QUALITY CONTROL ASPECTS OF ASPHALT CONCRETE SURFACE REGULARITY

S.Gnanasekaran

(06/8849)

Master of Engineering in Highway & Traffic Engineering

Department of Civil Engineering

University of Moratuwa

Sri Lanka

March 2010

QUALITY CONTROL ASPECTS OF ASPHALT CONCRETE SURFACE REGULARITY

S.Gnanasekaran

(06/8849)

Thesis submitted in partial fulfillment of the requirements for the Degree of Master of Engineering in Highway & Traffic Engineering.

Department of Civil Engineering

University of Moratuwa

Sri Lanka

March 2010

DECLARATION OF THE CANDIDATE

"I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any University or other institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text"

…… Signature

…… Date

DECLARATION OF THE SUPERVISOR

"I have supervised and accepted this thesis for the submission of the degree"

……. …….

Signature of the Supervisor Date

DEDICATION

This report is dedicated to my parents.

ACKNOWLEDGEMENTS

I am grateful to my supervisor Dr. W.K.Mampearachchi for all the help and encouragement given throughout the period of research and especially for the advice and direction to prepare my report. His devotion in the subject of Asphalt concrete is also acknowledged.

My gratitude is extended to Road Development Authority, Director General, Director Planning and his staff for giving me valuable assistance in completing this study.

My sincere thanks are to the University of Moratuwa for the services provided during my research period. I wish to thank the Road Development Authority for sponsoring and granting me leave to follow up this degree course.

22nd March, 2010.

ABSTRACT

The purpose of this study is to set an initial road smoothness specification for asphalt concrete overlaid roads in Sri Lanka and to find out the road roughness when the road satisfies the regularity requirement which is given in the Standard Specifications for Construction and Maintenance of Roads and Bridge (SSCM) Published in 1989.

Numbers of newly asphalt overlaid roads in various parts of Sri Lanka were surveyed using Vehicle Mounted Bump Integrators and corresponding International Roughness Indices (IRI) were derived. The change of roughness for a short period was also observed. Asphalt overlaid roads with various undulations were surveyed for roughness with Bump Integrator (BI) and the same locations were run with straight edge to measure bump and dip.

Smoothness specifications which are currently in use in other countries are taken into consideration. The outcome of roads of those countries as a result of setting a smoothness target is also discussed.

This study revealed that it is practical to set an initial roughness value in terms of IRI when the roughness is measured with BI and the roughness does not change drastically in a short period. Also, it is revealed that the maximum tolerance of surface regularity given the SSCM published in 1989 results a higher IRI value.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES