APPLICABILITY OF STEEL FIBERS TO IMPROVE THE PROPERTIES OF CEMENT STABILIZED AGGREGATE BASES

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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 belief and 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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To the best of my knowledge, the above particulars are correct.

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Supervisor

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ABSTRACT

Stabilized bases are normally designed for the heavy traffic categories or in the absence of base materials which should have the required material properties according to the specifications so that the higher strength category can be achieved.

Bases can be constructed using soil or aggregates. Those are stabilized with various admixtures such as lime, sand or cement. Among them, cement stabilization is a common practice in road construction industry.

The road construction industry has the experiences about the stabilization of dense graded aggregate bases with cement. Even though the content of cement has to be increased to get the higher strength capacity, shrinkage cracks may appear with the increase usage of the cement content and it has a tendency to convert the layer to a rigid pavement too. Hence, another feasible technique should be applied to achieve the required higher strength capacities concurrently to diminish shrinkage cracks and form the base withstand against higher number of heavy load repetitions as well as form the base withstand against higher number of heavy load repetitions without converting the layer into rigid.

To achieve both phenomena, this research was carried out to introduce usage of a reinforcement type such as steel fibers in Dense Graded Aggregate bases.

In this study, it is discussed about the high performance of Steel Fiber Reinforced Cement Stabilized bases over the conventional Cement Stabilized Bases.

Based on the results, a Pavement Design Chart was developed for Steel Fiber Reinforced Cement Stabilized Bases suitable for higher Traffic Classes such as T7 and T8. This can be used in general practice without doing any calculations.

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