THE STABILITY OF BITUMINOUS MIX DESIGN USING VARIOUS TYPES OF FILLERS

By

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DECLARATION BY THE CANDIDATE

I, Ahmad Fadhley Bin Abdul Majid, 2002611689 confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

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In the name of ALLAH, Lord of the Universe, the most gracious and is most merciful, with His permission, the proposal of the project has been successfully completed. Praised to Prophet Muhammad, His companion and those who are on the path as what he preached upon, may ALLAH almighty keep us blessing and tenders.

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ABSTRACT

Road construction and maintenance contribute significantly to the growth of Malaysia's economy. At present, the awareness among the government agencies and contractor in pavement technology in order to improve the pavement systems is responding well. Therefore, the road system exactly is essential for nation's development and growth.

This research focuses on the Ordinary Portland cement (OPC) and quarry dust as fillers in order to determine the optimum percentage in the mix bituminous design. Design mix that contain with 4%, 6%, 8% and 10% of fillers will be tested by using Marshall Test in the laboratory to determine its characteristics and the used in the bituminous mix design. In order to achieve the main objectives, the properties of the other material such as aggregate and bitumen will be firstly measured and determined.

After the research, the maximum stability of quarry dust and Ordinary Portland cement is 12.99kN and 13.83kN respectively. The highest stability of mix design occurred at the maximum percentage of filler which is 10%. The optimum percentage of quarry dust is 8% and OPC is 10%.

CHAPTER 1

INTRODUCTION

1.1 Background of study

For as long as the human race has existed, transportation and the road itself have consumed a considerable portion of its time and resources. The primary needs of them are economic; it has involved personal travel in search of food or work, commerce, exploration, conquest etc. The movement of people and goods by transportation using the road or route is undertaken to accomplish those basic objectives or tasks that require transfer from one location to another. Therefore, the road is essential for a nation's development and growth. In both the public and private sector, opportunities for engineering careers in pavement planning are exciting and rewarding. As the technology has increased year by year, the road system has also increased well due the variety method applied to obtain the best design in pavement.

Road development and maintenance form a significant part of Malaysia's economy corresponding to the aspiration to achieve a developed country status by year 2020. At present, the awareness among contractors, government and non government agencies in pavement technology in order to increase the pavement systems is responding well.

We can see many constructions are carried out almost in everywhere. In consequence, the demands on the road surfacing are now much greater than before and its composition and manufacture have become much more critical.