

R-267

MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

1956

PERFORMANCE TESTS
ON WHITE AND YELLOW TRAFFIC PAINT

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Highway Research Project 47 G-36 (9)
Progress Report 1

Research Laboratory
Testing and Research Division
Report No. 267
October 22, 1956

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PERFORMANCE TESTS
ON WHITE AND YELLOW TRAFFIC PAINT

During the period of August 15-22, 1956 the transverse stripes for all traffic paints included in the 1956 performance tests were applied in four test sections. According to established practice, the test sections included two concrete roadways and two bituminous concrete roadways.

Twenty-four paints were put down, one white and one yellow from each of eleven producers plus one California composition-specification white traffic paint, and one yellow experimental paint formulated by the laboratory. The sources of the test paints were as follows:

1. Baltimore Paint and Color Works, Baltimore.
2. Buckeye Paint and Varnish Company, Toledo.
3. Cook Paint and Varnish Company, Detroit.
4. Franklin Paint Company, Franklin, Massachusetts.
5. Glidden Company, Cleveland.
6. Jaegle Paint and Varnish Company, Philadelphia.
7. L. K. R. Chemical Company, Detroit.
8. Minnesota Mining and Manufacturing Co., St. Paul.
9. Patterson-Sargent Company (BPS), Detroit.
10. Prismo Safety Corporation, Huntingdon, Pennsylvania.
11. Truscon Laboratories, Detroit.
12. California Division of Highways, White, Type IV Specification;
MSHD No. 12A Yellow Experimental Traffic Paint.

Michigan State Highway Specifications for white and yellow traffic paint, revised June 15, 1956, governed the procurement of the paints applied in the 1956 performance tests. These specifications were revised by action of the traffic paint committee in its meeting on June 15, 1956. In conformance with these specifications which require reflectorizing beads to be applied by the "drop-in" method only, all of the 1956 performance test paints except 3M Centerlite had their bead complement dropped on. Improved 3M Centerlite white and yellow paint was supplied as a premix and is to be considered as an experimental paint in the performance sections: It received Michigan Specification Type III beads as an overlay at the rate of two pounds per gallon of paint. Prismo Lifeline paint received its own "drop-in" duck spheres while all other performance paints received Michigan Specification Type III beads at the rate of six pounds per gallon of paint.

Mr. E. A. Finney arranged for an exchange of white traffic paint with the California Division of Highways, which furnished its current Type IV composition-specification paint, based on a Parlon-Pentalyn-Chlorinated paraffin vehicle. The California paint was applied in all four test areas. An

experimental MSHD No. 12A traffic paint was also applied in all four test areas. This paint continues our experimentation with a yellow traffic paint based on a Parlon-Alkyd vehicle.

The four 1956 performance test sections are located as follows:

