Appendix B
Traffic Impact Assessment

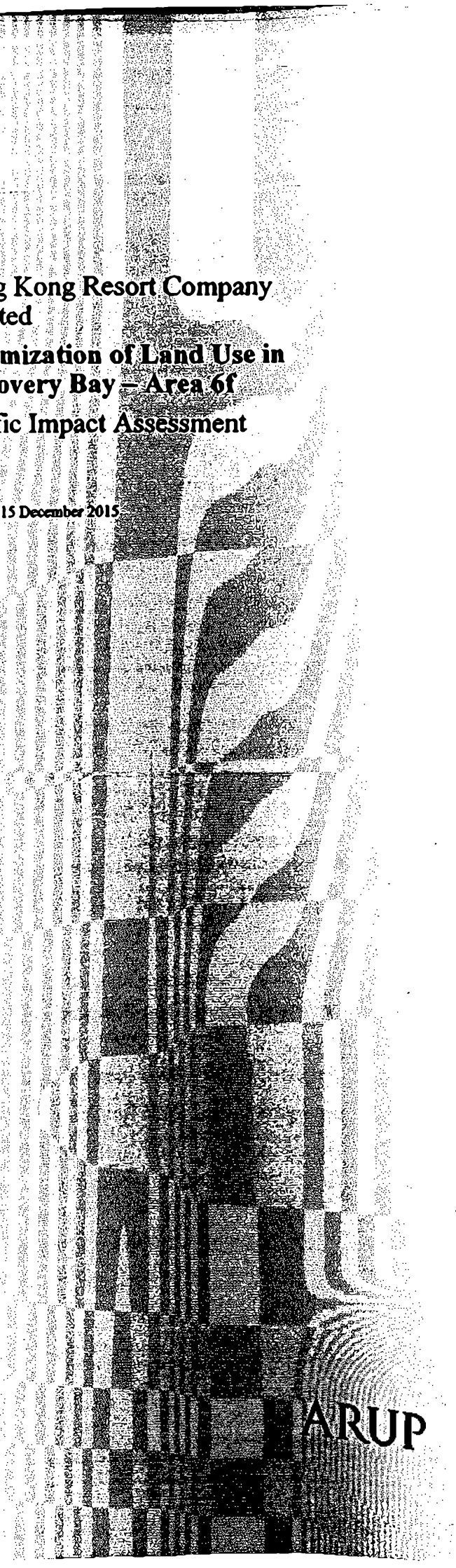
Hong Kong Resort Company Limited

Optimization of Land Use in Discovery Bay – Area 6f

Traffic Impact Assessment

TIA

Rev 0 | 15 December 2015



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Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

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		Name	Jenny Chiong / Andrew Huang	Victor Wong	Carmen Chu
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
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1 INTRODUCTION

1.1 Background

1.1.1 The Discovery Bay development is a self-contained sub-urban residential development comprising mainly low-density private housing, situated in the eastern part of Lantau Island covering a total land area of about 650 hectares. There are currently around 8,300 nos. of residential flat with total population around 15,000.

1.1.2 Discovery Bay falls within the ambit of the Discovery Bay Outline Zoning Plan (DB OZP) which was first approved on 21 March 2003. The current approved OZP limits the population to 25,000 (i.e. 10,000 nos. of residential flat), which is reflected in the latest Master Plan MP7.

1.1.3 There are plans to optimize the residential potential of Discovery Bay, while maintaining the low density and resort like living environment. Under the current planning proposal, a total of 476 nos. of flat would be developed in Area 6f, in additional to the current approved OZP. The developments are targeted for completion in Year 2023 for population intake in the same year.

1.1.4 Ove Arup and Partners (HK) Ltd was commissioned by Hong Kong Resort Co Ltd, to review and evaluate the traffic impact induced by the proposed additional residential developments in Area 6f of Discovery Bay, including ferry and road-based transport, to support the application to modify the DB OZP for better optimization of the potential of Discovery Bay. The possible developments in Area 10b of Discovery Bay for residential use have also been taken into account for the assessments under this study.

1.2 Scope of Study

1.2.1 The scope of this study is highlighted and summarised below:

- Conduct vehicle count surveys at critical links and junctions to appreciate current traffic conditions in the study area;
- Validate transport models with reference to the updated vehicle count surveys as base year, i.e. Year 2015;
- Update the inventory regarding traffic circulation patterns, traffic conditions and constraints of the existing, as well as the future committed road network and developments in the vicinity of the subject developments based on the latest information available;
- Review and assess the available traffic data/information;
- Develop reference scenario, i.e. should there be no change on the existing land use;

- Assess the likely traffic and transport impact due to the proposed developments on existing ferry service, and the road network capacity within and outside Discovery Bay;
- Develop traffic and transport improvement schemes, where appropriate, to mitigate any traffic and transport impact; and
- Assess the existing and future ferry service demand, to ensure the ferry service is able to cope with the additional demand induced by the proposed developments.

1.3 Structure of Report

1.3.1 After this introductory chapter, this report is divided into the following chapters:

- Chapter 2 – presents the details of the traffic count survey and the performance of critical junctions and road links for the base year, i.e. Year 2015;
- Chapter 3 – presents the parameters of the proposed developments in Discovery Bay;
- Chapter 4 – presents the traffic generation from the proposed developments, performance of critical junctions, road links and ferry service with the proposed developments in place; and
- Chapter 5 – summarises and concludes the findings of the study.

