



EVALUATE THE PROPERTIES OF BITUMINOUS MIX PREPARED USING RECLAIMED ASPHALT PAVEMENT (RAP)

Arun Bharti¹ and Saurabh Gupta²

¹M.tech Student, Department of Civil Engineering, Arni University

²Assistant Professor, Department of Civil Engineering, Arni University

Abstract—These days importance is given for Utilization of industrial and infrastructural wastes in civil engineering applications as such to make cost effective and environmental friendly construction practices. Most of the recent studies are focused on innovative solutions with respect to sustainability, due to growing needs of urban societies. It was found that the research studies on utilization of RAP (which is an infrastructural waste) in different civil engineering applications is becoming more popular day by day. Reclaimed asphalt pavement (RAP) is defined as the reclaimed and reprocessed pavement materials containing asphalt and aggregates and is produced by milling during reconstruction, resurfacing operations or to obtain access to buried utilities, or full depth removal of existing pavement layers which after proper crushing and screening consists of high-quality, well-graded aggregates coated by aged asphalt cement.

This paper discusses review over the properties of RAP aggregates in comparison to the natural aggregates, which includes physical, mechanical and chemical. Apart from the aggregate properties, this paper also presents the fresh and hardened properties of RAP inclusive for road pavement.

Index Terms—RAP, Bituminous Pavement, road construction.

I. INTRODUCTION

Urbanization is growing in the present days as well as model of R urban is being popularized where people are looking for a comfortable life with safe shelter and well-connected roads for transportation. To fulfill these basic needs people are heavily dependent on the natural resources which results in depletion of natural resources. Especially in construction industry; water, aggregates and cement are one of the major ingredients. To address the above issue we have to practice industrial ecology, i.e. treat the waste of a particular industry as a raw material for other industry such waste is RAP which is a mining wastes like Iron Ore Tailings and infrastructural wastes (Recycled Asphalt Pavements). Reclaimed asphalt pavement (RAP) is the term given to removed and/or reprocessed pavement materials containing asphalt and aggregates. These materials are generated when asphalt pavements are removed for reconstruction, resurfacing, or to obtain access to buried utilities. When properly crushed and screened, RAP consists of high-quality, well-graded aggregates coated by asphalt cement.

II. MATERIAL AND METHODS

III. RESULT AND DISCUSSION

The mechanical properties of the mix obtained after preparing Control mix and then replacing the bitumen mix by 4, 5, 5.5, 6, 7 % with slag along with bamboo fibre as stabilizer. The average result of the average sample are shown below:

Sample No.	Bitumen average content	Average Stability (Kn)		
		Control mix	Mix with Slag	Mix with slag and bamboo
B	4%	7.06	6	5.96
B	5%	9.21	8.31	8.31
B	5.5%	8.58	7.88	8.42
B	6%	8.62	6.946	7.88
B	7%	6.34	6.77	6.94

Table 1: Test Result Values of bitumen mix

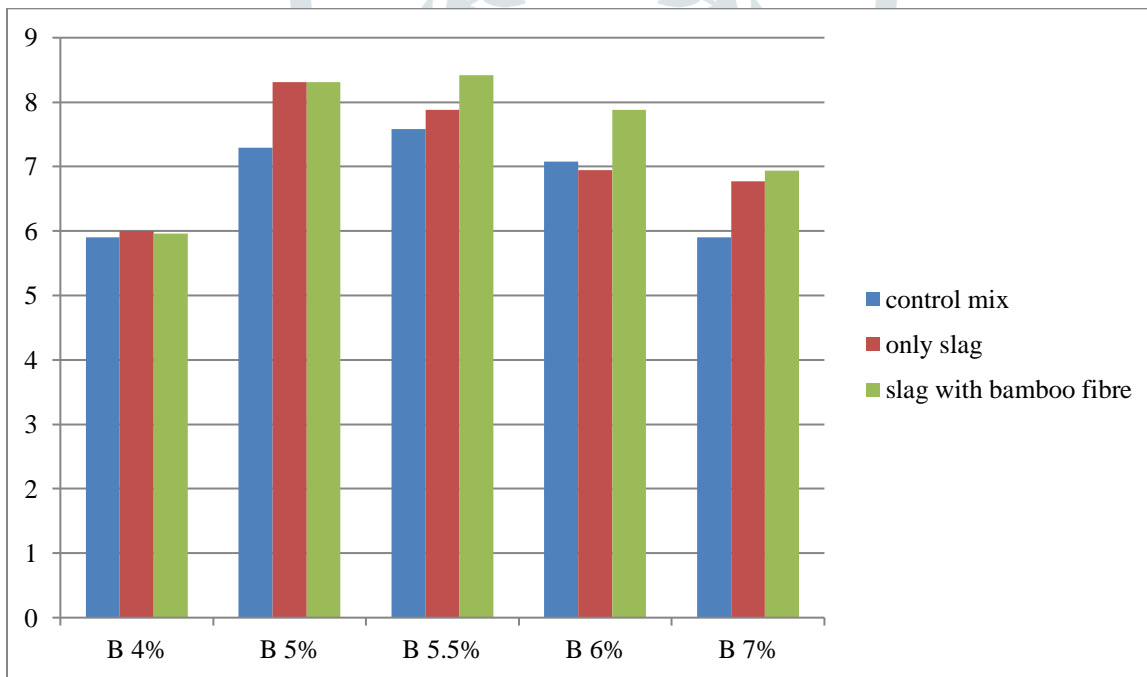


Figure 1 Average value of different ingredient

The above figure shows about the comparative study done after preparing control mix in lab replacing coarse aggregate with iron slag obtained from steel industry along with bamboo fibre as stabilizer.

IV. CONCLUSION

The SMA mix using Bamboo fibre has given quite expected results, which can be applied in the practical field. SMA mixes prepared without adding stabilizers have shown to give results that are far inferior to the results obtained while mixing those similar ingredients with any stabilizer. Slag as Coarse Aggregate using Bamboo Fibre has the best stability followed by Stone aggregate with Bamboo Fibre. So the use of Bamboo Fibre as stabilizer will be highly beneficial in consideration of stability and Flow Value.

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