R-340

1959 TRAFFIC PAINT PERFORMANCE TESTS
Cooperative Tests with City of Detroit

Traffic Paint Subcommittee
A. J. Permoda, Chairman

Research Laboratory Division
Office of Testing and Research
Report No. 340
Research Project 47 G-36(12a)

Michigan State Highway Department
John C. Mackie, Commissioner
Lansing, August 1960

1959 TRAFFIC PAINT PERFORMANCE TESTS
Cooperative Tests with City of Detroit

This project was discussed, in a broad sense, at a January 29, 1959, meeting in Lansing of Departmental and City of Detroit personnel gathered to review standards governing intra-city highway striping in Detroit.

Subsequently the extent of the Department's cooperation with the City of Detroit in applying its performance striping was defined at a meeting of Traffic Control Devices Committee members as reported in letter of February 3, 1959, from W. W. McLaughlin to H. G. Bauerle. The letter's instructions were that:

1. "The Highway Department would loan to the City of Detroit our equipment to put down their pavement marking paint test stripes and would furnish an operator to assist in putting them down.
2. "The Department Traffic Paint Subcommittee would make joint observations and evaluations of the test stripes.
3. "The Traffic Paint Subcommittee would take samples of all traffic paint included in city of Detroit testing program and would furnish them to the Highway Research Laboratory."

Points 1 and 3 of above instructions were complied with on June 23-24, 1959, when Departmental equipment and operators applied Detroit's paint

stripes as reported by letter of June 25, 1959, to W. W. McLaughlin from A. J. Permoda. As in the 1957 tests, the paint stripes were deposited in one area only, on sheet asphalt surfacing, standard for Detroit, in that city's performance test area on Oakland Avenue, about two blocks north of Six Mile Road. Figure 1 shows the white paint test section directly after deposition of striping. The quality of application was inspected by Commissioner J. H. Kettle and Secretary M. F. Klang of Detroit's Department of Purchases and Supplies, with E. A. Finney of the Research Laboratory Division.

Detroit supplied 23 white and 19 yellow paints for the tests, with the Department furnishing as controls one additional white and yellow which were the paints purchased for highway striping in 1959. These paints were applied to the roadway as triplicate transverse stripes at a 15-mil thickness. Two of the three stripes were unbeaded, and one was beaded by drop-on application with beads supplied by Detroit; the ratio was the standard 6 lb per gal of paint. Samples of paints furnished by Detroit were brought to the Laboratory for possible future reference.

Point No. 2 of above instructions, relative to paint observations, was carried out by Traffic Paint Subcommittee members with evaluations at standard three-month intervals over a period of one year.

Evaluation of service of both the beaded and unbeaded test stripes was based on appearance, durability, and night visibility, as is done in standard

highway performance areas, with the weighted rating and service factor values calculated in the customary manner.

The averaged quality values and the weighted rating values for the individual paints, as beaded and unbeaded stripes, are tabulated for all field observations in Tables 2 and 3, as are their terminal service factor values. Figure 2 shows the condition of some white stripes after one year's exposure.

RESULTS OF FIELD PERFORMANCE TESTS

Table 1 presents summary information on the test paints which were identified only by number, as Detroit never did release producer information. Another column in Table 1 presents results of qualification tests run by Detroit. One-year service factor values for the beaded and unbeaded stripes are also given in Table 1 for each of the test paints, as are their comparative standings based on terminal service factors.

Complementary information on service factor ratings compiled for half-year and full-year exposures for each of the test paints is presented graphically in Figures 3 and 4.

An examination of these graphs and the test data in the "Comparative Standing" columns of Table 1 shows that glass-bead reflectorization of test traffic paints significantly improved the service factor of exposed striping. On the average the service factor of beaded yellow paints was

equal at the one-year level to that of unbeaded striping at the half-year exposure level, the increase of service factor due to beading was not constant for the test paints but tended to be higher for the higher rating paints, and about half of the better rating traffic paints submitted to City of Detroit for performance testing compared favorably in service, under the specific conditions existing in its test area, with the two control paints submitted by the Department.

CONCLUSIONS

In compliance with instructions, the Department assisted the City of Detroit in depositing its 1959 performance traffic paints. Subsequent evaluation of this striping by the Traffic Paint Subcommittee gave results which augmented and complemented "Conclusions" made in Report No. 299A covering 1957 Traffic Paint Tests, cooperative with Detroit.

