

USE COMPACTION ROLLER TO EMBED (INLAY) MARKINGS INTO PAVEMENT SURFACE. USE MINIMUM SPEED AND WATER ON ROLLER. DO NOT USE VIBRATOR. IF MARKING BUCKLES OR DISTORTS SEVERELY IN FRONT OF ROLLER, MAT TEMPERATURE OR ROLLER SPEED MAY BE TOO HIGH.

### POLY PREFORM GROOVED APPLICATION:

CONCRETE PAVEMENT SURFACES AND BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAID IN THE HOT MAT, SHALL BE GROOVED FOR THE INSTALLATION OF DURABLE REFLECTORIZED PAVEMENT MARKINGS. SEE SPECIAL PROVISIONS.

### PAINT:

AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICATION IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

**FOR MOST CURRENT PAVEMENT MARKING  
SAMPLE PLAN SET, VISIT THE WEB SITE  
LISTED IN THE NARRATIVE REFERENCES**

PAVEMENT MARKING		PM
ITEM	UNIT	TOTAL
PAVT MSSG (LT ARROW) POLY PREF	EACH	13
PAVT MSSG (RT ARROW) POLY PREF	EACH	17
PAVT MSSG (THRU ARROW) POLY PREF	EACH	2
PAVT MSSG (LT-THRU ARROW) POLY PREF	EACH	13
PAVT MSSG (HOV DIAMOND) POLY PREF	EACH	4
PAVT MSSG (RT-LT ARROW) POLY PREF	EACH	2
4" SOLID LINE WHITE-POLY PREF	LIN FT	5517
8" SOLID LINE WHITE-POLY PREF	LIN FT	9543
24" STOP LINE WHITE-POLY PREF	LIN FT	55
4" BROKEN LINE WHITE-POLY PREF	LIN FT	26030
8" DOTTED LINE WHITE-POLY PREF	LIN FT	823
4" SOLID LINE YELLOW-POLY PREF	LIN FT	32
4" SOLID LINE WHITE-EPOXY	LIN FT	70182
12" SOLID LINE WHITE-EPOXY	LIN FT	816
4" SOLID LINE YELLOW-EPOXY	LIN FT	69468
CROSSWALK MARKING-POLY PREFORM	SQ FT	378

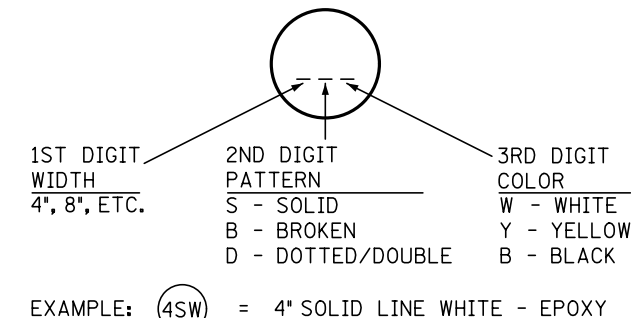
### PERMANENT PAVEMENT MARKING PLAN INDEX

70	PERM PAVEMENT MARKING TITLE AND TABULATION
71	DETAIL
72	TYPICAL

SAMPLE PLAN

### SYMBOLS & MATERIALS LEGEND

- CROSSWALK BLOCK WHITE-POLY PREFORM
  - PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORM
  - PAVEMENT MESSAGE (HOV LANE) - POLY PREFORM
- STRIPING KEY**
- CIRCLE - EPOXY      SQUARE - POLY PREFORM
  - TRIANGLE - PAINT
  - PENTAGON - REMOVEABLE PREFORMED PLASTIC MARKING



I HEREBY CERTIFY THAT SHEETS 70 THROUGH 72 OF THIS PLAN WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 2/01/09 LIC. NO. 00000  
 DESIGNER Polly Preform

FINAL STRIPING SHEET NO. 1	TITLE: PERMANENT PAVEMENT MARKING PLAN
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STATE PROJ NO 0000-00 (T.H. 00) SHEET NO PM1 OF PM1 SHEETS

REVISION DATE 04/08/16

spstr:lp:ingl

26-JAN-2017 09:16

METRO DISTRICT - TRAFFIC  
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