

THE FINAL YEAR PROJECT REPORT
ADVANCED DIPLOMA IN CIVIL ENGINEERING
SCHOOL OF ENGINEERING
MARA INSTITUTE OF TECHNOLOGY

CAPACITY ANALYSIS OF AN URBAN INTERSECTION - A CASE STUDY

MD. ELIAS B. KONCHONG

MAY 1989

SYNOPSIS

Two types of heavily trafficked intersections in Klang town i.e priority and rotary controlled were studied to analyse their existing capacity performance. Traffic congestion, queues and delays are familiar in both places especially during the peak hours.

The report is based on the technical investigations undertaken to study the traffic behaviour, composition, turning movements and geometric details at the intersections. It is found that their existing capacities are inadequate to handle the present traffic volume. Large traffic along main road of the priority intersection call for a more proper system to take control for smoother, safer and efficient movement of traffic. The critical condition of the rotary type is shown by the negative reserved capacities in most of the weaving sections.

Alternative proposals for improvement of the intersections include some changes of geometric layout

and installation of traffic signals as immediate measure. Long term solution suggested involve enlargement of carriageway, provision of channelising islands, slip road as well as construction of a flyover.

CONTENTS

	PAGE
SUBMITTAL SHEET	i
SYNOPSIS	ii
CONTENTS	iv
1.0 INTRODUCTION	1
2.0 THEORY	3
2.1 Intersection	3
2.2 Intersection capacity	6
2.2.1 Prevailing road conditions	7
2.2.2 Prevailing traffic conditions	7
2.3 Priority intersection	8
2.3.1 Capacity measurement	10
2.3.2 Visibility	14
2.4 Roundabout or rotary intersection	16
2.4.1 Conventional roundabout	19
2.4.2 Small roundabout	21
2.4.3 Mini roundabout	22
2.4.4 Capacity of roundabout	23
2.4.4.1 Capacity of large roundabout	24
2.4.4.2 Capacity of smaller roundabout	34
3.0 CASE STUDY NO.1	36
3.1 Existing condition of the intersection	36
3.1.1 Jalan Batu Tiga Lama	36
3.1.2 Jalan Dato' Mohd Sidin	37

3.2	Field observation and measurement	37
3.2.1	Geometric layout	38
3.2.2	Traffic volume and characteristics	38
3.3	Analysis of data collected	40
3.3.1	Geometric layout	40
3.3.2	Traffic volume and composition	42
3.3.3	Turning movements	43
3.3.4	Capacity of the intersection	44
3.4	Improvement proposals	45
4.0	CASE STUDY NO.2	50
4.1	Existing condition of the intersection	50
4.1.1	Persiaran Sultan Ibrahim (East) approach	50
4.1.2	Persiaran Sultan Ibrahim (West) approach	51
4.1.3	Jalan Rajawali approach	51
4.1.4	Jalan Batu Tiga Lama approach	52
4.2	Field observations and measurements	53
4.2.1	Geometric layout	53
4.2.2	Traffic volumes and characteristics	55
4.3	Analysis of data collected	60
4.3.1	Geometric layout	61
4.3.2	Traffic composition	61
4.3.3	Traffic volumes	61
4.3.4	Traffic flow and turning movements	62
4.3.5	Capacity of the intersection	66
4.4	Discussion and improvement proposals	71
4.4.1	Short term proposal	72
4.4.2	Long term proposal	77