

OFFICE MEMORANDUM



MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

April 9, 1970

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To: R. L. Greenman
Engineer of Testing & Research

From: L. T. Oehler

Subject: "Liquid Green Lite" 3M's Instant Setting Traffic Paint. Research
Project 69 NM-242, Research Report No. R-736.

Subject project was authorized by memorandum of June 17, 1969 from G. J. McCarthy to H. H. Cooper and R. L. Greenman. This cooperative project with the Traffic and Safety Division was later confirmed by your memorandum to G. J. McCarthy of June 26, 1969, and by H. H. Cooper's to D. E. Orne and J. E. Hobria of July 1, 1969. It was assigned to New Materials Committee for review, which was first made at meeting of August 26, 1969.

Per authorizing memorandum, the cooperative performance testing of subject paint was scheduled for the Detroit area to facilitate use of the special striping equipment owned by the Wayne County Road Commission, required for that application. Both of the Department's traffic paints, Regular Dry and Fast-Dry were placed in the field tests for comparative purposes. The roadway selected for the performance field tests was the 3-lane NB US 24 from Wick Rd northward almost to Michigan Ave.

The test paints were applied on August 12, 1969: all were white. To eliminate the traffic density variable, the three test paints were applied in tandem: 1, 2, 3; 1, 2, 3; etc., in each of the two lane lines, in the standard 20ft:30ft broken-line pattern. To eliminate the variable of residual stripe thickness, the test paints were applied on bare pavement, alongside the old striping. Particulars of the application are sketched in Figure 1. Figure 2 is a photograph taken after stripe application.

For additional test information, the Green Lite paint was applied premixed as furnished, plus an overlay of 2 lb of beads per gallon. It was applied by the required special equipment owned by Wayne County Road Commission. The equipment used two guns to apply both lane lines simultaneously. The two comparison paints, the Department's Regular Dry and Fast Dry, were applied by MDSH equipment, using the standard drop-on bead ratio of 6 lb per gallon. Separate passes were used to apply striping in the two lanes. On the afternoon of paint application, the temperature was about 80 to 85 F, with a sunny sky and a light breeze.

Drying Time and Ratings:

The drying times and ratings (initial and at 1-1/2, 4, and 6 months) are presented in Table 1. The ratings were made by two observers, one each from the Research Laboratory and from Traffic Field Services.

Review of Performance Ratings:

Green Lite had a very fast drying time (< 15 sec) and maintained a good white color. It never showed a night visibility rating better than "fair." Its durability rating over 6 month service was just marginally better than the comparison Fast Dry mainly because of its better comparative performance on Black Top.

MDSH Fast Dry dried in about 3 min and maintained a fair white color. Initially, it showed "very good" night visibility which, however, progressively deteriorated with the durability.

MDSH Regular Dry dried in about 20 min and maintained a fair white color. During the 6 month service test it performed significantly better regards durability and night visibility than the other two tested paints.

Test Comments

This report was prepared by A. J. Permoda, who offers several additional comments, pertinent to these tests:

1. The Green Lite striping, after wear was apparent, sometimes showed a widthwise taper in direction of application, as if the striping machine had difficulty in laying two lines simultaneously.
2. The MDSH Regular Dry striping sometimes exhibited a thickness taper, which affected the early night visibility ratings.
3. The selected US 24 test roadway is difficult to rate under traffic, and is quite removed from Lansing for observation.
4. Several color slides were taken during the ratings and are available for viewing.

Previous Evaluation

An earlier development of subject striping was evaluated by the Department under Research Project 65 NM-138(1) as reported in Research Report No. R-672, dated May 1968. The Report Recommendations read, "In view of

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the varied, but consistently poorer than standard-paint performance of the fast-drying Green Lite striping in three test applications, we recommend that evaluation of the current development be terminated. Etc."