2 EXISTING TRAFFIC CONDITIONS

2.1 Road Network in Discovery Bay

External Connection

2.1.1 Under the existing comprehensive traffic control management for Discovery Bay, only authorized vehicles are allowed to access Discovery Bay via Discovery Bay Tunnel such as emergency vehicles, servicing buses and goods vehicles.

2.1.2 The Discovery Bay Tunnel is a toll tunnel under single two-lane configuration that links Discovery Bay Road at Yi Pak in the east with Cheung Tung Road at Siu Ho Wan adjacent to North Lantau Highway in the west.

2.1.3 The Tunnel was built for the Discovery Bay residential development on the north-eastern coast of Lantau Island, Hong Kong, which open 24 hours every day to vehicles specified by the Commissioner for Transport. The toll charge ranges from HK$50.00 to HK$250.00, depending on the type of vehicle, and is chargeable one-way eastbound only (i.e. from North Lantau to Discovery Bay).

2.1.4 Toll levels of the Tunnel for different vehicle types are summarised in **Table 2.1** below.

Table 2.1 Toll Levels of Discovery Bay Tunnel

Category	Vehicle Type	Toll Payable (HK Dollars)
1	Government vehicles, ambulances or vehicles used by officers of the Fire Services Department, the Hong Kong Police Force, the Customs and Excise Department or the Correctional Services Department	50
2	Private light buses other than category 1 above	50
3	Public and private buses other than category 1 above	50
4	Light goods vehicles and special purpose vehicles other than category 1 above and of a permitted gross vehicle weight not exceeding 5.5 tonnes	120
5	Medium goods vehicles and special purpose vehicles other than category 1 above and of a permitted gross vehicle weight exceeding 5.5 tonnes but not exceeding 24 tonnes	160
6	Heavy goods vehicles and special purpose vehicles other than category 1 above and of a permitted gross vehicle weight exceeding 24 tonnes	250
7	Vehicles other than categories 1 to 6 above	250

2.1.5 Besides the above vehicle types, Urban Taxis, Lantau Taxis and coaches with prior bookings are allowed to access designated areas in Yi Pak (Discovery Bay North) via Discovery Bay Tunnel, since 26 October 2014.

2.1.6 The local road connects with the tunnel link is Cheung Tung Road, which is a 7.3 metre wide two-lane single carriageway. It runs in an east-west alignment parallel to the North Lantau Expressway. The carriageway is a key corridor to provide access for the residential bus services of Discovery Bay.

Internal Connection

2.1.7 Discovery Bay Road is the major internal road within Discovery Bay, spanning from Discovery Bay Tunnel in the north to the Marina in the south. The road is under single two-lane configuration, serving as the spine for both internal and external connections, with access roads branch for various residential developments in Discovery Bay as well as the bus terminus at Discovery Bay Plaza for access to the Ferry Pier.

2.1.8 Discovery Valley Road is an access road which connects to Discovery Bay Road to the east in the form of priority junction. This road is under single two-lane configuration and would serve as the major route for future developments in Area 6f via the extended Parkvale Drive.

2.1.9 The existing road network in Discovery Bay is shown in **Figure 2.1**.

2.2 Traffic Count Survey

2.2.1 In order to appreciate the existing traffic conditions, comprehensive traffic counts were conducted during the periods of 0700-1000 and 1600-2000 hours on a typical weekday (Thursday), and 1300-1800 hours on a typical weekend (Saturday) in February and June 2015. Traffic flow at critical road links including Discovery Bay Road, Discovery Valley Road, Siena Avenue, Discovery Bay Tunnel, Cheung Tung Road, North Lantau Highway, Lantau Link, and key junctions in Discovery Bay, Tung Chung and Sunny Bay areas as shown in **Table 2.2** below were surveyed.

2.2.2 The Area of Influence, location of the key junctions and critical road links are also shown in **Figure 2.2**.

Table 2.2 Surveyed Key Junctions

	Junction	Type
J1	Discovery Bay Tunnel / Discovery Bay Road	Roundabout
J2	Discovery Bay Road / Discovery Valley Road	Priority
J3	Discovery Bay Road / Plaza Lane	Priority
J4	Discovery Bay Road / Marina Drive	Priority
J5	Discovery Bay Road / Headland Drive	Priority
J6	Shun Tung Road / Tat Tung Road (West)	Signal
J7	Shun Tung Road / Tat Tung Road (East)	Signal
J8	Tat Tung Road / Fu Tung Street	Priority
J9	Sunny Bay Road / Cheung Tung Road	Priority
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority
J11	Siena Avenue North Roundabout	Roundabout
J12	Discovery Bay Road / Vista Avenue	Priority
J13A	Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Signal
J13B	Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Signal
J14	Chek Lap Kok South Road Roundabout	Roundabout
J15	Shun Tung Road / Yu Tung Road	Signal
J16	Tung Chung East Interchange	Roundabout
J17	Tat Tung Road / Mei Tung Street	Signal
J18	Tat Tung Road / Hing Tung Street	Signal

2.2.3 The observed weekday AM and PM peak were found to be 0800-0900 and 1700-1800 hours respectively. While for weekend, the peak hour was found to be 1400-1500 hours, but the flows during weekend are in general lower than that during both weekday AM and PM peak. Therefore, weekday AM and PM peak were considered as critical scenarios for assessment.

2.3 Existing Traffic Performance

2.3.1 The observed traffic flow during the AM and PM peak hours at the critical road links *(refer to **Figures 2.3 and 2.4**)*, and the corresponding performance in terms of volume-to-capacity (v/c) ratio are shown in **Table 2.3** below.

