

Chapter 1

INTRODUCTION

Hot mix recycling asphalt pavements is increasingly being used as one of the major rehabilitation methods by using various highway agencies. This generally helps savings in costs, natural resources (aggregates and bitumen) and environment. Estimated world production of asphalt in 2007 is about 1.6 trillion metric tons of asphalt was produced worldwide. Out of which Asia produced 495 million metric tons of asphalt, nearly 31% of total production.

In this study attempt was made to reuse the RAP which is obtained from deteriorated pavement with a different percentage of RAP in a virgin mix. The mixing is done in laboratory and various laboratory tests were carried out from the RAP mix to study the performances and the results are compared with the virgin mix. This would determine whether the recycled HMA pavement has performed similar to virgin mix. It would also provide information of mix method for recycled mixture.

Most states have established limit on the maximum percentage of RAP that can be used which typically ranging between 10% to 50%. Based on the expert opinions, future specifications are expected to allow the use of RAP in higher quantity. On the other hand, many agencies are taking advantage by increasing the percentage of RAP. The design procedure and the success of using RAP will require many durability concerns related to the interaction between virgin and recycled materials.

The purpose of this study is to provide a information about use of RAP in HMA, and, mix design techniques, handling of RAP in the HMA, and performance issues.

1.1 Need of Recycling

- Natural resources are conserved to reuse or salvaging of aggregates and asphalt in existing pavement.
- Pavement material disposal is greatly reduced or eliminated.
- Energy is conserved as the construction is completed or on-grade and no fuel is required for heating.
- Pavement maintenance costs can be reduced.

Recycling of Flexible pavement for the sustainable development and its performance evaluation

So by knowing above all advantages for the recycling of RAP, We concluded that it is more useful to reduce the cost of construction of pavement when compared with virgin mix and it also increases the age of pavement using RAP.

1.2 Objectives

The overall objective of the present study is to design and evaluate performance of bituminous mixes containing different percentage of RAP. Specifically the objectives of present study are to

- Characterization of reclaimed asphalt pavement (RAP) collected from known source.
- Design of Bituminous Concrete (BC) with and without different percentage of RAP (0%, 40% and 50%) using Marshall method.
- Evaluate moisture damage potential of bituminous mixes with and without RAP by Tensile Strength Ratio (TSR) test
- Evaluate the rutting resistance of bituminous mix with and without RAP, by Flow-Time test.
- Study the effect of addition of RAP in bituminous mixes.