Under the specific conditions of the tests these conclusions were:

1. Glass-bead reflectorization significantly increased the service factor of test traffic paints.

2. Increase of service factor of test paints due to reflectorization was higher for the higher rating paints.

3. About half of the better rating paints, submitted to Detroit for performance testing in 1959, compared favorably with the two control paints submitted by the Department.

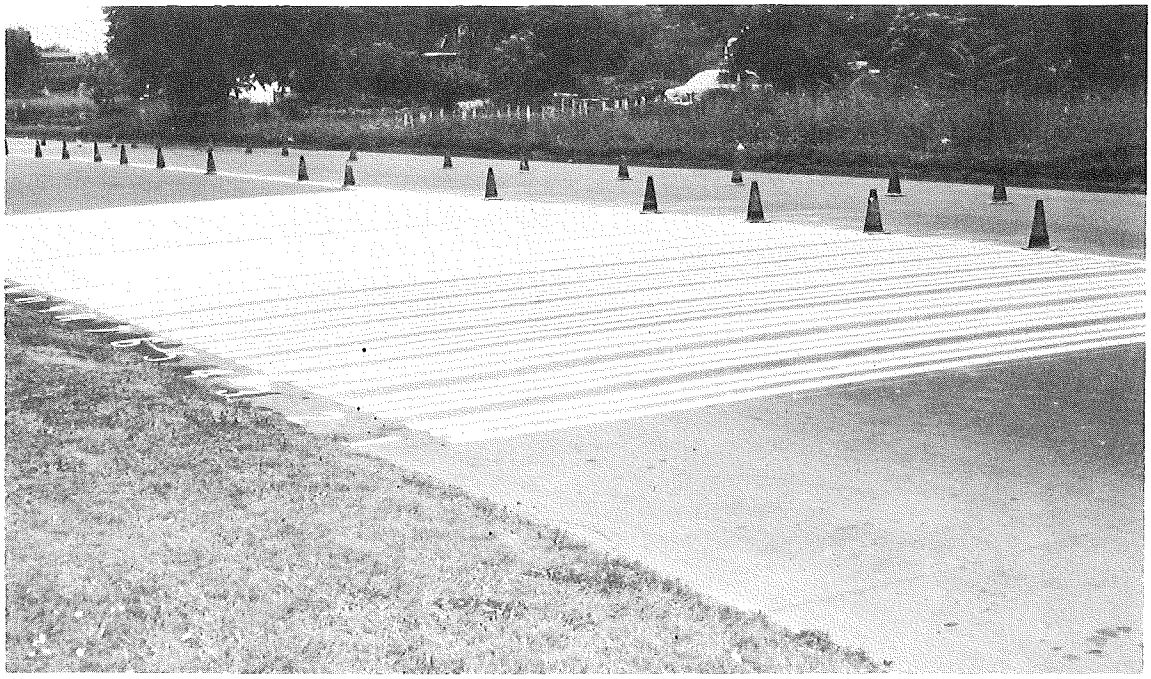

Figure 1. White paints directly after deposition in Detroit's test section.