Table 2.3 Year 2015 Observed Traffic Flow for Critical Links during Peak Hours

Critical Road Links	Direction	Observed Flow (VEH/Hour)		Observed Flow (PCU/Hour)		Carriageway Capacity (PCU/hour)	Volume-to-Capacity (V/C) Ratio	
		AM Peak	PM Peak	AM Peak	PM Peak		AM Peak	PM Peak
Lantau Link	E/B	2,790	3,295	3,570	4,480	6,100	0.59	0.73
	W/B	3,595	2,665	4,495	3,575	6,100	0.74	0.59
North Lantau Highway	E/B	2,450	2,740	3,090	3,840	6,100	0.51	0.63
	W/B	2,725	2,480	3,540	3,300	6,100	0.58	0.54
Cheung Tung Road Western Section	E/B	105	70	160	105	1,040	0.16	0.10
	W/B	95	75	160	110	1,040	0.15	0.10
Cheung Tung Road Eastern Section	E/B	110	80	165	165	1,040	0.16	0.16
	W/B	105	120	175	120	1,040	0.17	0.11
Discovery Bay Tunnel	E/B	75	40	120	70	1,280	0.10	0.05
	W/B	60	75	105	125	1,280	0.08	0.10
Discovery Bay Road (North of Discovery Valley Road)*	N/B	95	115	150	190	1,040	0.15	0.18
	S/B	95	110	155	175	1,040	0.15	0.17
Discovery Bay Road (South of Discovery Valley Road)*	N/B	105	135	180	225	1,040	0.17	0.21
	S/B	110	125	190	215	1,040	0.18	0.20
Discovery Valley Road*	E/B	20	35	35	55	1,040	0.03	0.05
	W/B	20	30	30	50	1,040	0.03	0.05
Siena Avenue*	E/B	45	30	75	45	1,040	0.07	0.05
	W/B	40	30	55	45	1,040	0.05	0.04

* Included Golf Cart at Discovery Bay internal roads with PCU factor of 1.

2.3.2 Junction capacity analyses based on the Transport Planning and Design Manual (TPDM) have been carried out at the key junctions. Results of the capacity assessment are summarised in **Table 2.4** below.

Table 2.4 Year 2015 Existing Junction Performance

Junction		Type	Performance *	
			AM	PM
J1	Discovery Bay Tunnel / Discovery Bay Road	Roundabout	0.07	0.06
J2	Discovery Bay Road / Discovery Valley Road	Priority	0.06	0.09
J3	Discovery Bay Road / Plaza Lane	Priority	0.35	0.36
J4	Discovery Bay Road / Marina Drive	Priority	0.10	0.08
J5	Discovery Bay Road / Headland Drive	Priority	0.02	0.05
J6	Shun Tung Road / Tat Tung Road (West)	Signal	42%	35%
J7	Shun Tung Road / Tat Tung Road (East)	Signal	>50%	>50%
J8	Tat Tung Road / Fu Tung Street	Priority	0.31	0.37
J9	Sunny Bay Road / Cheung Tung Road	Priority	0.05	0.05
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority	0.17	0.20
J11	Siena Avenue North Roundabout	Roundabout	0.06	0.04
J12	Discovery Bay Road / Vista Avenue	Priority	0.05	0.03
J13A	Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Signal	>50%	>50%
J13B	Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Signal	>50%	>50%
J14	Chek Lap Kok South Road Roundabout	Roundabout	0.49	0.44
J15	Shun Tung Road / Yu Tung Road	Signal	>50%	>50%
J16	Tung Chung East Interchange	Roundabout	0.15	0.16
J17	Tat Tung Road / Mei Tung Street	Signal	>50%	>50%
J18	Tat Tung Road / Hing Tung Street	Signal	>50%	>50%

* *Figures shown represent "Design Flow/Capacity" (DFC) ratio for roundabout and priority junctions, and "Reserve Capacity" for signal junctions*

2.3.3 As shown in **Tables 2.3 and 2.4**, all critical road links and key junctions are currently operating with significant spare capacity during both AM and PM peak hour.

2.4 Transport Services to/from Discovery Bay

2.4.1 The two main transport modes for accessing Discovery Bay are ferry and residential bus. Since 26 October 2014, designated areas in Discovery Bay (North) are also accessible by Urban and Lantau Taxis.

2.4.2 The main ferry route operates from Discovery Bay to Central. There are also local ferry/kaito ferry routes operating from Discovery Bay to Mui Wo, Peng Chau and Trappist Monastery

2.4.3 There are two types of bus services in Discovery Bay: one serves various residential developments within Discovery Bay for connection to the ferry pier or commercial centre at Discovery Bay (North); the other serves as external connection from Discovery Bay (from pier or DB North) to Tung Chung, Sunny Bay and Hong Kong International Airport, via Discovery Bay Tunnel.