TESTING AND RESEARCH DIVISION

Le Roy T. Oshel

Engineer of Research
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LTO/AJP:sjt

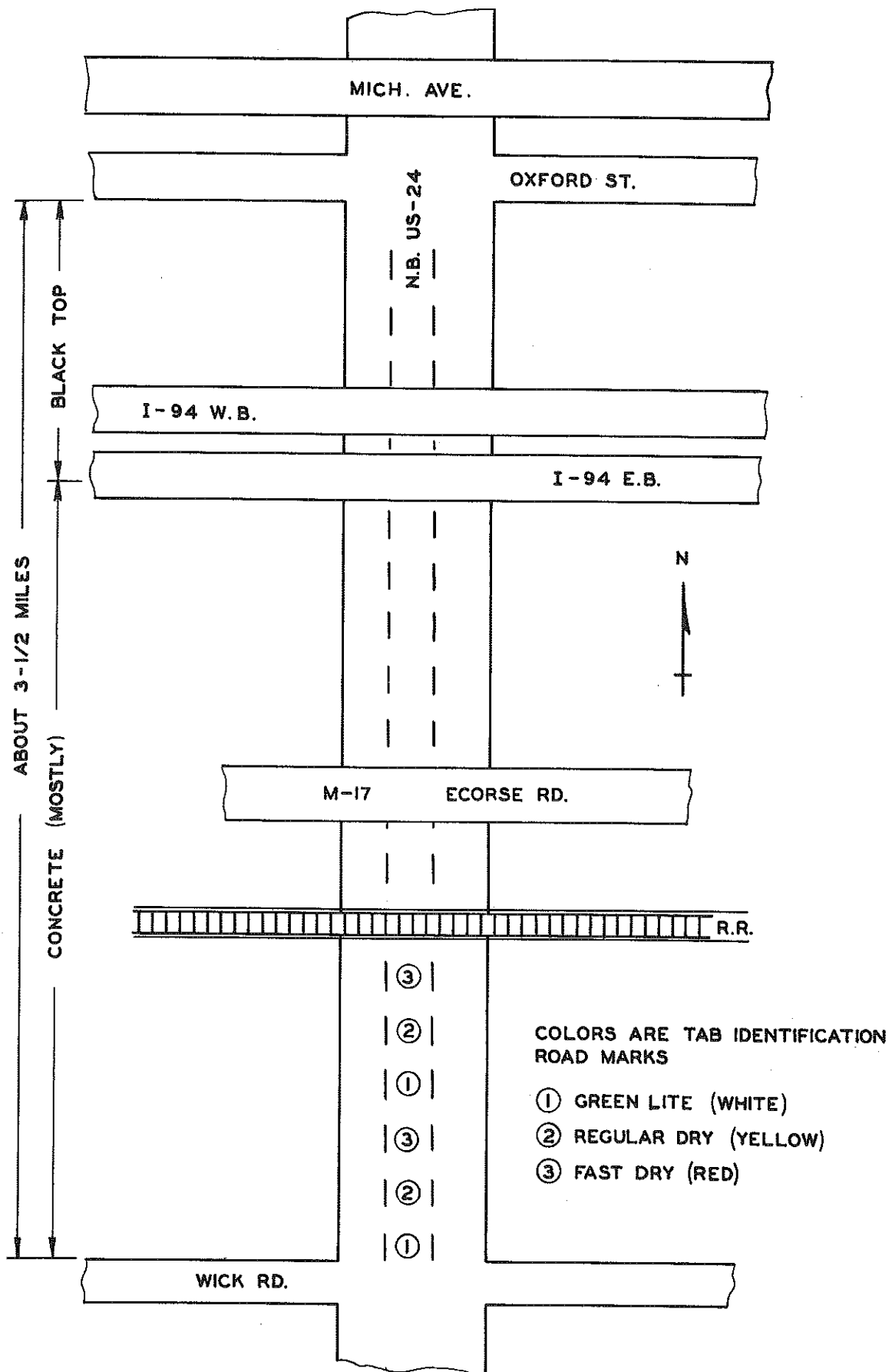


Figure 1. Location and particulars of test stripes on NB US 24 in Detroit.