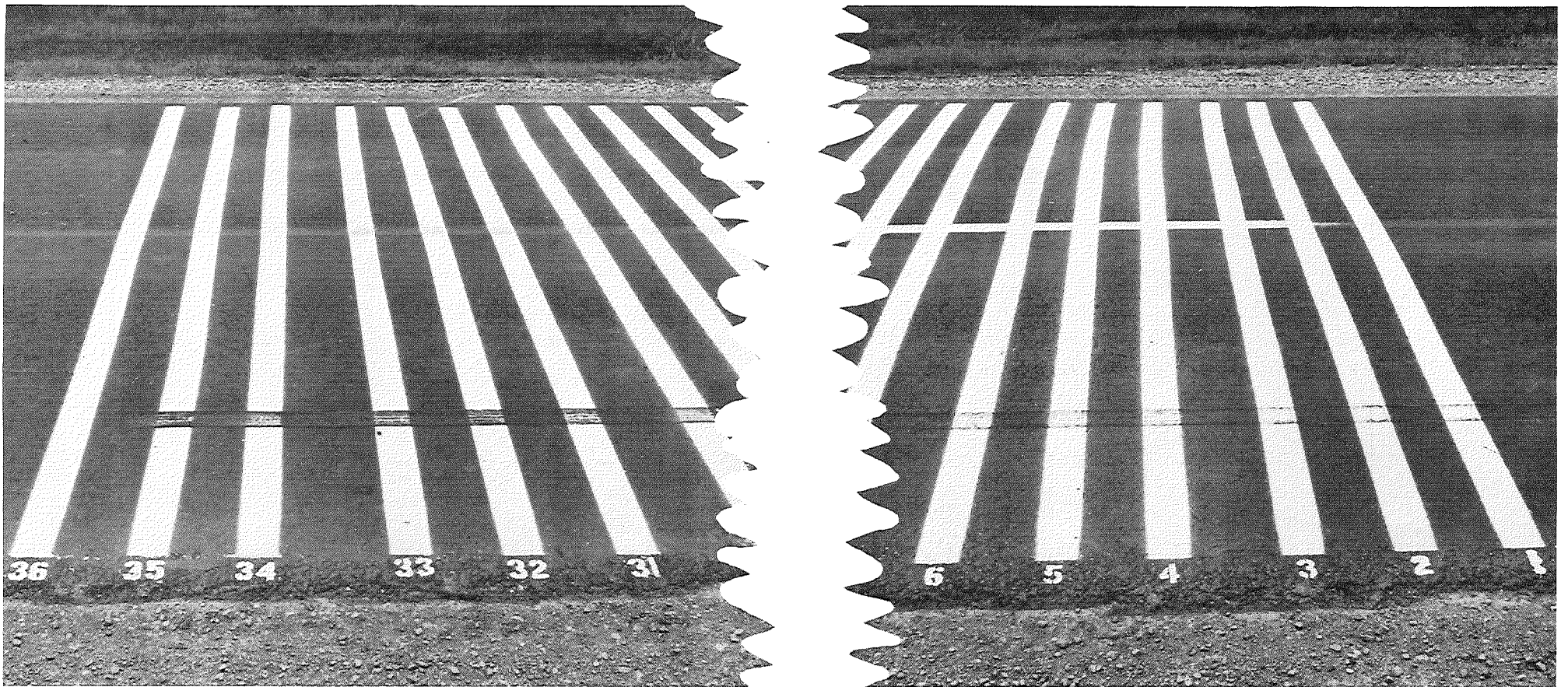
1. US-27, 3 miles south of St. Johns, concrete, west roadway.
2. US-27, 3 miles south of St. Johns, bituminous, east roadway.
3. US-127, between Miller Road and Pennsylvania Avenue extension, concrete, east roadway.
4. US-16, 0.2 miles west of Okemos-Haslett Road, bituminous, north lanes.

Three stripes of a test paint were applied in each test area. The test stripes were identified only by number which increased consecutively in the order of application. The order of application of the test paints in the four areas was again rotated to compensate for any inequalities arising from differences in the time of application. All paints were applied as transverse, 4-inch wide stripes across two lanes of highway, traffic and passing, in the test areas. Since no specific stripe thickness recommendations were received from any of the producers, all test paints were applied at the rate of 16.5 gallons per mile (15 mil wet-film thickness).

In the deposition of the 1956 transverse stripes the spray machine transmission setting was the same, 14.9 mils, for all performance paints except 3M Centerlite, a premix paint. Weight checks were taken only once on each paint in the entire series. The weight deviation from the calculated amount should theoretically represent the evaporation of volatiles from the paint in the process of deposition, and should vary in the different paints. These weight deviations are given in the accompanying table.

Detailed observations were again made by Research Laboratory personnel during the application of these paints including air temperature and relative humidity, atomization pressure, drying time and stripe width. A summary of these values is given in the attached table.

No difficulty was experienced in depositing the paints in any of the test sections. Some trouble was experienced in Section 2 bituminous when some "hot-rod" enthusiast used the white paint section as an acceleration test track and cut a tire lane through the paints, about two days after paint application, as shown in Figure 1. Ratings, however, can be continued in that section. Initial evaluation of the performance stripes in the test sections has been completed and will be tabulated in a final report with subsequent evaluations.



