

GREEN PAVEMENT

Strategies for Malaysia

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PREFACE

The basis for this book originally stemmed from my passion to develop better and sustainable pavement for roads and highways. This book discusses on pavements, a specialised area of highway engineering and covers on the sustainable aspects of the pavement life cycle, including design, construction, maintenance and rehabilitation phases. The emphasis of this book is on the use of sustainable pavement materials which forms the pavement structure. Research on pavement materials is important as the durability of the pavement structure, hence, its sustainability is dependent on the materials used. This book is important as it contains information on the various research undertaken by the author to improve the sustainability of pavement materials, such as bitumen modification using polymers and the use of waste materials such as reclaimed asphalt pavement to reduce asphalt mix production costs. Worldwide, research on pavement materials is increasing as there is a need to improve the durability of the road pavement which is subjected to the ever-increasing loads in terms of numbers of axle repetitions, load intensity and different climatic conditions. This book will be of interest to the engineers involved in pavement construction and maintenance as it provides comprehensive information on sustainable pavement materials research.

CHAPTER 1

INTRODUCTION



BACKGROUND

The road network serves to facilitate a number of community benefits including accessibility, mobility, economic development and social justice. The development of road network in Malaysia began very slowly in the late 19th century. Historical records showed that in 1896, the Straits Settlements of Penang and Malacca had about 350 miles of road while 180 miles of road in the Federated Malay States of Perak, Selangor, Negeri Sembilan and Pahang [Chew, 1996]. In the first decade of the 20th century, there were only about 2000 miles of roads paved with crushed stones in the Federated Malay States.

The foundation for the modern road development in Malaysia was laid with the completion of the General Transportation Study in 1968 during the first Malaysia Plan (1966 – 1970). The subsequent Malaysia Plans directed the development of the road networks throughout the country. According to the latest statistics, the total road network in Malaysia for the year 2021 is around 339,886 kilometres [JKR Malaysia, 2022]. In Peninsular Malaysia, the road network is almost matured with almost all areas are connected with roads as shown in Figure 1. In Sabah and Sarawak, the road network is currently expanding and with the completion of the Pan Borneo Highway, increased accessibility will be provided with the improved road network.