

Reviewed by:

R.F. Cauley
 Robert F. Cauley
 Materials and Research
 Engineer



Prepared by:

Craig Graham
 Craig Graham
 November 20, 1995

RESEARCH UPDATE

Update U95-12

THERMOPLASTIC PAVEMENT MARKINGS IN VERMONT

REFERENCE: Report 95-2

HISTORY: During 1994, a detailed inspection was conducted on all projects that had been striped with thermoplastic markings in 1992 and 1993. The inspection was a windshield survey, and was accomplished by a single employee. Along with these inspections, applications of new thermoplastic material were also observed on 26 projects during the 1994 construction season. The results of the 1994 inspection were documented in Report 95-2. Some projects were resurveyed throughout the summer of 1995. Two employees usually were present during the inspections, and they used the procedure outlined in Research Report 95-2. The ratings on the 1992 and 1993 projects follow:

1992 AND 1993 PROJECTS				
RATINGS	'94	%	'95	%
Excellent	2	11	1	6
Good-Excellent	3	16	2	11
Good	7	39	11	60
Fair-Good	1	6	1	6
Fair	2	11	2	11
Poor-Fair	1	6	1	6
Poor	2	11	0	0
Total	18	100	18	100



VT 66 Applied 1992

Some of the differences can be attributed to the difference in opinions between the 1994 and 1995 inspectors. Generally, the ratings agreed with each other, with a 67 to 78% majority falling into the 'good' or better categories. As stated in Report 95-2, 64% of 76 projects were rated in these categories in 1994. According to these figures, it can be stated that thermoplastic markings are performing satisfactorily in terms of durability.

Twenty-five of the twenty-six projects that were observed during 1994 were found to be in the 'good' or better categories. It is expected that these ratings will become more widely scattered after a few seasons.

RETROREFLECTIVITY: The Federal Highway Administration is considering a minimum requirement of 150 millicandellas of retroreflectivity for white markings. The following table summarizes retroreflectivity values obtained on 11 selected projects completed during the past four years. All values are in millicandellas (mcdl):

RETROREFLECTIVITY				
Year Marked	White Edge Line	Range	Yellow Center Line	Range
1995	353	266 - 396	144	128 - 160
1994	220	184 - 312	95	87 - 102
1993	197	145 - 223	105	95 - 116
1992	160	125 - 204	118	109 - 126

The most dramatic decrease in reflective values occurs after the first winter maintenance season. Each succeeding year the values drop gradually, but not as much as during the first winter. Notice that after three years of wear and winter maintenance the average retroreflective values are still above the proposed FHWA limit of 150 mcdl. Currently, Vermont uses a limit of 130 mcdl. Based on this limit the 1992 projects should see at least one more year of acceptable retroreflectivity.

PHOTOGRAPHIC ANALYSIS: Photographs, one of which is part of this report, were taken at nine retroreflectivity test areas during 1995. These will be compared with photographs taken in 1996 and beyond.

FOLLOW-UP: Overall, thermoplastic pavement markings are still performing satisfactorily throughout Vermont. Certain problem areas do exist, but most of the material on the roads appears to be performing well.