THEORETICAL AND EXPERIMENTAL EVALUATION OF THE EFFECT OF THE PERCENTAGES OF QUARRIES SURFACE MATERIALS IN COARSE AGGREGATES ON THE BEHAVIOUR OF ROAD TAR MIXTURES

by

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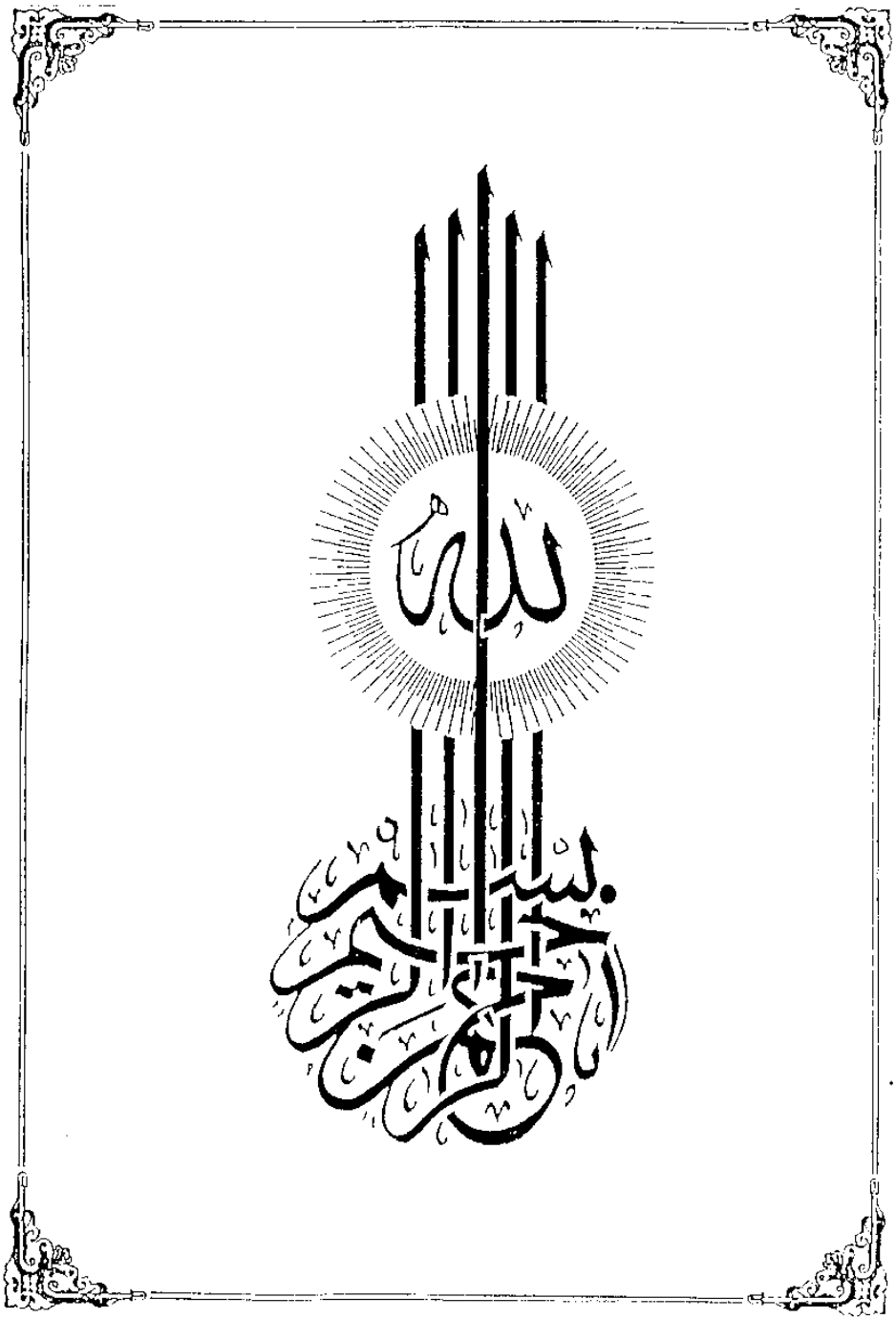

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CHAPTER I

INTRODUCTION

The performance of bituminous concrete pavement depends largely on the properties of mineral aggregates which are commonly composed of coarse aggregate, fine aggregate, and mineral filler. Mineral aggregates vary widely in their mineralogical, granulometric, strength surface texture, and shape characteristics. These properties are usually evaluated to determine the suitability of mineral aggregates for use in bituminous mixtures.

One of the major sources of road making aggregates is the crushed rock aggregate which is prepared by quarrying natural rock from quarries having materials of acceptable properties and crushing it to the required size.

In the majority of these quarries, the fresh rock is capped by an overburden of partially decomposed rock. In addition, decomposition may penetrate into cracks and joints in sound rock, which may also be traversed by veins of rock of inferior quality. Decomposed or inferior rock may find its way into the crushers, which cannot be easily eliminated.

In Egypt, "Abu-Zaabal" basaltic quarries are extensively used in attaining coarse basaltic aggregates for road construction. Decomposed quarries surface materials were found with fresh basalt after the crushing operations. The properties of these decomposed materials, as well as their effect on engineering properties of hot bituminous mixtures, were not clearly evaluated and fully understood.

This research has been initiated, first, to determine the different properties of the decomposed quarries surface materials and, secondly, to evaluate their effect on the engineering properties of hot road tar mixtures.

The study covers a review of the available related literature. Experimental work has been conducted to determine the different properties of the quarries surface materials.

The mineralogical and chemical composition of the quarries surface materials have been studied.

The specific gravity, water absorption, and stripping resistance of the quarries surface materials have been determined.