**FIGURE 1. SECTION 2 BITUMINOUS, WHITE STRIPES,
SHOWING TIRE CUT MADE ABOUT TWO DAYS AFTER DEPOSITION OF STRIPE**

SUMMARY OF APPLICATION DATA

		Code No.	Stripe No.	Time	Air Temp. °F.	R. H. %	Drying Time Min.	Wt. Diff. %	Weather Comments		
T E S T A R E A ① US - 27, 3 MILES SOUTH OF ST. JOHNS, CONCRETE, 22 FEET, WEST ROADWAY.	8-22-56	120	1- 3	1:33	70	51	55	-2.8	Overcast and Windy	WHITE	
		102	4- 6				20				
		110	7- 9				94	-8.2			
		100	10-12				40				
		104	13-15				60	-3.5			
		114	16-18				45				
		93	19-21				28	-6.8			
		112	22-24				22				
		98	25-27			71	41	-7.6			
		116	28-30			56	37				
		106	31-33				40	-4.9			
		108	34-36	2:51			33				
		8-22-56	109	1- 3	10:36	69	72	38	-0.9	Overcast and Windy	YELLOW
			115	4- 6				32	-2.9		
			111	7- 9				86	-1.4		
			113	10-12				41			
			101	13-15		69	72	35	-2.9		
			105	16-18				52			
			99	19-21				26	-3.8		
			119	22-24				33			
			103	25-27				41	-6.9		
		107	28-30				36				
		118	31-33				20	-7.4			
		117	34-36				46	-4.3			
		121	37-39	11:52	74	58	51				
T E S T A R E A ② US - 27, 3 MILES SOUTH OF ST. JOHNS, BITUMINOUS, 18 FEET, EAST ROADWAY.	8-21-56	108	1- 3	10:32	67	75	22	-1.4	Clear, with light Wind	WHITE	
		110	4- 6				57				
		112	7- 9				20	+1.7			
		114	10-12				29	-6.4			
		116	13-15				24	-7.6			
		106	16-18				20	-1.0			
		102	19-21				13	-3.8			
		104	22-24				35				
		93	25-27				21				
		100	28-30			72	27	-4.6			
		98	31-33			57	17				
		120	34-36	11:49			38				
		8-21-56	121	1- 3	1:37	69	58	59	-4.1	Clear, with light Wind	YELLOW
			118	4- 6				17			
			117	7- 9				49	+0.9		
			115	10-12				64			
			111	13-15				64			
			113	16-18				29	-6.8		
			101	19-21				25			
			105	22-24				34	-6.1		
			107	25-27				29	-2.5		
		103	28-30				38				
		99	31-33				27				
		119	34-36				16	-2.0			
		109	37-39	2:56	72	61	31				

SUMMARY OF APPLICATION DATA

		Code No.	Stripe No.	Time	Air Temp. °F.	R. H. %	Drying Time Min.	Atom. Pressure psi.	Weather Comments		
T E S T A R E A ③ US-127, BETWEEN MILLER ROAD AND PENNSYLVANIA AVENUE, CONCRETE, WEST ROADWAY.	8-15-56	98	1-3	10:34	76	74	42	60	Overcast, with Light Wind	WHITE	
		100	4-6				35	30			
		102	7-9		81	80	21	25			
		104	10-12				42	25			
		106	13-15				39	25			
		108	16-18				29	25			
		110	19-21				81	25			
		112	22-24		80	68	38	25			
		114	25-27				40	25			
		116	28-30				34	25			
		93	31-33				29	25			
		120	34-36	12:57	74	95	57	40			
		8-16-56	121	1-3	10:26	82	80	70	40	Overcast, with Light Wind	YELLOW
			111	4-6				77	30		
			113	7-9				25	30		
			115	10-12				43	50		
			117	13-15				43	30		
			118	16-18				27	30		
			99	19-21	12:38	86	70	31	30		
			101	22-24				41	35		
		103	25-27				29	20			
		105	28-30				32	30			
		107	31-33				45	30			
		109	34-36	1:24	87	66	44	35			
T E S T A R E A ④ US-16, 0.2 MILES WEST OF OKEMOS - HASLETT ROAD, BITUMINOUS, NORTH ROADWAY.	8-20-56	120	1-3	1:48	68	85	58	45	Overcast, with Light Wind	WHITE	
		116	4-6				35	25			
		114	7-9	2:06	71	86	41	25			
		112	10-12				36	25			
		110	13-15				61	25			
		106	16-18				28	35			
		104	19-21				45	25			
		102	22-24				21	35			
		100	25-27				32	30			
		98	28-30				42	60			
		93	31-33				26	35			
		108	34-36	3:19	68	85	27	25			
		8-20-56	109	1-3	10:15	66	71	40	35	Overcast, with Light Wind	YELLOW
			107	4-6				43	30		
			105	7-9				45	30		
			103	10-12				46	20		
			101	13-15				36	35		
			111	16-18	11:12	68	67	83	30		
			99	19-21				31	30		
			118	22-24				22	30		
		117	25-27				50	30			
		115	28-30				45	55			
		113	31-33				33	30			
		121	34-36	12:14	64	85	96	40			