

**MODIFICATION OF BITUMINOUS MIXTURE USING
GRANULES FORM OF LDPE-HDPE FOR FLEXIBLE
PAVEMENT**

By

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This report is submitted as a
partial requirement for the degree of
Bachelor of Engineering (Hons) Civil (Infrastructure)

UNIVERSITI TEKNOLOGI MARA

JULY 2018

DECLARATION BY THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non – academic institution for any degree or qualification. I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Increment in the number of vehicles and overloading of commercial vehicles and also daily temperature changes are the main reasons for pavement surface to distress. Due to rapid population, the amount of disposal plastic wastes increased and become a serious problem due to their non-biodegradability, so these plastic wastes will be used in road construction to increase the life period and serviceability of road flexible pavement. This study presents the utilization of recycle plastic waste product in granules form of Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE) as additives to modify the bituminous mixture at wearing course. Both materials have their own characteristics and advantages, thus produced the optimum benefit when combining both products in bituminous mixture. Wearing samples were prepared using Marshall Method of Mix Design to produce the compacted mixtures and Marshall Test was carried out to determine the OBC value and its properties. The properties and performance of the modified mixture were quantified and compared with conventional mixture and JKR specification in term of air voids, stability, flow, stiffness, cantrabro loss and resistance to water. Result showed by adding 2% of LDPE-HDPE in the bituminous mixture provides better binding properties which increased the strength, durability, resistance to abrasion loss, and more water resistance. At the same time, occurrence of pavement distress will be minimized.

ACKNOWLEDGEMENT

First of all, praise is due to almighty Allah with His compassion and mercifulness to allow me completing this research. I would like to express my sincere gratitude to my supervisor, Madam Shahreena Melati Binti Rhasbudin Shah and my co-supervisor, Madam Nor Izzah Binti Zainuddin for their guidance, continuous support and encouragement in the process of making this research right until the end. I appreciate their guidance for me from the beginning to the end that helped to develop an understanding for this study thoroughly. Without their guidance, comments and advice, I will have a hard time completing this study.

I also would like to express my gratitude towards staff of Highway and Transportation laboratory, Puan Suzana Binti Hj Ahmad for her guidance during my time of laboratory works.

I acknowledge my thankfulness to my beloved parents for their endless support and care throughout completing my final year project. I am very thankful for their sacrifice, patience and understanding that they had for me in order for me to complete this study for my final year project. Honestly, without them, it will be tough for me to complete this study. Lastly, I would like to thank to all who directly or indirectly contribute to the completion of my research study from the beginning till the end.

Thank You.

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