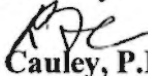



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**RESEARCH UPDATE**

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Update U95-6

**IN LAID THERMOPLASTIC PAVEMENT MARKINGS  
(INITIAL REPORT)**

**REFERENCE:** WP 95-R-16.

**HISTORY:** Thermoplastic pavement markings have been used throughout Vermont on new construction since 1992. While these lines provide excellent delineation, the thickness of the material (0.125") does make it susceptible to damage or removal by snowplows during winter maintenance operations. One way to alleviate this problem is to inlay the thermoplastic markings into grooves cut into the pavement. While a modification of this method has been done with pavement marking tape, it has not been attempted before with thermoplastic.

In the spring of 1995, the Vermont Agency of Transportation (VAOT) Construction Division, as part of the Montpelier NH 9530 project, proposed inlaying hot applied thermoplastic markings at the VT 12 and US 2 intersection in Montpelier. The pavement marking subcontractor, L&D Safety Marking Co., applied LDI SG70 modified hydrocarbon thermoplastic markings as both edge and center lines, and letters and symbols. This material is currently on the VAOT Approved Product List.

**PROJECT LOCATION:** At the intersection of VT 12 and US 2 in Montpelier. All four crosswalks, three stopbars, and four arrows were scheduled to be inlaid (See Figure 1).

**APPLICATION:** The project paving was completed by June 30, 1995. All markings except for the ones intended for inlaying were also completed by this time.

On July 19, 1995, the marking locations were prepared by grinding the new pavement in strips 5.5" wide by 1/8" deep in order to match the outline of the markings (See Figure 2). This procedure required an entire 8-hour day to complete. Technical assistance for this phase was provided to L&D by John Busby, Head Foreman, Techniques Routieres Avancees of Laval, PQ. Once these areas were ground to the proper depth, the locations were swept by hand and rotary sweeper.

The pavement markings were applied the next day, July 20 (Figure 3). The material was applied by handcart in the same manner as normal surface laid thermoplastic legends and symbols. Due to the ground areas being 5.5" wide, and the die for the markings being 6" wide, 1/4" of thermoplastic adhered to the surface of the pavement on either side of the cut. The rest of the material flowed into the groove. This provided a 125 mil (0.125") line on the edges with 250 mils (0.250") in the center (Figure 4)

At the time of application of the pavement markings, the air temperature was 70 degrees F and the sky was clear. No rainfall had occurred in the previous 48 hours.

**COST:** The cost of the installation of the inlay materials is presented in the table below. The 8/12/94 price is the original contracted (bid) price of applying thermoplastic markings over the new pavement. Note the difference between the bid and final price:

Description	Quantity	Price (8/12/94)	Cost	Price (6/20/95)	Cost
24" Stop Bar	75 lf	\$3.80/lf	\$285	\$18.00/lf	\$1350
Crosswalk	200 lf	\$6.41/lf	\$1281	\$30.00/lf	\$6000
Arrow	4 ea.	\$47.50 ea.	\$190	\$180.00 ea	\$720
<b>Total</b>			<b>\$1756</b>		<b>\$8070</b>

The additional cost is \$6314 for the inlaying of the thermoplastic.

**FOLLOW UP:** The in laid markings will continue to be evaluated with emphasis on durability as compared to the performance of standard thermoplastic applications on other intersections within the Montpelier NH 9530 project.

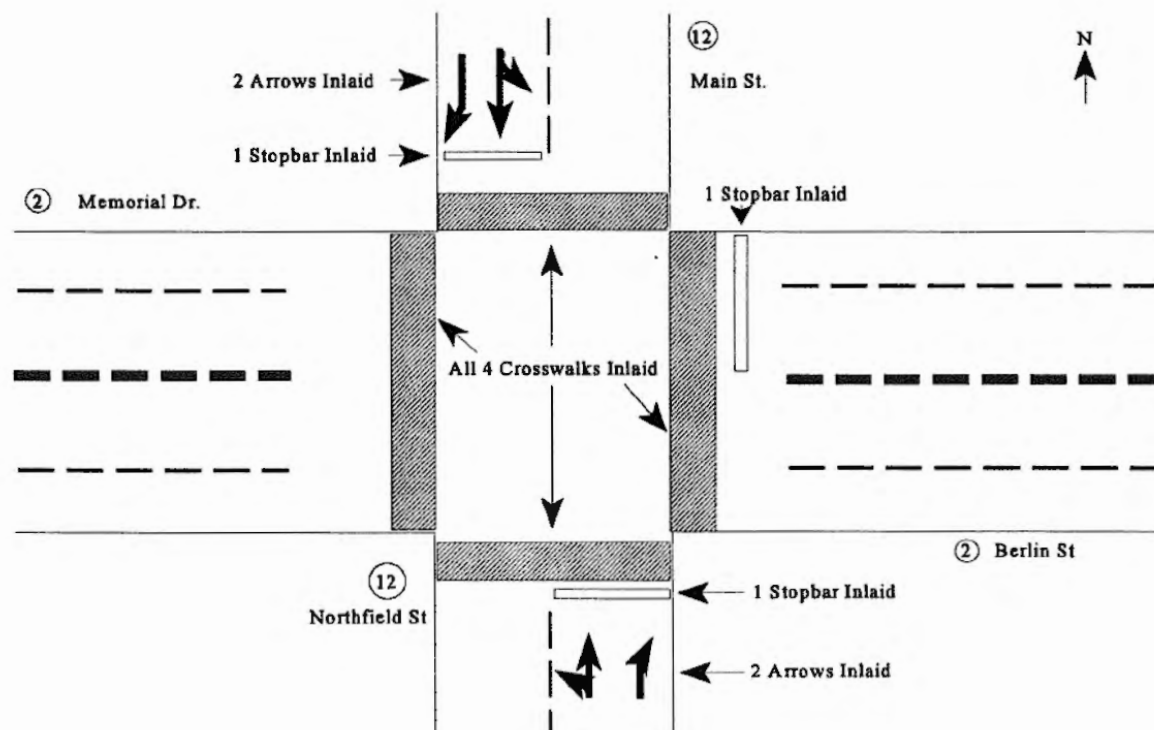


Figure 1



Figure 2 --  
Ground out pavement



Figure 3 --  
Inlaying of material



Figure 4 --  
Cross Section of ground  
out section of pavement

