PAVEMENT MARKING RESTRIPING STRATEGY FOR ODOT DISTRICT 11

BACKGROUND

This study was initiated by ODOT to evaluate the performance of four pavement marking materials (fast dry traffic paint, polyester, extruded thermoplastic and epoxy) in order to determine which materials are most suitable for the environmental and traffic conditions in District 11. The main focus of this study was to evaluate the performance of fast dry traffic paint and polyester as restriping materials; however, epoxy and thermoplastic were included in the evaluation for comparison purposes.

RESEARCH CONTEXT

The primary objectives of this project was to develop a pavement marking material selection matrix for use by ODOT District 11 that will assist the district's decision makers in selecting the most cost-effective and durable pavement marking materials.

RESEARCH APPROACH

The four marking materials were installed at 11 test sites distributed across the district on two-lane and four-lane highways having a variety of pavement types, pavement geometries, and traffic volumes. The performance of the pavement markings was evaluated for a period of two years in terms of dry retroreflectivity, daytime color, and durability. Laboratory test procedures were also included to examine the quality of the glass beads used in this study. The field performance results were analyzed to determine the service life of the various marking materials and estimate the cost of different restriping strategies.

RESEARCH FINDINGS AND RECOMMENDATIONS

Based on the findings, it was recommended to continue to use epoxy on new asphalt and concrete surfaces in District 11 and to use traffic paint for restriping applications. For two-lane roads with asphalt surfaces, it was recommended to restripe the edge lines every two years and restripe the centerlines every year. On selected roads with sharp curves that slope towards the Ohio River, it was recommended to restripe the centerlines as well as the edge lines on an annual basis to avoid run-off road crashes. For multi-lane roads with asphalt surfaces, it was recommended to restripe locations with low traffic and good pavement condition every two years and restripe all lines at locations with high traffic (ADT greater than or equal to 10,000 vehicles per day) or rough pavement condition (pavement condition rating (PCR) less than 80) every year. For all roads with concrete surfaces, it was recommended to restripe all lines every year regardless of the traffic level and pavement condition.

INITIAL PERFORMANCE

- Initial retroreflectivity was close to or exceeded ODOT requirements for all markings, except for yellow polyester.
- In addition, yellow polyester barely met ODOT color requirements.

SERVICE LIFE

- Service life for epoxy and thermoplastic markings was greater than 4 years.
- Service life for polyester was greater than 2 years for nearly all white lines and less than 1 year for most yellow lines.
- Service life for traffic paint was greater than 2 years for nearly all white lines and less than 2 years for some yellow lines.

RECOMMENDED STRATEGY

- Implementation of the recommended restriping strategy in District 11 would cost approximately $4 million, a savings of $1.5 million as compared to restriping all lines every year with traffic paint.
- One material that is increasingly being used in Ohio is spray thermoplastic. District 11 is encouraged to look into using this less expensive material instead of epoxy on new asphalt surfaces.

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