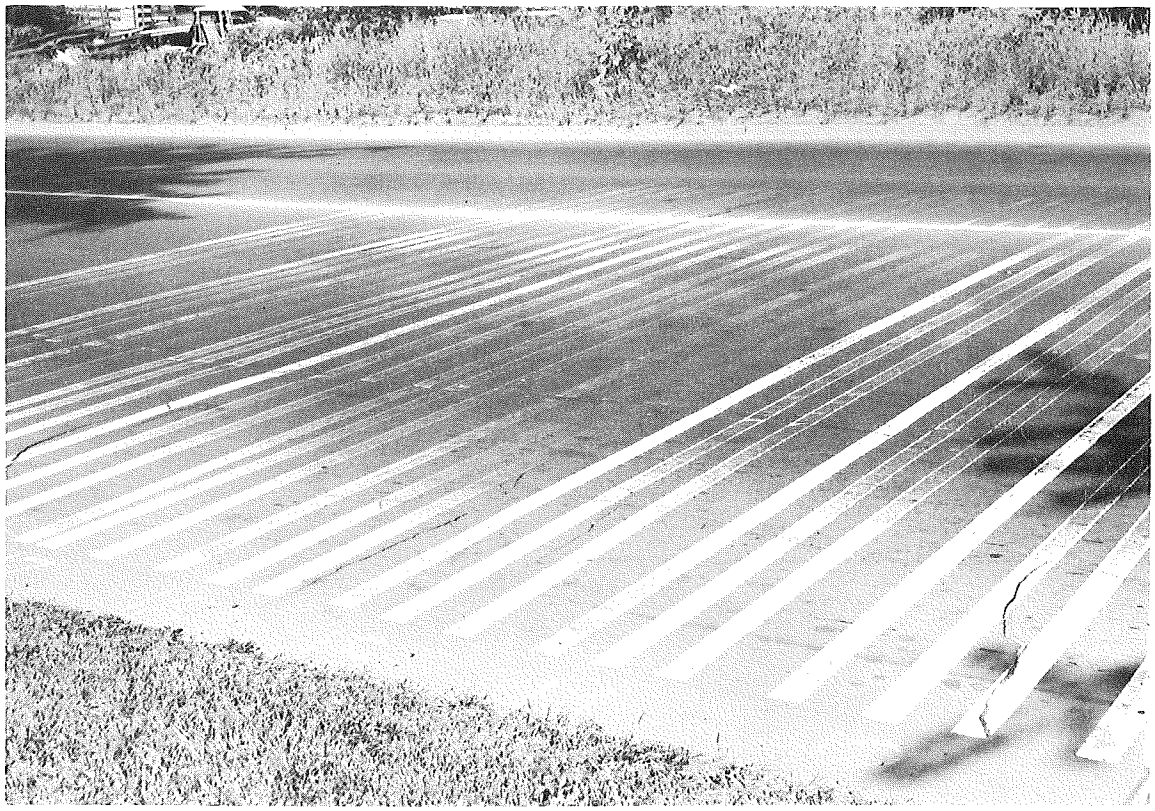

Figure 2. Some white test stripes after one year of exposure. The left stripe of each series of three stripes is reflectorized.

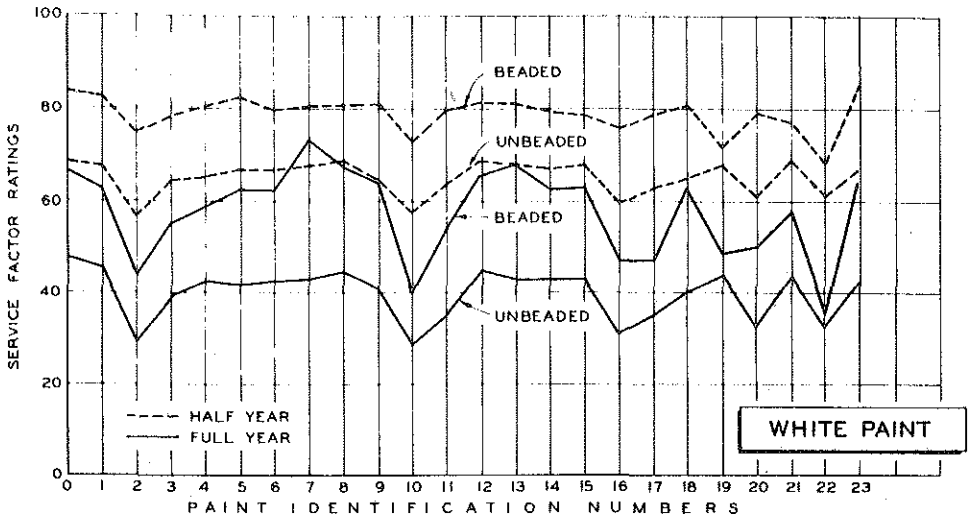

Figure 3. Half-year and full-year service factor ratings of white test paints.