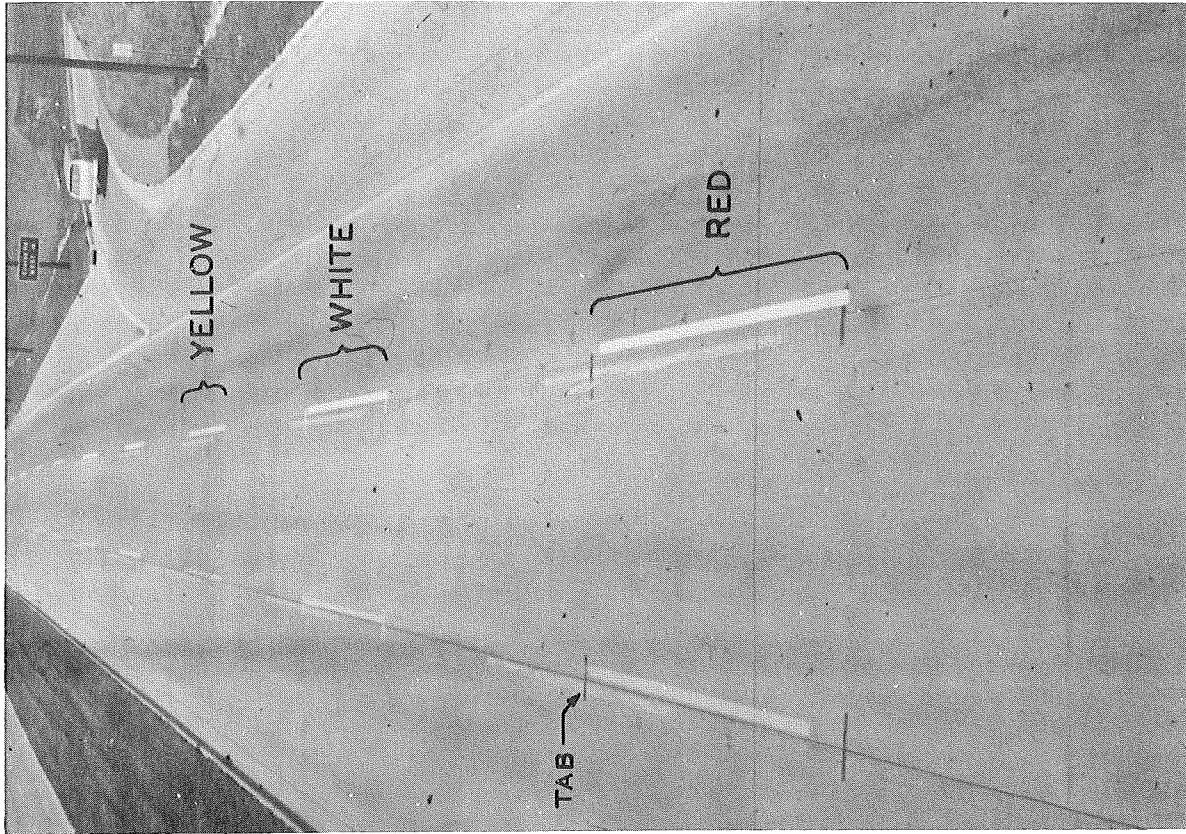


Figure 2. Appearance of stripes after application. The pair of test stripes are laid to the right of the residual lane lines, looking N from S of Ecourse Rd. Longitudinally, red, white, and yellow transverse road tabs identify the test paint.

