

**USE OF THE DIGITAL IMAGE ANALYSIS IN
DETERMINATION OF DETERIORATION OF
THERMOPLASTIC ROAD MARKING**

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DECLARATION OF THE CANDIDATE AND SUPERVISOR

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ABSTRACT

Road safety is a major component of the highway sector and it should be well considered in highway planning, designing, construction and maintenance. The visibility of road marking is essential for efficient traffic flow and road safety. There are complaints that road markings of many roads in Sri Lanka have poor visibility and no effective remarking process in action. The major reason for the poor visibility is the low reflection levels of road markings. The visible area of road marking is the main factor for visibility. It is necessary to determine the deterioration patterns of road marking to maintain adequate remaining area of road marking on the road surface.

However, there is no guideline or methodology available for road agencies in Sri Lanka to follow when deciding road marking repainting period. It is difficult to allocate funds, resource management along with stock material, manpower and machinery utilization in the most effective manner without a well-established guideline.

The main objectives of this research are to obtain a comprehensive study of digital image analysis in determination of deterioration of lane marking, identify the optimum frequency of time for repainting in urban roads and introduce a guideline for repainting of road marking while integrating the guideline that can be used as a program to a road database thereby a road management tool as a future implementation.

The measurements are taken in the selected section on Colombo - Horana (B084) road, Etulkotte - Mirihana - Kohuwela 120) road, Galagedera - Horana (B123) and Colombo - Galle -Hambanthota - Wellawaya (A002) road. Digital images are captured over a considerable period of time for analyzing purposes. A relationship between the time period and the remaining area of paint is developed based on digital photo-based measurements. The software of "ImageJ" is used to analyze digital photos. The relationships in between percentages of remaining areas of road marking on all types of lanes with respect to time period are found by using digital image analysis. The behavior of road marking wearing pattern is also be found relevant to the type of lane marking with respect to time period.

Keywords: Road safety, Road marking remaining area, Deterioration, Digital image

DEDICATION

This study is wholeheartedly dedicated to my beloved parents and family, who have been my source of inspiration and gave me strength when I thought of giving up. To my son, husband, brother, sisters, relatives, supervisor, members of evaluation committee, friends, and classmates who shared their words of advice and encouragement to finish this study. And finally, I dedicated this study to the nature, thank you for the guidance, strength, power of mindlessness, protection and skills.

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LIST OF ABBREVIATIONS

Abbreviation	Description
RDA	Road Development Authority
ADT	Average Daily Traffic
RL	Coefficient of retro-reflect ed Luminance
A 002	Colombo- Galle – Hambanthota – Wellawaya road
B084	Colombo Horana road
B120	Ethul Kotte – Mirihana – Kohuwala road
B123	Galagedara – Horana road
NTPEP	National Transportation Product Evaluation Program