2.4.4 Table 2.5 summarises the ferry and bus services for Discovery Bay.

Table 2.5 Ferry and Bus Services for Discovery Bay

No	Origin	Destination
Ferry		
-	Discovery Bay Ferry Pier	Central Pier No. 3
-	Discovery Bay (Nim Shue Wan)	Mui Wo [1]
-	Discovery Bay (Nim Shue Wan)	Peng Chau / Trappist Monastery [2]
Internal Bus		
1	Headland Drive/ Parkland Drive	Discovery Bay Ferry Pier
2	Hillgrove Village/ Midvale Village	Discovery Bay Ferry Pier
3	Hillgrove Village/ Parkvale Village	Discovery Bay Ferry Pier
4 [3]	Siena Two	Discovery Bay Ferry Pier
C4	Discovery Bay Ferry Pier	DB North Comm Centre (Circular)
5	La Vista / La Serene	Discovery Bay Ferry Pier
6	Seabee Lane	Discovery Bay Ferry Pier
7	Capeland Drive	Discovery Bay Ferry Pier
8	Caperidge Drive	Discovery Bay Ferry Pier
9 [3]	DB North Comm Centre / Siena One	Discovery Bay Ferry Pier
C9	Discovery Bay Ferry Pier	DB North Comm Centre (Circular)
9A	Chianti	Discovery Bay Ferry Pier
9S	Peninsula Village (Capevale Drive)	DB North Comm Centre
External Bus		
DB01R	Discovery Bay Ferry Pier	Tung Chung
DB02A	DB North Comm Centre	Airport
DB02R	Discovery Bay Ferry Pier	Airport
DB03P	DB North Comm Centre	Sunny Bay
DB03R	Discovery Bay Ferry Pier	Sunny Bay

[1] Operate on Saturdays, Sundays and Public Holidays. One departure per day per direction on Mondays to Fridays (School Days only) via Peng Chau

[2] Kaito ferry service

[3] AM peak period on Monday to Friday only

3 PROPOSED DEVELOPMENTS IN DISCOVERY BAY

3.1 Development Parameters

3.1.1 The additional development is located in Area 6f west of existing Discovery Bay Phase 3 Parkvale Village. It consists of 476 nos. of flat. Location plan of the developments is presented in **Figure 3.1**.

3.1.2 The other possible development in Area 10b of Discovery Bay for residential use is located along existing Marine Drive, which consists of 1,125 nos. of flat. The location of this residential development in Area 10b is also shown in **Figure 3.1**.

4 FUTURE TRAFFIC CONDITIONS

4.1 Trip Generation for Residential Developments

Pedestrian Trip Generation

4.1.1 The likely volume of traffic generated by the additional residential developments is based on the current trip generation and attraction by the existing residential developments in Discovery Bay, assuming future additional residential developments would have similar characteristics of the existing residential developments.

4.1.2 Pedestrian count surveys were also conducted during weekday AM and PM peak period, at the footpaths immediately outside the typical residential developments in Discovery Bay, counting the number of pedestrians leaving and entering the residential buildings during the peak period. The survey locations are shown in **Table 4.1** below.

Table 4.1 Pedestrian Survey Location

Survey Location	Coverage	Total No. of Flats
Footpath at Capevale Drive	Phase 4 Peninsula Village – Jovial Court, Haven Court and Verdant Court	408 nos.
Footpath at Costa Avenue	Phase 8 La Costa – Onda Court and Costa Court	230 nos.

4.1.3 The surveyed pedestrian flow and corresponding trip generation / attraction rates at the existing residential developments are then estimated. For comparison, reference has also been made to the overall pedestrian trips approaching / leaving Discovery Bay by external residential bus, ferry or taxi during the same peak period. These trip rates are tabulated in **Table 4.2** below.

Table 4.2 Peak Hour Pedestrian Trips and Trip Generation Rate

	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Pedestrian Count at Capevale Drive (persons/hr)	133	40	62	104
Trip Rate at Capevale Drive (persons/hr/flat)	0.326	0.098	0.152	0.255
Pedestrian Count at Costa Avenue (persons/hr)	67	25	38	57
Trip Rate at Costa Avenue (persons/hr/flat)	0.291	0.109	0.165	0.248
Total Pedestrian Trips Approaching / Leaving Discovery Bay by Bus, Ferry or Taxi (persons/hr) (1)	2,011	788	723	1,650
Trip Rate for Overall Discovery Bay (persons/hr/flat) (2)	0.242	0.095	0.087	0.198
Adopted Trip Rate for Additional Residential Development (persons/hr/flat)	**0.326**	**0.109**	**0.165**	**0.255**

(1) Reference to the peak hour Octopus count and ticket gate count provided by the operator for bus and ferry services respectively (refer to Appendix A). Surveys were also conducted at the taxi stand at Discovery Bay North to record the number of taxi passengers boarding/alighting during the peak hour

(2) Overall number of flats for existing residential developments is 8,326 nos.

4.1.4 As shown in **Table 4.2**, the surveyed pedestrian trip rates at the residential developments at Capevale Drive and Costa Avenue were in general higher than the overall trip rate for the entire Discovery Bay. For conservative approach, the higher trip rate is adopted for estimation of pedestrian generation for the proposed addition residential development, as shown in **Table 4.3** below. This adopted trip rate is considered conservative, since it has also included some Discovery Bay internal trips.

Table 4.3 Pedestrian Trip Generation for Additional Residential Developments in Area 6f (Unit: ped/hr)

Residential Development	No. of Flats	No. of Flats for Assess-ment [1]	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Area 6f	476	571	186	62	94	146
Estimated Pedestrian Trips to use External Bus Service (persons/hr)			93	31	47	73
Estimated Pedestrian Trips to use Ferry Service to Central (persons/hr)			93	31	47	73

[1] Includes a +20% variation in total number of flats adopted for assessment to allow for flexibility in detailed design

4.1.5 Assuming that the modal split for additional residential developments would be similar to the existing travel pattern, the pedestrian trips generated are mainly travel to urban areas by ferry, or external residential bus to MTR Station at Sunny Bay or Tung Chung. With reference to the boarding/alighting surveys and the information on the ferry ticket gate / bus Octopus count from the operator, the modal split for ferry and bus modes is approximately 50% and 50% respectively. According to the latest survey, only around 1% of the total external trips are by taxi.

