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STUDY OF PARKING PARAMETERS AND PARKING MANAGEMENT IN HOSPITAL  
TENGKU AMPUAN AFZAN (HTAA), KUANTAN

LIEW TZUN MING

Thesis submitted in fulfilment of the requirements for the award of the degree of Bachelor of  
Eng (Hons.) Civil Engineering

Faculty of Civil Engineering and Earth Resources

UNIVERSITI MALAYSIA PAHANG

JUNE 2016

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I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Civil Engineering.

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## ABSTRACT

Parking is regarded as an integral part of urban transportation system, and the increase in the number of vehicles had caused problems with parking in major cities around Malaysia. The Hospital Tengku Ampuan Afzan (HTAA) in Kuantan is not spared from this problem too, while the number of patients and staffs at the hospital keeps increasing each year, the number of parking lots in the car park are still the same, which had caused difficulties for its visitors to search for parking, and contributed to the illegal parking by the roadside along the main entrances. This study aims at assessing the supply and demand of the car parking system as well as the parking parameters in Hospital Tengku Ampuan Afzan (HTAA), Kuantan. Besides, this study will also present the actual figures of the number of illegally parked vehicles within the hospital compound, as well as those by the roadside along the main entrances. This data, along with the other parking parameters studied in this study, will present the actual parking demand in HTAA. Corrective measure is suggested in this study to improve the parking woes in HTAA. In this study, parking supply is defined as the number of parking lots provided at the hospital, and parking demand is meant by the summation of parking accumulation and the number of illegally-parked vehicles. License plate survey is chosen for this study, as it provides data of higher accuracy and consistency. The methodology of this study involved data collection, data analysis and recommendations to improve the situation.

## ABSTRAK

Tempat letak kenderaan merupakan salah satu aspek utama dalam perancangan system pengangkutan bandar. Sejak tahun-tahun kebelakangan ini, seiring dengan peningkatan bilangan kenderaan di jalan raya, masalah kekuarangan tempat letak kenderaan telah menjadi semakin serius di bandar-bandar utama seluruh Malaysia. Kajian ini bertujuan untuk mengkaji keberkesanan sistem letak kenderaan di Hospital Tengku Ampuan Afzan (HTAA), Kuantan, dan termasuklah masalah letak kenderaan secara haram di bahu-bahu jalan sepanjang pintu masuk dan keluar HTAA. Hasil dapatan kajian ini berupaya untuk memberikan gambaran berkenaan permintaan tempat letak kenderaan oleh pengunjung-pengunjung HTAA. Selain itu, kajian ini turut mencadangkan langkah-langkah penyelesaian efektif kepada masalah ini, berdasarkan kepada hasil dapatan kajian ini. Dalam kajian ini, pembekalan tempat letak kenderaan merujuk kepada bilangan tempat letak kenderaan yang terdapat di perkarangan HTAA, manakala permintaan tempat letak kenderaan merujuk kepada penjumlahan di antara pengumpulan bilangan kereta yang diletakkan di tempat-tempat letak kenderaan di perkarangan HTAA, dan bilangan kenderaan yang diletakkan secara haram di bahu-bahu pintu masuk dan keluar. Kaedah survei plat kenderaan telah digunakan dalam menjalankan kajian ini, kerana kaedah ini menjanjikan data yang lebih tepat dan konsisten. Metodologi kajian ini merangkumi proses-proses seperti pengumpulan data, analisis data, serta cadangan-cadangan untuk mengatasi masalah kekurangan tempat letak kenderaan di HTAA.

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND STUDY**

According to Malaysian Road Transport Act 1987, “parking” means the bringing of a motor vehicle to a stationary position, and causing it to wait for any purpose other than that of immediately taking up or setting down persons, goods or luggage; whereas “parking place” means a place set apart as a place at which motor vehicles or any specified class or description of motor vehicles may be parked.

There are certain criteria taken into consideration in designing an effective and practical car park, which includes the purpose of building which it serves, the current and projections of future traffic volumes, and the amount of land available. However, the rapid development enjoyed by Malaysian cities in recent years has caused the increase in traffic amount, which in turn, increases the demand for car park as well. The problem is obvious especially in popular crowd-drawing areas such as shopping malls, commercial areas, office lots, places of worship, hospitals and etc. Due to inefficient parking systems and inadequate car park, consequences such as illegal parking at vacant land, on the road kerb or by the roadside, double parking, and even internal traffic jams had developed.

The lack of car park is also a common problem in Malaysian government hospitals. News reports depicting the seriousness of this problem are often featured on the mainstream media. This study will focus on the lack of car park in Tengku Ampuan Afzan Hospital (HTAA) at Kuantan. Located at Jalan Tanah Puteh, HTAA sits on a land area of

40.1 acres, and is the general hospital serving the general population of Kuantan district, with a capacity of 793 beds. The lack of parking spaces in HTAA is not a new problem, and it has been highlighted on the press for a couple of times.

## **1.2 PROBLEM STATEMENT**

HTAA has been suffering from the issue of insufficient car parking spaces for a long time. Due to the fact that it provides the most comprehensive healthcare services to the general public of Kuantan, and supporting services for the rural hospitals in Pahang as a whole, its accident and emergency (A&E) unit is operating twenty-four hours per day and seven days per week, whereas its outpatient department operates at office hours, which is from 8am to 5pm on weekdays. Hence, there are visitors coming to and leaving the hospital at any time of the day.

The car parking lots in HTAA are shared among the visitors as well as the staffs. Since most of the parking lots have been taken up by the employees at HTAA, there are not plenty left for the use of general public. The numbers of patients and visitors of HTAA has been increasing from year to year, however the number parking lots remains the same all these while. This had caused the problem of insufficient parking lots to get worse in recent years.

While the problem remains unsolved till this day, it has developed consequences which may affect the level of service experienced by the visitors to the hospital. Problems of double parking, illegal parking by the road kerb or vacant space at the hospital compound, and internal traffic jams are common scene in HTAA. Due to insufficient parking lots available, cars are plying around the compound of HTAA in search of vacant parking lots. Internal traffic jams will occur when the amount of cars moving around HTAA has reached the capacity of the internal roads. Sometimes it had obstruct the movements of ambulance entering and exiting HTAA, causing delay to occur in dealing with emergencies. The problem gets worsen in weekends, due to the increase in the number of visitors.

### **1.3 RESEARCH OBJECTIVES**

The objectives of this study are:

1. To assess the supply and demand of the car parking system in HTAA.
2. To study the parking parameters, including the parking accumulations, parking durations, parking turnover, and parking occupancy in HTAA.
3. To identify the number of illegally-parked vehicles within and out of HTAA's compound.
4. To suggest improvements to the ongoing car park problem in HTAA.

### **1.4 SCOPE OF STUDY**

The study will be carried out at the compound of HTAA. The scope of study will cover the traffic flow and parking flow behaviors in HTAA. The traffic flow data is needed to understand the amount of traffic entering and exiting HTAA, whereas the parking flow behaviors data studies the average amount of time spent by visitors to utilize the car park. The data will be used to propose a better parking systems and alternatives which can accommodate and regulate the amount of traffic in HTAA, so as to solve the parking woes which haunted HTAA for a long time.