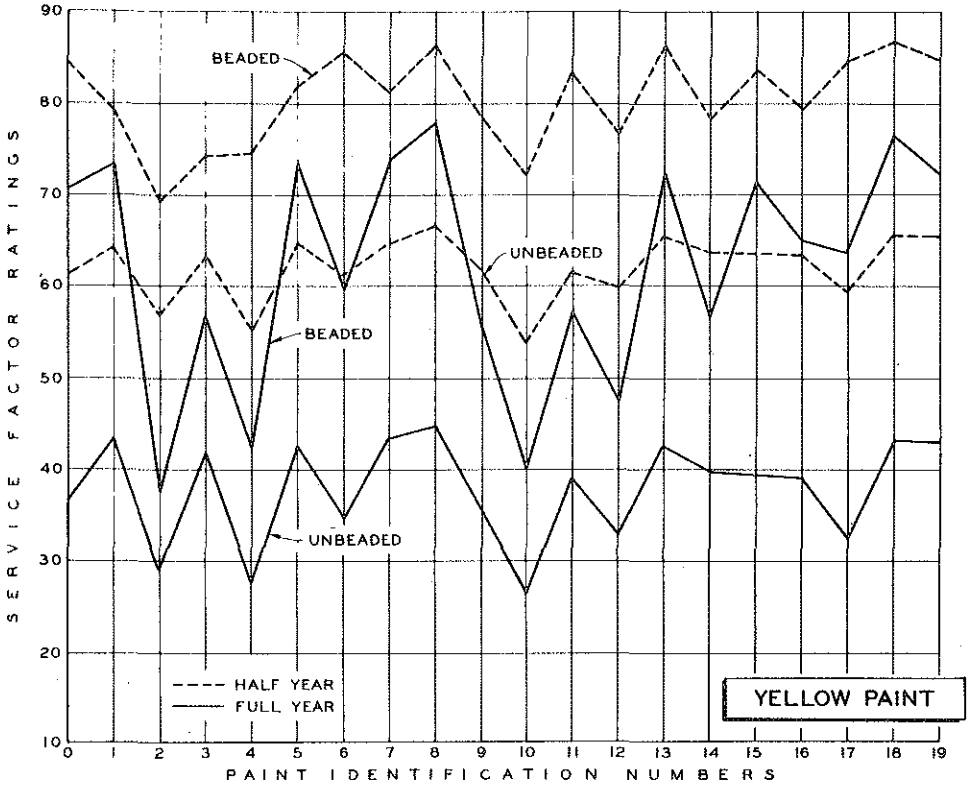

Figure 4. Half-year and full-year service factor ratings of yellow test paints.

TABLE 1
SERVICE FACTORS AND TERMINAL RATINGS
1959 Detroit Performance Stripes

WHITE PAINTS

Paint Identification Number*	Qualification Tests**	One Year Service Factor		Comparative Standing	
		Beaded	Unbeaded	Beaded	Unbeaded
0	P	66.8	47.6	4	1
1	P	62.9	45.2	8	2
2	P	43.9	29.3	22	23
3	P	55.0	39.0	16	17
4	P	58.6	42.4	14	12
5	P	62.2	41.4	11	14
6	P	62.0	42.3	13	13
7	NP(1)	73.1	42.8	1	8
8	P	67.1	44.3	3	4
9	NP(1)	63.7	40.5	7	15
10	NP(1)	39.7	28.1	23	24
11	NP(1)	54.1	34.9	17	18
12	P	65.3	44.8	5	3
13	P	67.9	42.5	2	9
14	NP(1)	62.1	42.4	12	11
15	P	62.8	43.0	10	7
16	P	46.8	30.8	20	22
17	P	46.4	34.9	21	19
18	P	62.3	40.0	9	16
19	P	48.1	43.6	19	6
20	P	49.9	32.4	18	20
21	P	57.2	43.7	15	5
22	NP(2)	35.4	32.2	24	21
23	P	63.9	42.5	6	10

YELLOW PAINTS

Paint Identification Number*	Qualification Tests**	One Year Service Factor		Comparative Standing	
		Beaded	Unbeaded	Beaded	Unbeaded
0	P	70.5	36.5	9	13
1	P	73.2	43.3	5	3
2	P	37.3	29.0	20	18
3	P	56.9	41.8	14	8
4	NP(3)	42.4	27.4	18	19
5	P	73.4	43.3	4	4
6	NP(1)	59.6	34.6	12	15
7	P	73.8	43.4	3	2
8	P	77.9	44.8	1	1
9	P	55.9	35.9	16	14
10	NP(1)	40.0	26.2	19	20
11	NP(3)	57.3	38.9	13	12
12	P	47.2	32.7	17	16
13	P	72.4	42.4	6	7
14	P	56.4	39.7	15	9
15	P	71.6	39.4	8	10
16	NP(1)	65.0	38.9	10	11
17	NP(1)	63.8	32.2	11	17
18	NP(1)	76.5	43.2	2	5
19	P	72.4	43.0	7	6

* Paint Identification Numbers used by Detroit; Producer's identity not given. No. 0 paint supplied by Department.