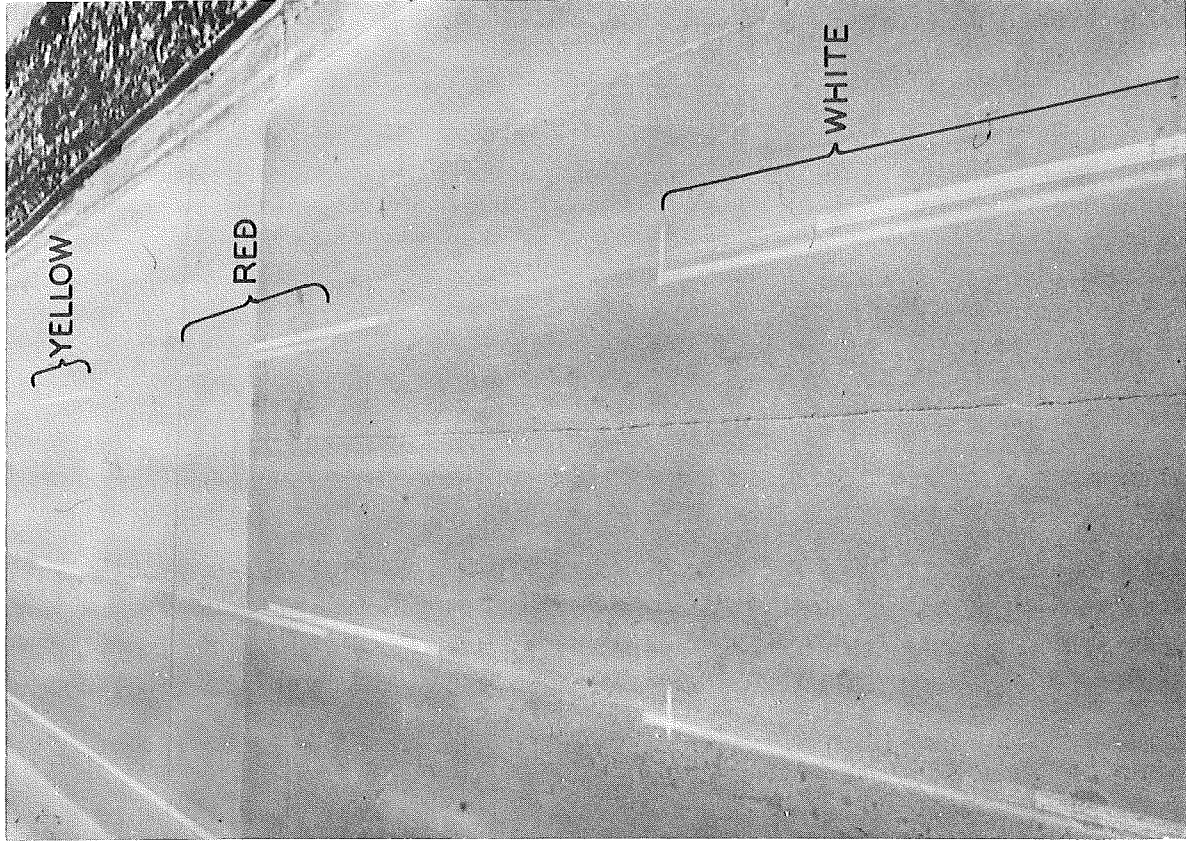


Figure 3. Appearance of test stripes, after 6 months of service, looking S from EB I 94 bridge. Left pair is test couple. The colored paint tabs identify the test traffic paints. The right couples were restriped with standard paint during the test.

TABLE 1
PERFORMANCE OF TEST PAINTS ON US 24

		Green Lite	MDSH Fast Dry	MDSH Regular Dry
Drying Time		less than 15 sec.	about 3 mins.	about 20 mins.
Initial	General Appearance & Durability	Good	Good	Good
	Night Visibility	Fair	Very Good	Good
1-1/2 mo.	General Appearance	Very Good	Good	Good
	Durability	Good	Good	Good
	Night Visibility	Fair	Good to Fair	Good
4 months	General Appearance & Durability	Fair	Fair	Good
	Night Visibility	Fair	Fair	Good
6 months	Durability & Night Visibility*	Poor	Poor	Fair
	Numerical Rating**	2***	1-1/2	5

Notes: * See Figure 3 for view of one area.

** Using scale of 10 (Perfect) to -0 (Complete Wear-away)

*** Green Lite earned on advantage over the Fast-Dry on Black Top surfacing of test area.