4.1.6 Also, it is anticipated that during AM and PM peak hour, trip generation from the additional residential developments are mainly work-related trips to urban areas, hence the estimated patronage for the two ferry services to Mui Wo and Peng Chau/Trappist Monastery would be minimal only.

4.1.7 For pedestrian trips generated who would travel by ferry to urban areas, it is assumed that they would take internal residential bus directly from the proposed residential development to the bus DB Plaza, then change to ferry at the pier. While for those travelling to Sunny Bay/Tung Chung, it is assumed that they would also take the internal residential bus to DB Plaza or DB North, then change transfer to external bus towards Sunny Bay/Tung Chung etc.

4.1.8 Walk trips to/from ferry pier and cycle trips are excluded, as a conservative approach for assessment of internal bus generation (i.e. assume all pedestrian trip generation would travel by internal bus).

4.1.9 In addition, the walk trips and cycle trips would only induce minimized impact to existing footpath and cycle track. Since according to the latest surveys, including both interview survey and site observation survey conducted at the building block entrance at Phase 3 Parkvale Village and Phase 4 Peninsula Village, the observed split for walking and cycling to/from ferry pier is around 10% and <0.5% respectively, as shown in **Table 4.4** and **4.5** below.

Table 4.4 Pedestrian Survey at Phase 3 Parkvale Village

	AM Peak	PM Peak
Total surveyed pedestrians leaving residential building block to ferry pier	*59*	*22*
• By bus/golf cart	52 (88%)	19 (86%)
• By walk	7 (12%)	3 (14%)
• By Bicycle	0 (0%)	0 (0%)
	AM Peak	**PM Peak**
Total surveyed pedestrians approaching residential building block from ferry pier	*16*	*62*
• By bus/golf cart	15 (94%)	57 (92%)
• By walk	1 (6%)	5 (8%)
• By Bicycle	0 (0%)	0 (0%)

Table 4.5 Pedestrian Survey at Phase 4 Peninsula Village

	AM Peak	PM Peak
Total surveyed pedestrians leaving residential building block to ferry pier	*105*	*43*
• By bus/golf cart	91 (87%)	40 (93%)
• By walk	13 (12%)	3 (7%)
• By Bicycle	1 (1%)	0 (0%)
	AM Peak	**PM Peak**
Total surveyed pedestrians approaching residential building block from ferry pier	*23*	*83*
• By bus/golf cart	21 (91%)	76 (92%)
• By walk	2 (9%)	6 (7%)
• By Bicycle	0 (0%)	1 (1%)

4.1.10 The additional two-way walk trips generated/attracted for Area 6f would only be less than 30 ped/hr during AM and PM peak hour. While the clear width of the narrowest part of the footpath is 2.5m, assuming 0.5m lateral clearance on both sides of the footpath and LOS C performance (i.e. flow rate = 32.8 ped/min/m), the capacity of footpath would be 32.8 × (2.5-0.5-0.5) × 60 = 2,952 ped/hr.

4.1.11 With the existing footpath available capacity at the narrowest section of around 2,950 ped/hr (i.e. around 100 times the pedestrian trip generated). Majority of the residents would travel by shuttle bus immediate outside the residential developments. Hence, impact on existing pedestrian and cycle track network would only be minimal.

Vehicular Trip Generation – Bus

4.1.12 Based on the above assumptions, the estimated pedestrian trips as shown in **Table 4.3** are converted to vehicular (bus) trip generation.

4.1.13 As a conservative approach, it is assumed that the bus trip generation due to additional residential developments would have occupancy of not more than 70% (i.e. each bus would carry not more than 56 passengers including standing passengers), hence generating a higher number of bus trips compared with the case of assuming 100% occupancy (i.e. each bus would carry 80 passengers including standing passengers).

4.1.14 The vehicular (bus) trip generation for internal trips between the additional developments and DB Plaza bus terminus is tabulated in **Table 4.6** below.

Table 4.6 Calculated Internal Bus Trip Generation for Additional Residential Developments in Area 6f (Unit: pcu/hr)

Residential Development	No. of Flats	No. of Flats for Assessment [1]	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Area 6f	476	571	186 / 56 = 4 veh = 10 pcu	62 / 56 = 2 veh = 5 pcu	94 / 56 = 2 veh = 5 pcu	146 / 56 = 3 veh = 8 pcu

[1] Includes a +20% variation in total number of flats adopted for assessment to allow for flexibility in detailed design

4.1.15 For assessment purpose on providing bus service to the residential development, the critical bound traffic during peak hour would be adopted for both generation and attraction. In the morning peak, the critical bound is generation while in the evening peak the attraction would be more critical. Also, for conservative approach, it is assumed these buses from the additional residential developments would operate with headway of around 8 minutes, similar to the existing internal bus services. The adopted vehicular (bus) trip generation for internal trips is shown in **Table 4.7** below.

Table 4.7 Adopted Internal Bus Trip Generation for Additional Residential Developments in Area 6f (Unit: pcu/hr)

Residential Development	No. of Flats	No. of Flats for Assessment [1]	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Area 6f	476	571	20	20	20	20

[1] Includes a +20% variation in total number of flats adopted for assessment to allow for flexibility in detailed design

4.1.16 Similarly, the vehicular (bus) trips for external services are estimated, assuming that these buses would operate in addition to the existing services to Sunny Bay, Tung Chung and Airport. The calculated bus trip generation is shown in Table 4.8.