** Qualification Ratings made by Detroit: P = Passing; NP = Not Passing
(1) Excessive drying time.
(2) Excessive bleeding.
(3) Improper color match.

TABLE 2
1959 Detroit Test Stripes
Traffic Count = about 23,000 Vehicles per Day

WHITE PAINTS

Exposure Days	Beading	Factor Evaluated	Stripe Number																					
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
7	None	General Appearance	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.7	10.0	
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	4.3	4.3	4.3	4.0	4.3	4.3	4.3	4.3	4.3	4.3	4.7	4.3	4.3	4.3	4.3	4.3	3.3	4.3	3.3	4.0	4.7	4.3	4.7	4.0
		Weighted Rating	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.1	7.4	7.2	7.2	7.2	7.2	7.2	6.6	7.2	6.6	7.0	7.4	7.2	7.3	7.0
	Drop-on	General Appearance	8.7	9.7	8.3	9.3	9.3	8.7	8.3	8.0	9.0	8.7	8.3	9.3	9.7	9.7	9.3	9.7	10.0	9.3	10.0	10.0	9.7	10.0	9.7	9.7
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	8.7	6.0	5.7	5.3	6.0	7.0	5.3	6.0	5.3	5.3	5.3	5.0	5.0	5.0	5.3	5.0	5.0	5.7	5.0	4.3	5.7	5.0	9.3	5.7
		Weighted Rating	9.2	8.0	7.7	7.6	7.9	8.4	7.5	7.8	7.6	7.4	7.5	7.4	7.5	7.5	7.6	7.5	7.5	7.8	7.5	7.2	7.8	7.5	9.6	7.8
91	None	General Appearance	8.3	9.3	7.7	8.3	8.3	8.0	8.0	7.0	8.3	7.3	6.7	8.3	8.3	8.3	7.3	8.7	8.0	7.3	8.7	8.7	7.3	7.7	4.0	5.0
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	4.7	4.3	4.3	4.3	4.3	4.3	4.7	4.7	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	5.0	4.7
		Weighted Rating	7.2	7.1	6.9	7.0	7.0	7.0	7.2	7.0	7.3	7.1	7.0	7.2	7.2	7.2	7.1	7.2	7.2	7.1	7.2	7.2	7.1	7.1	6.9	7.2
	Drop-on	General Appearance	4.7	6.0	3.7	6.3	6.0	5.7	5.7	5.3	6.3	6.0	4.7	6.7	6.7	6.7	6.0	6.7	6.7	5.3	6.3	8.7	6.0	6.7	4.0	6.0
		Durability	10.0	10.0	10.0	9.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	7.3	7.7	7.7	6.7	6.0	7.0	7.0	6.7	7.0	7.3	8.0	7.0	7.3	7.3	6.7	6.3	6.0	8.7	7.0	5.3	8.0	6.3	5.3	8.7
		Weighted Rating	8.1	8.4	8.2	7.9	7.9	8.3	8.1	7.9	8.1	8.2	8.5	8.2	8.3	8.3	8.0	7.8	7.7	8.9	8.1	7.5	8.2	7.7	8.3	8.4
170	None	General Appearance	7.7	6.7	1.3	5.3	6.0	6.0	6.7	7.7	7.7	5.7	1.0	4.3	7.3	7.0	6.3	7.3	2.7	4.3	6.0	7.3	3.0	7.7	3.3	6.7
		Durability	7.7	7.3	1.3	5.7	6.7	6.7	7.0	7.7	8.0	6.0	1.0	4.7	8.0	7.3	7.0	7.0	2.7	4.7	6.3	7.7	3.2	8.0	3.7	7.2
		Night Visibility	3.7	3.7	1.0	3.0	3.0	3.0	3.0	3.3	3.3	2.7	1.0	2.3	3.7	3.3	3.3	3.3	2.0	2.0	3.0	3.3	1.7	3.7	2.0	3.3
		Weighted Rating	5.7	5.4	1.2	4.3	4.8	4.8	5.0	5.5	5.6	4.3	1.0	3.5	5.8	5.3	5.1	5.2	2.4	3.3	4.6	5.5	2.4	5.8	2.8	5.2
	Drop-on	General Appearance	7.0	7.0	3.3	7.0	6.7	7.0	7.0	6.0	7.3	7.7	3.3	7.3	8.0	8.0	7.3	8.0	6.0	6.7	7.3	7.3	6.0	6.3	3.3	7.0
