DETERMINATION OF OPTIMUM NOMINAL AGGREGATE SIZE FOR SINGLE SURFACE DRESSINGS

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Abstract

Surface dressings are used as a road maintenance activity as well as a surfacing of a newly constructed road. One of the main decisions to be taken in designing a dressing is the selection of appropriate aggregate size. Improper selection of aggregate size could tarnish the performance of a surface dressing. The aim of this study is to find the optimum size of aggregate for a single surface dressing especially in Sri Lankan Macadam roads.

General size of aggregate for a particular surface dressing could be found using commercial traffic volume and surface hardness of the road based on TRRL method. But the aggregate sizes selected in above simple method have shown inconsistent results. Therefore tests should be carried out to find most appropriate size for the surface dressings.

Three sizes of aggregate were selected using above simple check for the tests. Three different surface dressings from different aggregate sizes were done. Binder type kept constant and binder rate changed according to the chip size. The performances of these three surface dressings were evaluated by measuring aggregate removal rate and skid resistance of the seal.

Digital photographs of demarcated locations in surface dressings of different chip sizes were taken at pre determined time intervals. The numbers of aggregate were counted in each photo after certain time interval and using this data, the behavior of each surface dressing over a period of time can be studied. The aggregate size that could keep highest area of aggregate intact in its dressing would be a more durable chip size.

The next aspect of checking performance of the dressing is the skid resistance. The techniques utilized to measure this value are Locked wheel test and Sand patch

method. The main- aim of skid resistance testing was to compare three sizes of aggregate and see how they respond to skidding. It was found that 9.5mm nominal size performed better in durability aspect and 12.5mm performed better in skid resistance aspect.

Declaration

"I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university to the best of my knowledge and believe it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations"

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Supervisor

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Table of Contents

List of Figures

List of Tables