



Faculty of Engineering

**DETERMINATION OF LEVEL OF SERVICE ON DIFFERENT ROADS IN
KUCHING AREA**

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**DETERMINATION OF LEVEL OF SERVICE ON DIFFERENT ROADS IN
KUCHING AREA**

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This Thesis Is Propose To

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*This project report is dedicated to my beloved father and mother, (KU and UMI), my
younger sisters and brother, (Lisa, Yaya and Adik)
and all my true friends for their
love and support*

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ABSTRACT

The increasing of population and development of technology give a big impact directly to a place. The roads that link the towns allow people to move from one place to another place. A proper research should be carried out to ensure that the roads able to support the capacity of vehicles during peak hours. The purpose of this project is to determine the Level of Service (LOS) on two-lane roads in Kuching City. Those roads are important and were built during early of Kuching City development. This project focused on Tabuan Road, Stutong Road, Matang Baru Road, Sultan Tengah Road and Old 7th Mile Road, and they link the sub-urbans like Tabuan, BDC, Satok, Matang Jaya, Samariang, Santubong and Batu 7. According to the methodologies stated in Highway Capacity Manual 2000 (HCM 2000), some important data should be determined first before further analysis is carried out, and those data are traffic volume, shoulder width, lane width, design speed and access-point per mile. This project also shows how those data affect the level of service.

ABSTRAK

Pertambahan penduduk dan kemajuan teknologi secara langsung memberi impak yang besar kepada sesebuah penempatan. Jalan raya yang menghubungkan bandar-bandar membolehkan orang ramai bergerak dari satu tempat ke tempat yang lain untuk pelbagai tujuan. Oleh itu, kajian yang mendalam mengenai jumlah pengguna jalan raya perlu dijalankan dengan rapi bagi memastikan jalan raya tersebut dapat menampung kapasiti kenderaan pada waktu puncak. Dalam projek ini, kajian telah dijalankan untuk menentukan *Level of Service (LOS)* bagi jalan raya dua-lorong di sekitar Bandar Raya Kuching. Jalan-jalan raya tersebut kebanyakannya telah dibina seawal penubuhan Bandar Raya Kuching dan masih merupakan jalan raya yang penting pada hari ini. Kajian dijalankan terhadap Jalan Tabuan, Jalan Stutong, Jalan Matang Baru, Jalan Sultan Tengah dan Jalan Batu 7 Lama, yang mana jalan-jalan raya tersebut menghubungkan sub-bandar seperti Tabuan, BDC, Satok, Matang Jaya, Samariang, Santubong dan Batu 7. Berdasarkan metodologi yang terkandung dalam *Highway Capacity Manual 2000 (HCM 2000)*, data-data awal seperti isipadu trafik, lebar bahu jalan, lebar lorong, had laju dan bilangan akses per batu perlulah diambil terlebih dahulu sebelum analisis selanjutnya dijalankan. Projek ini juga menunjukkan bagaimana data-data tersebut mempengaruhi *level of service*.

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LIST OF SYMBOLS

V_{ps}	Demand flow rate
f_{LS}	Lane and shoulder adjustment
f_A	Access point per mile
f_{HVS}	Heavy vehicle adjustment for speed
f_{gs}	Grade adjustment factor for speed
f_{np}	Adjustment for effect of no-passing zones on average travel speed
$f_{d/np}$	Directional distribution and no passing zone adjustments
P_T	Portion of trucks and buses
P_R	Portion of recreational vehicles
E_T	Passenger car equivalency for trucks
E_R	Passenger car equivalency for recreational vehicles

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CHAPTER 1

INTRODUCTION

1.1 Overview

Level of Service (LOS) is one of the most common terms used to describe how good or how bad traffic is projected to be. LOS serves as a benchmark to determine whether new development will comply with an existing LOS or if it will exceed the preferred or adopted LOS. As part of planning for new projects or developments, transportation professionals conduct a Traffic Impact Study (TIS). The TIS determines how specific streets and intersections will function with increased traffic volumes either with or without improvements.

1.2 Objective

The main objective of this project is to determine the level of service of five different two-lane roads in Kuching area. Those roads are chosen based on the importance and how they are linked to the others. The LOS determination is focused

on Tabuan Road, Stutong Road, Matang Baru Road, Sultan Tengah Road and Old 7th Mile Road. Other objectives are to find the physical characteristics of the roads and to show how those characteristics affect the level of service.

1.3 Meaning of Level of Service (LOS)

General meaning of Level of Service (LOS) is quality of service that describes operational conditions within a traffic stream. It does not include safety and having different measures for different facilities, or in other words, based on traffic density. LOS is stated as six measures, A (least congested) through F (most congested) (Kilareski and Washburn 2005).

1.4 Intersection LOS

This is a measure of the average delay experienced by each vehicle passing through an intersection. It can be measured for the vehicles making each directional turning movement, using each approach leg, or as a composite average value for all vehicles using the intersection. Intersection LOS is labeled with a letter grade designation ranging from A to F. An LOS A represents insignificant delay (less than 10 seconds per vehicle), whereby LOS F represents significant waiting. This means more than 50 seconds per vehicle for intersections with non-existent or inadequate signals or more than 80 seconds per vehicle for intersections with signals (Dush and Muhonen 2002).

1.4.1 LOS Criteria

According to Highway Capacity Manual 2000 (HCM 2000), there are two types of intersection, signalized intersection and unsignalized intersection.

1.4.1.1 Signalized Intersection

Table 1.1 shows the Average Control Delay for each LOS and their descriptions for signalized intersection (Kilareski and Washburn 2005).