		Durability	9.3	9.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	5.0	9.0	9.0	9.0	9.0	9.0	8.0	8.0	9.0	8.2	7.3	8.7	3.7	9.0
		Night Visibility	7.0	7.7	5.0	7.3	8.0	7.7	8.0	8.7	8.3	8.3	4.0	7.7	8.0	7.7	7.8	7.7	7.3	3.7	8.3	4.3	5.7	7.0	2.0	8.0
		Weighted Rating	7.9	8.2	5.6	8.0	8.3	8.2	8.3	8.6	8.5	8.5	4.3	8.2	8.4	8.3	8.2	8.2	7.4	5.7	8.5	6.2	8.3	7.6	2.8	8.3
267	None	General Appearance	3.0	2.5	0.5	1.0	2.0	1.5	1.5	1.5	1.5	1.5	0.0	0.5	2.0	1.5	1.5	1.5	0.0	1.0	1.5	2.0	0.5	1.5	0.0	1.5
		Durability	3.0	2.0	0.5	1.0	1.5	1.5	1.5	1.5	1.5	1.5	0.0	0.5	2.0	1.5	1.5	1.5	0.0	1.0	1.0	1.5	0.5	1.5	0.0	1.5
		Night Visibility	1.5	1.5	0.5	1.0	1.5	1.0	1.0	1.5	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0	1.0
		Weighted Rating	2.2	1.8	0.5	1.0	1.6	1.2	1.2	1.5	1.2	1.2	0.0	0.2	1.5	1.2	1.2	1.2	0.0	0.5	1.0	1.3	0.2	1.2	0.0	1.2
	Drop-on	General Appearance	5.5	4.5	0.5	2.5	3.5	4.5	5.0	7.5	6.0	5.0	0.0	2.5	5.5	6.5	4.0	5.0	1.0	1.0	4.0	2.5	2.0	3.5	0.0	4.0
		Durability	5.5	4.5	0.5	2.0	2.5	3.5	4.0	7.0	6.0	4.5	0.0	2.0	5.0	5.5	4.0	4.5	1.0	1.0	4.0	2.5	2.0	3.5	0.0	4.0
		Night Visibility	4.0	3.5	0.5	2.5	3.0	3.5	3.0	6.5	4.0	4.0	0.0	1.5	4.5	5.0	4.0	4.5	0.0	0.5	3.5	1.5	1.0	3.0	0.0	4.0
		Weighted Rating	4.8	4.0	0.5	2.3	2.8	3.6	3.6	6.8	5.0	4.3	0.0	1.8	4.8	5.4	4.0	4.6	0.5	0.8	3.7	2.0	1.5	3.2	0.0	4.0
363	None	General Appearance	2.5	1.5	0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	1.5	1.0	1.0	0.0	0.0	1.0	1.5	0.0	1.0	0.0	1.0
		Durability	2.0	1.5	0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.0	1.0
		Night Visibility	1.0	1.0	0.0	0.3	1.0	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.5	0.8	0.8	0.8	0.0	0.0	0.5	0.8	0.0	0.3	0.0	0.5
		Weighted Rating	1.6	1.2	0.0	0.4	1.0	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.8	0.4	0.9	0.9	0.0	0.0	0.6	1.0	0.0	0.4	0.0	0.8
		1 yr. Service Factor	47.6	45.2	29.3	39.0	42.4	41.4	42.3	42.8	44.3	40.5	28.1	34.9	44.8	42.5	42.4	43.0	30.8	34.9	40.0	43.6	32.4	43.7	32.2	42.5
	Drop-on	General Appearance	4.0	3.0	0.0	1.5	2.5	3.0	3.5	6.0	4.5	2.5	0.0	1.0	3.0	4.5	3.0	2.5	0.0	0.0	3.0	1.5	0.5	2.5	0.0	2.5
		Durability	3.5	2.5	0.0	1.5	2.0	2.5	3.5	5.5	4.0	2.5	0.0	1.0	3.0	3.5	2.5	2.5	0.0	0.0	3.0	1.0	0.5	2.0	0.0	2.0
		Night Visibility	3.0	1.5	0.0	1.0	1.5	2.0	2.5	3.5	3.0	2.0	0.0	0.5	2.0	3.5	2.5	2.0	0.0	0.0	2.0	0.8	0.3	1.5	0.0	1.5
		Weighted Rating	3.3	2.0	0.0	1.2	1.8	2.3	3.0	4.6	3.6	2.2	0.0	0.8	2.5	3.6	2.6	2.2	0.0	0.0	2.5	1.0	0.4	1.8	0.0	1.8
		1 yr. Service Factor	66.8	62.9	43.9	55.0	58.6	62.2	62.0	73.1	67.1	63.7	39.7	54.1	65.3	67.9	62.1	62.8	46.8	46.4	62.3	48.1	49.9	57.2	35.4	63.9