Table 4.8 Calculated Additional External Bus Trip Generation for Additional Residential Developments in Area 6f

	% Split [1]	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Estimated Pedestrian Trips to use External Bus Service (persons/hr)	-	93	31	47	73
Estimated Pedestrian Trips for Tung Chung (persons/hr)	25%	23	8	12	18
Estimated Pedestrian Trips for Airport (persons/hr)	5%	5	2	2	4
Estimated Pedestrian Trips for Sunny Bay (persons/hr)	70%	65	21	33	51
Calculated External Bus Trip for Tung Chung (pcu/hr)	-	23 / 56 = 1 veh = 2.5 pcu	8 / 56 = 1 veh = 2.5 pcu	12 / 56 = 1 veh = 2.5 pcu	18 / 56 = 1 veh = 2.5 pcu
Calculated External Bus Trip for Airport (pcu/hr)	-	5 / 56 = 1 veh = 2.5 pcu	2 / 56 = 1 veh = 2.5 pcu	2 / 56 = 1 veh = 2.5 pcu	4 / 56 = 1 veh = 2.5 pcu
Calculated External Bus Trip for Sunny Bay (pcu/hr)	-	65 / 56 = 2 veh = 5 pcu	21 / 56 = 1 veh = 2.5 pcu	33 / 56 = 1 veh = 2.5 pcu	51 / 56 = 1 veh = 2.5 pcu
Total Additional Calculated External Bus Trip for Discovery Bay	-	**10 pcu**	**8 pcu**	**8 pcu**	**8 pcu**

[1] Reference to the peak hour Octopus count provided by the operator for the three existing bus route to Tung Chung, Airport and Sunny Bay

4.1.17 Critical bound traffic during peak hour would be adopted for both generation and attraction, similar to the approach for internal bus trip generation. Hence, the adopted bus trip generation is shown in Table 4.9.

Table 4.9 Adopted Additional External Bus Trip Generation for Additional Residential Developments in Area 6f

	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Adopted External Bus Trip for Tung Chung (pcu/hr)	2.5	2.5	2.5	2.5
Adopted External Bus Trip for Airport (pcu/hr)	2.5	2.5	2.5	2.5
Adopted External Bus Trip for Sunny Bay (pcu/hr)	5	2.5	2.5	2.5
Total Additional Adopted External Bus Trip for Discovery Bay	**10**	**10***	**8**	**8**

* Critical trip generation of 10 pcu/hr during AM peak was adopted for both trip generation and attraction

Vehicular Trip Generation – Taxi

4.1.18 With reference to the traffic study conducted in March 2014, for peak hour taxi generation under the no toll scenario, it is estimated that the existing residential developments in Discovery Bay would generate / attract 79 taxis one-way during the peak hour.

4.1.19 While under the survey conducted after introduction of taxi services, the surveyed peak hour taxi generation is 30 taxis one-way, including those serving the residential developments, hotel and other facilities in Yi Pak. Hence, the existing amount of taxi trip generation is lower that the estimation under previous traffic study. For conservative approach, the taxi trip generation by new additional developments will make reference to the estimation under previous traffic study.

4.1.20 Using the taxi trip generation under previous traffic study, the one-way additional taxi trip generation would be 79 taxis ÷ 8,326 existing flats × 476 additional flats (with 20% buffer) = 5 taxis.

Vehicular Trip Generation – Summary

4.1.21 **Table 4.10** below summarised the adopted trip generation for the proposed additional residential developments in Area 6f of Discovery Bay.

Table 4.10 Adopted Trip Generation for Additional Residential Developments in Area 6f (Unit: pcu/hr)

	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Internal Bus Trip	20	20	20	20
External Bus Trip	10	10	8	8
External Taxi Trip	5	5	5	5
Total	**35**	**35**	**33**	**33**

4.1.22 Similarly, the trip generation for the possible trip generation for developments in Area 10b of Discovery Bay for residential use is also estimated, and would be included in the "Reference Scenario" of future year traffic assessment (refer to Section 4.3). **Table 4.11** below summarised the adopted trip generation for the possible residential developments in Area 10b of Discovery Bay.

Table 4.11 Adopted Trip Generation for Additional Residential Developments in Area 10b (Unit: pcu/hr)

	AM Peak		PM Peak	
	Generation	**Attraction**	**Generation**	**Attraction**
Internal Bus Trip	20	20	20	20
External Bus Trip	13	13	13	13
External Taxi Trip	13	13	13	13
Total	**46**	**46**	**46**	**46**

Occupancy for Ferry Service

4.1.23 Assessment on the existing ferry service has also been conducted, to appreciate the impact of the additional residential developments to the existing ferry service.

4.1.24 As mentioned above, the pedestrian trip generation from additional residential developments are mainly work-related trips to urban areas. Hence it is assumed that all pedestrian trips generated would use the ferry service to/from Central during the AM and PM peak hour. Nonetheless, the existing occupancy of the two ferry services to Mui Wo and Peng Chau/Trappist Monastery is also shown for reference purpose.

4.1.25 As shown in **Table 4.12** below, the critical AM peak occupancy for ferry services from Discovery Bay to Central would increase from 64% to 93%, with taken into account the subject proposed additional residential development in Area 6f and also the possible residential developments in Area 10b. Hence, the existing ferry service would still operate within capacity with the additional residential developments in place.

