FINAL YEAR PROJECT REPORT
ADVANCED DIPLOMA IN CIVIL ENGINEERING
SCHOOL OF ENGINEERING,
MARA INSTITUTE OF TECHNOLOGY
SHAH ALAM, SELANGOR D.E

DEGRADATION OF AGGREGATES IN UNBOUND PAVEMENT USING GEOTEXTILE INTERFACE

BY
AHMED SHUKERI EMBONG
MAY 1992

ACKNOWLEDGEMENT

The author wishes to express his sincere thanks to his project advisors, Ir. Ibrahim Kamaruddin and Ir. Haron Ismail for the encouragement, consultations and constant guidance given in making this study a successful venture.

Heartfelt thanks also to all the laboratory staffs and friends who willingly extended their help when required during the experimentation of this study.

Lastly, the author wishes to express appreciation to those who have helped directly or indirectly, during the course of this study.

Ahmad Shukeri

(May 1992)

SYNOPSIS

The work reported in this paper refers to a degradation study carried out in the laboratory, by using a Large Shear Box, in which different initial gradings of aggregates (having high crushing strength) was sheared with a sheet of geotextile acting as an interface. The geotextile used was a needle-punched non-woven type supplied by Nylex (DUPONT) Malaysia.

The aggregates were classified into three initial gradings namely, uniformly graded, well graded and gap graded. The tests were carried out conforming to BS 1377 : 1990.

Three different normal loads at 20 KN, 40 KN, and 60 KN were employed during the shearing of the aggregates. The degree of degradation and angle of resistance between different gradings of aggregates were compared.

CONTENTS

CHAPTER ONE

1.0 INTRODUCTION

Degradation is defined as the reduction in size of particles which occur during the process of laying and compaction of aggregates and as a consequence of traffic action in association with weathering processes during a pavement life. Whether used as a base or subbase beneath bituminous or concrete surfacings or as unpaved road, granular materials are usually required to be compacted so as to achieve a desired minimum stability in order to minimize deflection and to enhance durability.

During the compaction process, in laboratory as well as in the field, aggregate degradation is very likely to occur depending on the type and magnitude of the compactive effort.(3)

The purpose of the pavement is to carry traffic safely, conveniently, and economically over its design life by protecting the subgrade from being over stressed by traffic load. This is achieved by ensuring that no material used in the pavement suffer any unacceptable deterioration due to the loading imposed on it.