

# OFFICE MEMORANDUM



MICHIGAN  
DEPARTMENT OF STATE HIGHWAYS

February 24, 1975

TO: Traffic Control Devices Committee:

D. E. Orne, Chairman  
K. A. Allemeier  
F. G. Annis  
A. Jessen  
W. A. Sawyer

FROM: A. J. Permoda

SUBJECT: 1974 Performance Tests of "Fast-Dry" White and Yellow  
Pavement Marking Paints. Research Project 47 G-36(27a).  
Research Report No. R-957.

For the subject tests, the Department obtained one-drum test quantities of "Fast-Dry" pavement marking paint from producers listed in the Appendix, with the paints meeting requirements of applicable specifications dated April 14, 1971. In addition, the Department obtained 5-gal quantities for application as transverse test lines and 1-gal quantities for reference purposes for the Research Laboratory.

As in previous tests, Traffic Field Services applied the test paints for the road performance tests, transversely across two lanes of a four-lane divided highway. However, the test area was changed from M 78 east of East Lansing to US 27 south of St. Johns (Fig. 1). The applications were made on May 20-22, 1974, which was about ten days earlier than in 1973. The test applicator was the portable Grayco, airless, hot-spray equipment; the same as used the last few years, which was described in the earlier Research Report No. R-798. The tests included some experimental beads, a paint additive, and two chlorinated rubber paints formulated to other State Highway specifications.

Inspections of the test lines were made by members of the regular rating team several days after application, and at periodic intervals thereafter. The respective ratings are listed in Table 1; these ratings are averaged for the three raters and the two locations. The right-hand columns of the Table list the drying times of the paints; those listed under the longitudinal stripe column were determined in accordance with specification requirements by means of an automobile tire, while those listed under transverse stripes were determined in the performance area using the small ASTM tired wheel.

The test stripes were rated over a period of 223 days, about the same as last year's 219 days. Even though we expected that the 1974 test paints would perform better than the 1973 paints because of progressive phasing

out of studded tires in Michigan, this did not occur as shown in graphs of Figure 2. Since last year's M 78 test area and this year's US 27 test area had about the same ADT of 16,000+, and since the participating producers were about the same, we are unable to explain the slightly poorer performance of the paints in the 1974 tests.

#### Committee Meeting

As last year, the Traffic Control Devices Committee met early, on November 15, 1974, to select producers for bids for 1975 roadway striping requirements. The Laboratory submitted then-available performance data. On that basis, the Committee issued bid requests to four producers of white paints and three producers of yellow paint. Since then, the additional final rating was made and those data are incorporated in Table 1.

#### Summary

As mentioned earlier in the report, we are unable to explain the slightly poorer performance of the average of all the standard traffic paints in the 1974 tests, as compared to the 1973 tests.

Regarding the individual standard paints in the current tests: a) The best performing of the paints, No. 7 in white and yellow, was not tendered a bid request because of an unacceptably long drying time.

Regarding experimental features being evaluated in the current tests: a) The paints containing chlorinated-rubber, Nos. 8 and 9 white and No. 8 yellow performed well in the tests though they had unacceptably long drying times; b) the paint additive (also tested previously) again yielded improvement of performance of the same paint, No. 9 vs. No. 10 yellow; c) neither the "Snow-Glo" or polyester-plastic beads improved the performance of the control paint, Nos. 12 and 13 white, respectively, vs. No. 10 white; and d) the graded flotation beads did improve the performance of the control paint, No. 11 vs. No. 10 white, and will be evaluated again in the forthcoming 1975 tests for verification.

TESTING AND RESEARCH DIVISION



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Figure 1. Initial appearance of test stripes on US 27, north of Price Rd, looking north. Right roadway is bituminous while left roadway is concrete. Foreground stripes on the concrete are the white paints (5/24/74).

