

**STUDY ON STRUCTURAL BEHAVIOUR  
OF PLAIN CONCRETE SLEEPER**

**by**

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*May ALLAH bless all of you.*

*Adnan b. Derahman*

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## ABSTRACT

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This experimental project is a continuing study on structural behaviour of prestressed concrete sleeper (Ariffin Ngah, 1995) and (M.Yusoff Sulaiman, 1994). The experimental set-up are the same except for this project which do the testing on a plain concrete sleeper instead of prestressed concrete sleeper.

Four numbers of plain concrete sleepers were cast, one were tested under static loads and three sleepers under dynamic loads. The minimum strength of each plain concrete sleepers are  $60 \text{ N/mm}^2$ .

Sleepers or ties (more specifically cross ties) have several important functions :

- 1)Receive the load from the rail and distribute it over the supporting ballast at an acceptable ballast pressure level,
- 2)Hold the fastening system to maintain the proper track gauge, and
- 3)Restrain the lateral, longitudinal and vertical rail movement by anchorage of the superstructure in the ballast.

# CHAPTER 1

## INTRODUCTION

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### 1.1 GENERAL

The essential function of the railway track is to support and guide the vehicles that run over it. The conventional railway track consists of two rails located at fixed distance apart. The pressure exerted over by the rails is in turn transmitted to the formation. This is achieved with the help of sleepers and ballast.

Construction of railways tracks in Malaysia began in 1881 with short lines connecting the interior to parts on the west coast and by 1923, the through line from the Thai border to Singapore was connected successfully. In 1990, the system totalled 1685 route kilometres of meter gauge track carries approximately seven million passenger and four million tonnes of freight per annum. (Figure 1.1 Malaysian Railway Map, 1982)