TABLE 3
1959 Detroit Test Stripes
Traffic Count = about 23,000 Vehicles per Day

YELLOW PAINTS

Exposure Days	Beading	Factor Evaluated	Stripe Number																	
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
6	None	General Appearance	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	4.3	3.7	4.3	3.7	3.7	4.0	4.0	3.3	4.0	3.3	3.0	3.3	3.7	4.0	4.0	3.7	4.0	3.7	4.3	4.0
		Weighted Rating	7.2	6.9	7.2	6.9	6.9	7.0	7.0	6.7	7.0	6.7	6.5	6.6	6.8	7.0	7.0	6.9	7.0	6.8	7.2	7.0
	Drop-on	General Appearance	9.0	10.0	9.7	10.0	10.0	9.7	10.0	10.0	10.0	9.7	9.0	8.7	9.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	6.3	5.3	6.0	4.7	5.0	5.3	6.0	5.0	7.3	5.3	4.3	6.3	5.3	6.0	5.0	5.0	5.0	5.0	7.0	5.7
		Weighted Rating	8.0	7.6	8.0	7.4	7.5	7.6	8.0	7.5	8.6	7.6	7.0	8.0	7.6	8.0	7.5	7.5	7.5	7.5	8.5	7.8
90	None	General Appearance	9.0	8.3	7.3	5.7	8.7	8.3	8.7	9.0	8.7	8.7	9.0	5.7	9.3	9.0	9.3	9.3	9.7	9.3	8.0	9.0
		Durability	10.0	10.0	10.0	9.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		Weighted Rating	6.9	6.8	6.7	6.4	6.9	6.8	6.9	6.9	6.9	6.9	6.9	6.6	6.9	6.9	6.9	6.9	7.0	6.9	6.8	6.9
	Drop-on	General Appearance	8.0	7.3	5.3	5.0	7.3	7.3	7.7	8.0	7.3	8.0	6.3	4.3	8.3	8.3	9.0	8.7	9.2	8.7	7.0	8.8
		Durability	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		Night Visibility	7.3	6.3	7.3	5.7	7.0	7.0	8.0	7.0	7.7	6.0	8.3	8.3	6.3	8.0	6.0	7.3	6.3	8.0	8.3	7.7
		Weighted Rating	8.4	7.9	8.2	7.4	8.2	8.2	8.8	8.3	8.6	7.8	8.8	8.6	8.0	8.8	7.9	8.5	8.1	8.9	8.8	8.7
170	None	General Appearance	4.7	7.0	2.0	7.7	1.3	7.0	4.7	7.0	7.7	6.0	.67	5.3	4.7	7.0	6.7	6.3	6.3	4.3	6.7	7.0
		Durability	4.3	7.0	2.3	8.0	1.3	7.3	5.0	7.7	8.7	6.3	1.0	7.3	4.7	7.7	7.0	7.0	6.5	4.7	8.3	7.0
		Night Visibility	2.3	3.0	1.3	3.0	1.0	3.0	2.0	3.0	3.0	2.0	.67	2.7	1.3	3.0	2.0	2.3	2.0	1.0	2.7	8.0
		Weighted Rating	3.3	5.0	1.8	5.5	1.2	5.1	3.5	5.3	5.8	4.1	.80	4.8	3.0	5.3	4.5	4.6	4.2	2.8	5.3	2.7
	Drop-on	General Appearance	7.0	7.0	3.0	6.7	4.3	7.7	7.7	6.7	7.3	7.3	3.7	5.7	6.7	8.7	7.3	8.3	8.3	8.0	7.7	7.7
		Durability	9.0	9.0	3.7	8.3	6.0	9.3	9.3	9.3	9.3	8.7	4.7	9.0	7.3	9.3	8.0	9.3	9.3	9.3	9.3	9.3