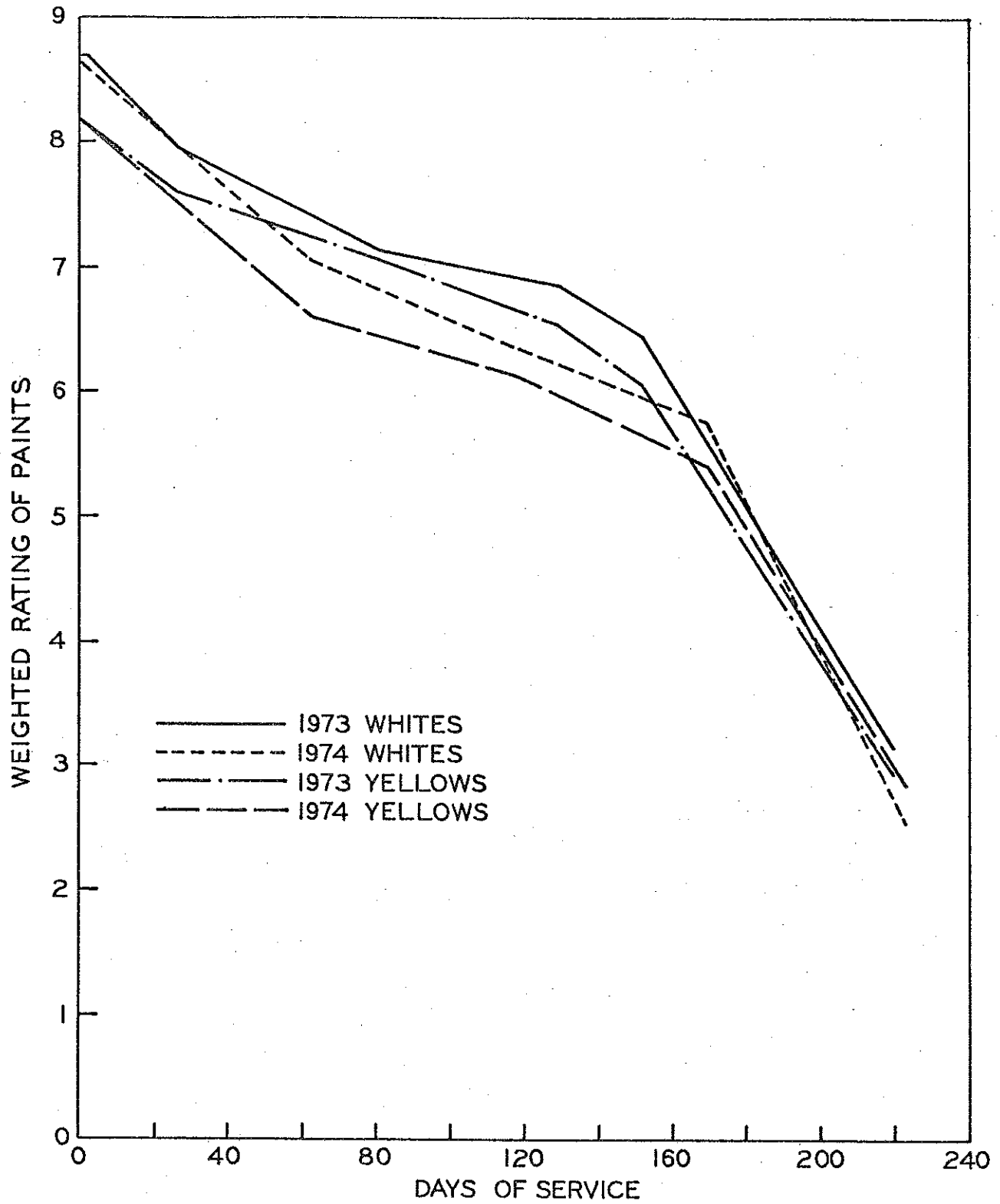


Figure 2. Graphs of Average Weighted Ratings vs Days of Service covering all regular paints, white and yellow, in performance tests in 1973 and 1974.