Table 4.12 Occupancy of Ferry Service

	AM Peak		PM Peak	
	Generation	**Attraction**	**Generation**	**Attraction**
Discovery Bay – Mui Wo [1]				
Existing Peak Hour Ferry Ridership to/from Mui Wo (persons/hr) [2]	n/a	122	94	n/a
Capacity of Ferry Service Operated (persons/hr)	n/a	161	161	n/a
Existing Occupancy of Ferry Service to/from Mui Wo	n/a	76%	58%	n/a

	AM Peak		PM Peak	
	Generation	**Attraction**	**Generation**	**Attraction**
Discovery Bay – Peng Chau/Trappist Monastery				
Existing Peak Hour Ferry Ridership to/from Peng Chau/Trappist Monastery (persons/hr) [2]	30	237	119	11
Capacity of Ferry Service Operated (persons/hr)	364	364	182	182
Existing Occupancy of Ferry Service to/from Peng Chau/Trappist Monastery	8%	65%	65%	6%
Discovery Bay – Central				
Existing Peak Hour Ferry Ridership to/from Central (persons/hr) [3]	1,277	177	249	926
Capacity of Ferry Service Operated (persons/hr)	1,980	1,485	990	1,485
Existing Occupancy of Ferry Service	**64%**	**12%**	**25%**	**62%**
Estimated Ferry Patronage to Represent 10,000 Flats under Approved OZP with Adjustment Factor of 1.2 (refer to Section 4.3) (persons/hr)	1,532	212	299	1,111
Estimated Pedestrian Trips Generated from Possible Residential Developments in Area 10b (persons/hr)	220	73	112	172
Estimated Pedestrian Trips Generated from Additional Residential Developments in Area 6f (persons/hr)	93	31	47	73
Total Ridership with Both Additional Residential Developments (persons/hr)	1,845	317	458	1,356
Estimated Occupancy of Ferry Service	**93%**	**21%**	**46%**	**91%**

[1] Single trip from Mui Wo to Discovery Bay in AM peak; single trip from Discovery Bay to Mui Wo in PM peak

[2] Reference to patronage count survey conducted on a typical weekday in Jan 2015

[3] Reference to the peak hour ticket gate count provided by the operator

4.2 Future Year Major Highway and Land Use Assumption

4.2.1 The additional developments in Discovery Bay are targeted for completion in Year 2023. Year 2026 and 2031 are used as the assessment years for the purpose of this study.

4.2.2 Year 2026 and 2031 traffic forecast for the major strategic road links (eg. North Lantau Highway) and critical junctions in Tung Chung are prepared with reference to our in-house strategic transport model,

which has incorporated with the latest highway infrastructure and planning assumptions.

4.2.3 With reference to the latest highway infrastructure assumptions, relevant key future highway infrastructures for this study are summarised in Table 4.13 below.

Table 4.13 Highway Infrastructure Assumptions

Year 2016 (In addition to Base Year 2009 Road Network)	**Configuration**
Southern Connection of Tuen Mun-Chek Lap Kok Link	Dual 2
Hong Kong – Zhuhai – Macao Bridge Hong Kong Link Road	Dual 3
Hong Kong – Zhuhai – Macao Bridge	Dual 3
Year 2021 (In addition to 2016 Road Network)	**Configuration**
Northern Connection of Tuen Mun-Chek Lap Kok Link	Dual 2
Year 2026 (In addition to 2021 Road Network)	**Configuration**
Lantau Road P1 between Tung Chung and Sunny Bay	Dual 2

4.2.4 A brief summary of the key land-use assumptions are also listed below:

- Tung Chung New Town (progressive population intake);
- Sunny Bay Tourism Node (2026);
- SkyCity developments located in the North Commercial District of Airport Island (which includes SkyPlaza), plus some additional development in the East Commercial District (from now to 2030);
- Lantau Logistics Park (LLP) (2026);
- Asia World-Expo (AWE) future expansion (from now to 2025);
- Transport Hub at Siu Ho Wan MTR Depot (2026);
- Airport Third Runway (2026);
- Possible LLP Extension or Recreational Uses or other Compatible Users west of LLP (by 2031); and
- Tung Chung New Town Extension (by 2031)

4.3 Assessment Scenarios

4.3.1 To evaluate the associated traffic impact likely to be induced by the additional developments in Discovery Bay, two scenarios were analysed and compared. The first scenario (i.e. "Reference Scenario") assumed that the number of residential units in Discovery Bay would be grown to 10,000 flats from existing 8,326 flats under the current approved OZP. An adjustment factor of 1.2 (=10,000 ÷ 8,326) would be applied to the Year 2015 surveyed traffic flow within Discovery Bay to represent the traffic with 10,000 flats.

4.3.2 Reference has also been made to the previous approved TIA report for transport arrangements in Yi Pak in Year 2010 and the taxi flow sensitivity study under no toll scenario in March 2014. Traffic generation for the proposed commercial, community and hotel developments in Yi Pak, including taxi, goods vehicles, and public coach etc. has been included in the "Reference Scenario". Although taxi service has already been introduced and surveyed in the Year 2015 flow, the surveyed taxi flow is lower than that estimated in the previous study. For conservative approach, the trip generation presented in previous study will be adopted in this study.

4.3.3 For the taxi generation for residential developments in Discovery Bay, and it has been adjusted using the factor of 1.2 mentioned above, to represent the flow under full 10,000 flats within Discovery Bay.

4.3.4 Traffic forecast of background traffic at critical strategic road links and junctions outside Discovery Bay under the "Reference Scenario", reference is made to our in-house strategic transport model, which has incorporated with the latest highway infrastructure and planning assumptions.

4.3.5 In addition, trip generation and attraction of the possible residential developments in Area 10b has also been included under the "Reference Scenario".