		Night Visibility	9.2	8.0	2.7	7.3	5.7	8.3	8.3	8.0	8.5	8.0	4.1	8.0	6.9	8.5	8.0	8.8	7.0	8.3	8.3	8.5
		Weighted Rating	8.9	8.3	3.1	7.6	5.7	8.6	8.6	8.4	8.7	8.2	4.1	8.3	7.0	8.8	7.9	9.0	8.0	8.8	8.7	8.7
267	None	General Appearance	1.5	2.5	0.0	1.5	0.0	2.5	0.5	2.5	2.0	1.0	0.0	1.5	0.5	2.0	1.5	1.5	1.0	0.5	2.5	2.5
		Durability	1.5	2.5	0.0	1.5	0.0	2.0	0.5	2.0	2.0	0.5	0.0	1.0	0.5	1.5	1.5	1.0	1.0	0.5	2.0	2.0
		Night Visibility	1.0	1.5	0.0	1.5	0.0	1.5	0.5	1.5	1.5	0.5	0.0	1.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
		Weighted Rating	1.2	2.0	0.0	1.5	0.0	1.8	0.5	1.8	1.8	0.6	0.0	1.1	0.2	1.3	1.2	1.0	1.0	0.2	1.6	1.6
	Drop-on	General Appearance	6.0	7.5	0.5	3.5	0.0	6.5	3.0	7.0	7.5	3.0	0.5	2.5	1.0	5.5	3.0	6.5	5.0	4.0	6.5	6.0
		Durability	5.5	7.0	0.5	3.5	0.0	7.0	3.0	7.0	7.5	2.5	0.5	2.5	1.0	5.5	3.0	6.0	5.5	4.0	6.5	6.0
		Night Visibility	5.0	6.5	0.0	4.0	0.0	6.5	2.0	6.5	6.5	2.5	0.0	2.0	0.5	6.5	2.5	6.0	5.0	3.5	7.0	6.0
		Weighted Rating	5.3	6.8	0.2	3.8	0.0	6.7	2.5	6.8	7.0	2.6	0.2	2.2	0.8	6.0	2.8	6.0	5.2	3.8	6.8	6.0
363	None	General Appearance	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.5	1.0	1.0	0.0	1.0	1.0
		Durability	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.8	0.0	1.0	0.5	0.8	0.8	0.0	1.0	1.0
		Night Visibility	0.0	1.0	0.0	0.3	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.5	0.0	0.8	0.3	0.3	0.5	0.0	0.8	0.8
		Weighted Rating	0.0	1.0	0.0	0.7	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.7	0.0	0.9	0.4	0.6	0.7	0.0	0.9	0.9
		1 yr. Service Factor	36.5	43.3	29.0	41.8	27.4	43.3	34.6	43.4	44.8	35.9	26.2	38.9	32.7	42.4	39.7	39.4	38.9	32.2	43.2	43.0
	Drop-on	General Appearance	3.5	5.5	0.0	2.0	0.0	5.5	1.5	5.0	6.0	1.0	0.0	1.0	0.0	3.5	2.0	3.5	3.0	2.0	6.0	4.5
		Durability	3.5	5.5	0.0	2.0	0.0	4.5	1.0	5.0	6.0	1.0	0.0	1.0	0.0	3.5	2.0	3.8	3.0	2.0	6.0	4.5
		Night Visibility	4.0	5.0	0.0	1.0	0.0	4.0	1.0	5.0	5.0	1.0	0.0	1.0	0.0	3.0	1.0	3.0	2.0	2.0	4.0	3.0
		Weighted Rating	3.8	5.2	0.0	1.5	0.0	4.4	1.0	5.0	5.5	1.0	0.0	1.0	0.0	3.2	1.5	3.4	2.5	2.0	5.0	3.8
		1 yr. Service Factor	70.5	73.2	37.3	56.9	42.4	73.4	59.6	73.8	77.9	55.9	40.0	57.3	47.2	72.4	56.4	71.6	65.0	63.8	76.5	72.4