TABLE 1  
1974 TEST PAINT PERFORMANCE RATINGS

Paint Identification No. <sup>1</sup>	2-Day Rating <sup>2</sup> 5/23/74			63-Day Rating			119-Day Rating			170-Day Rating			223-Day Rating - 12/30/74			Drying Time, min.						
	App	N. V.	W. R.	App	N. V.	W. R.	App	N. V.	W. R.	App	N. V.	W. R.	App	N. V.	W. R.	Service Factor	Longitudinal	Transverse				
	Dur			Dur			Dur			Dur			Dur									
1 - White	9.2	10	7.8	8.8	6.0	7.7	7.1	8.9	5.4	7.0	7.2	9.1	4.8	6.7	4.6	3.6	2.1	3.0	94.0	2-1/4	7	
2 - White	9.0	10	6.9	8.3	3.4	5.0	5.5	6.8	3.2	4.9	4.8	5.3	2.2	3.7	1.6	0.6	0.8	0.8	63.3	3/3	8	
3 - White	9.5	10	7.2	8.6	5.6	7.4	7.1	8.6	5.2	6.8	7.3	8.7	4.0	6.2	4.4	3.2	2.1	2.8	90.3	2-3/4	5-1/2	
4 - White	9.0	10	7.6	8.7	7.3	9.7	4.9	7.1	9.0	4.9	6.8	7.8	8.8	3.8	6.2	5.1	3.9	2.8	3.4	90.6	1-1/2	4
5 - White	8.8	10	6.9	8.3	7.7	9.5	6.4	7.8	9.0	5.6	7.2	7.4	8.3	4.8	6.5	3.8	3.0	3.0	3.1	93.6	3-1/4	6
6 - White	8.5	10	8.2	9.0	6.5	7.2	5.4	6.2	5.0	5.5	4.8	4.7	3.4	4.1	2.2	1.5	1.0	1.3	70.9	2	6-1/2	
7 - White	8.2	10	7.4	8.5	6.5	9.8	7.6	8.4	6.5	9.0	6.6	6.2	8.5	5.8	6.9	5.0	4.4	3.2	3.9	100.0	5	15
8 - White, Exp <sup>4</sup>	8.8	10	6.5	8.1	6.5	9.5	7.0	8.0	6.5	8.8	6.0	7.2	8.9	5.7	7.1	5.4	4.6	3.6	4.2	97.8	15	15
9 - White, Exp <sup>4</sup>	9.8	10	5.9	7.9	7.5	9.4	6.3	7.7	6.6	8.5	6.0	6.7	7.9	5.0	6.3	4.6	3.6	2.6	3.2	92.1	15	15
10 - White, Exp <sup>4</sup>	9.0	10	7.6	8.7	7.2	9.3	5.3	7.1	6.1	8.4	4.2	6.1	3.8	5.4	3.3	2.0	1.6	1.9	83.0	2-1/2 <sup>5</sup>	4-1/2	
11 - White, Exp <sup>4</sup>	9.2	10	7.4	8.6	7.8	9.6	6.0	7.6	7.5	8.9	4.8	7.8	8.6	3.8	6.1	4.9	3.6	2.6	3.2	91.0	4-1/2	4-1/2
12 - White, Exp <sup>4</sup>	9.2	10	4.4	7.1	7.5	9.7	4.2	6.7	7.5	8.8	4.0	6.2	8.3	3.5	5.8	4.3	2.8	2.4	2.8	81.4	4-1/2	4-1/2
13 - White, Exp <sup>4</sup>	9.5	10	5.1	7.5	7.8	9.4	3.3	6.2	7.4	8.5	3.5	5.9	8.0	3.1	5.5	4.2	3.7	1.6	2.7	78.0	4-1/2	4-1/2
1 - Yellow	9.2	10	7.8	8.8	7.2	8.2	4.6	6.3	7.7	8.6	4.4	6.4	7.6	4.1	6.2	5.8	4.2	2.9	3.7	80.4	3	3
2 - Yellow	9.0	10	6.2	8.0	7.4	9.0	3.9	6.3	7.8	3.8	6.2	7.0	8.4	3.2	5.6	4.2	4.3	2.5	3.4	75.7	2-1/4 <sup>3</sup>	7-1/2
3 - Yellow	9.8	10	6.6	8.3	7.8	9.6	5.2	7.2	7.5	8.8	4.8	6.6	8.2	4.2	6.1	4.6	3.8	1.9	2.9	81.5	2-1/4	7
4 - Yellow	9.5	10	6.4	8.1	7.6	8.0	4.8	6.3	6.6	7.0	4.4	5.6	7.1	3.8	5.4	4.7	2.4	2.1	2.5	72.4	2	3-3/4
5 - Yellow	9.0	10	5.8	7.8	6.9	9.6	4.9	7.0	6.4	8.0	4.9	6.3	7.2	3.9	5.5	3.5	1.5	1.5	1.7	74.9	5	4-3/4
6 - Yellow	8.8	10	6.5	8.1	5.0	5.7	4.0	4.8	4.5	4.1	3.1	3.7	3.8	2.4	2.4	1.5	0.4	0.2	0.4	49.1	2	5-1/2
7 - Yellow	8.8	10	7.4	8.6	6.0	8.9	8.3	8.3	6.5	9.0	6.9	7.7	5.3	5.6	5.9	5.5	4.4	3.8	4.2	89.7	6	12
8 - Yellow, Exp <sup>4</sup>	9.3	10	9.2	9.6	7.4	9.8	8.5	8.9	6.8	9.0	7.0	7.8	7.2	8.8	6.9	7.7	6.0	5.0	3.9	100.0	4-3/4	15
9 - Yellow, Exp <sup>4</sup>	9.2	10	7.5	8.3	7.4	9.8	7.2	8.3	7.0	8.9	5.9	7.2	6.7	5.8	7.0	4.7	4.3	2.4	3.4	90.2	7	7
10 - Yellow, Exp <sup>4</sup>	9.8	10	6.5	8.2	7.6	9.7	4.3	6.8	7.4	9.0	4.0	6.3	7.6	8.8	3.5	6.0	5.8	4.8	2.6	80.1	2-1/2 <sup>5</sup>	4

<sup>1</sup> Identification listed in Appendix A

<sup>2</sup> Ratings: App = appearance, Dur = durability, N. V. = night visibility, W. R. = weighted rating

<sup>3</sup> Paint had undesirable poor applicability

<sup>4</sup> Exp = experimental

<sup>5</sup> 1973 Test Data