"INTRODUCTION TO MODIFIED BINDER IN STRUCTURAL BASE COURSE LAYERS"

Project submitted to

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In

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1.0 INTRODUCTION

1.1 GENERAL

The best way to build a durable and long lasting structure such as a road pavement is to start with a solid foundation. The designing of a road with a strong base course can provide the load-bearing capacity needed to handle heavy axle loads. Strong base course also provides the load-spreading ability to relieve stresses and strains coming on to the wearing course placed above it.

1.2 NEED OF STUDY

The primary objective of the study undertaken is to evaluate the engineering properties of modified bitumen and mixes and by using "modified binder" in the structural layers like DBM and to find the potential benefits compared to the conventional binders.

1.3 OBJECTIVES

- To determine optimum bitumen content (OBC) of the dense bituminous concrete mix by Marshall Method of bituminous mix design using CRMB55 & PMB40.

- DBM specimens are cast at OBC and to subject the same to performance test such as rutting, moisture sensitivity evaluation & fatigue.

1.4 PROBLEM STATEMENT

In developing countries like India the dramatic growth in vehicular traffic have augmented axle loads and increased tire pressure on the pavements resulting in rutting and cracking. Compaction and type of binder of asphaltic concrete mixtures in flexible pavements plays a major role in the performance of these pavements. Mix properties, such as density and air voids are highly dependent on the degree and the method of compaction. These properties in turn affect pavement performance indicators, such as rutting and fatigue cracking.

1.5 SCOPE FOR STUDY

The key points aimed to maintain the scope during the study were compaction of asphalt concrete mixes by Marshall and Rolling Compactor cum Rut Analyzer methods to evaluate HMA properties of the mix and to find some co-relations in HMA properties between two laboratory compaction methods. Further more, to compare the effect of different number of blows and different number of passes as compactive efforts for various modified binder mix designs, as performance of mixes in terms of density and air voids were observed according to the serial tests.

The compaction methods used to evaluate HMA properties were Marshall and superpave laboratory compaction methods. Standard mix design procedures were differentiated on their method of compaction, which is assumed to simulate field compaction. With the Marshall design methods, specimens are prepared by impact compaction, while in the superpave design method, specimens are fabricated by rolling compaction. This type of compaction was developed to produce realistic specimens which compared favorably to in-service mixtures after traffic compaction. The rolling compaction technique was introduced to simulate the increasing loads and tire pressures of vehicles operating on the pavement. Prior to this compaction technique, it was not possible to achieve a realistic field density in laboratory specimens and to compare the above results with indirect tensile test results.