4.3.6 For the second scenario (i.e. "Design Scenario"), traffic generated by the additional residential developments in Area 6f of Discover Bay as presented in the previous section would be included on top of the traffic flow under Reference Scenario.

4.3.7 In summary, the assessed scenarios are listed below:

- Year 2026/2031 "Reference Scenario"

  = Year 2026/2031 in-house traffic model with latest highway and planning assumptions

  + Surveyed Year 2015 Discovery Bay Traffic Flow with Adjustment Factor of 1.2 *(for full development under approved OZP)*

  + Traffic Generation and Attraction *(including taxi)* for Yi Pak Developments

  + Taxi Generation and Attraction with Adjustment Factor of 1.2 *(for full development under approved OZP)*

  + Trips Generation and Attraction for Possible Residential Developments in Area 10b of Discovery Bay

- Year 2026/2031 "Design Scenario"

  = Traffic Flow under "Reference Scenario"

  + Trips Generation and Attraction for Additional Residential Developments in Area 6f of Discovery Bay

4.4 Future Traffic Performance

4.4.1 The projected Year 2026 traffic flows of internal and external road networks for the "Reference Scenario" and "Design Scenario" are shown in **Figures 4.1** to **4.4** accordingly, while the same set of traffic flows for Year 2031 are shown in **Figures 4.5** to **4.8** respectively.

4.4.2 Link capacity assessment for Year 2026 and 2031 are shown in **Tables 4.14** to **4.17** below, while junction capacity assessment for the key junctions for Year 2026 and 2031 are summarised in **Tables 4.18** and **4.19** below. The observed traffic flow condition in 2015 are shown together in the tables as reference.

4.4.3 All critical road links and key junctions are expected to operate with v/c ratio below 1.2 (except Lantau Link W/B during AM Peak of Year 2031 Reference and Design Scenarios) and within practicable capacity during both AM and PM peak hour in Year 2026 and 2031, with the additional residential developments in place. As shown in **Tables 4.16** and **4.17**, Lantau Link W/B would be operating with v/c ratio of 1.24 during AM Peak, under both Year 2031 Reference and Year 2031 Design Scenario, indicating that the impact of traffic generation from the additional residential units on the said assessed road link is negligible.

Table 4.14 Year 2026 Projected Traffic Flow for Critical Links during Peak Hours – Reference Scenario (Unit: PCU/Hour)

Critical Road Links	Direction	Carriageway Capacity (PCU/hour)	Year 2015 Observed Flow (PCU/Hour)		Year 2026 Reference Scenario (PCU/Hour)		Year 2026 Volume-to-Capacity (V/C) Ratio	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Lantau Link	E/B	6,100	3,570	4,480	5,045	5,300	0.83	0.87
	W/B	6,100	4,495	3,575	5,550	5,215	0.91	0.85
North Lantau Highway	E/B	6,100	3,090	3,840	3,330	3,555	0.55	0.58
	W/B	6,100	3,540	3,300	3,880	3,670	0.64	0.60
Cheung Tung Road Western Section	E/B	1,040	160	105	250	220	0.24	0.21
	W/B	1,040	160	110	235	190	0.22	0.18
Cheung Tung Road Eastern Section	E/B	1,040	165	165	335	380	0.32	0.36
	W/B	1,040	175	120	350	300	0.34	0.29
Discovery Bay Tunnel	E/B	1,280	120	70	420	360	0.33	0.28
	W/B	1,280	105	125	400	420	0.31	0.33
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	195	240	0.19	0.23
	S/B	1,040	155	175	200	225	0.19	0.22
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	230	280	0.22	0.27
	S/B	1,040	190	215	240	270	0.23	0.26
Discovery Valley Road	E/B	1,040	35	55	40	65	0.04	0.06
	W/B	1,040	30	50	40	60	0.04	0.06
Siena Avenue	E/B	1,040	75	45	350	320	0.34	0.31
	W/B	1,040	55	45	330	315	0.32	0.31

Table 4.15 Year 2026 Projected Traffic Flow for Critical Links during Peak Hours – Design Scenario (Unit: PCU/Hour)

Critical Road Links	Direction	Carriageway Capacity (PCU/hour)	Year 2015 Observed Flow (PCU/Hour)		Year 2026 Design Scenario (PCU/Hour)		Year 2026 Volume-to-Capacity (V/C) Ratio	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Lantau Link	E/B	6,100	3,570	4,480	5,050	5,305	0.83	0.87
	W/B	6,100	4,495	3,575	5,555	5,220	0.91	0.86
North Lantau Highway	E/B	6,100	3,090	3,840	3,335	3,560	0.55	0.58
	W/B	6,100	3,540	3,300	3,885	3,675	0.64	0.60
Cheung Tung Road Western Section	E/B	1,040	160	105	255	230	0.25	0.22
	W/B	1,040	160	110	235	195	0.23	0.19
Cheung Tung Road Eastern Section	E/B	1,040	165	165	335	385	0.32	0.37
	W/B	1,040	175	120	360	305	0.34	0.29
Discovery Bay Tunnel	E/B	1,280	120	70	435	370	0.34	0.29
	W/B	1,280	105	125	415	435	0.32	0.34
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	205	250	0.20	0.24
	S/B	1,040	155	175	210	230	0.20	0.22
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	260	310	0.25	0.30
	S/B	1,040	190	215	270	295	0.26	0.28
Discovery Valley Road	E/B	1,040	35	55	60	85	0.06	0.08
	W/B	1,040	30	50	60	80	0.06	0.08
Siena Avenue	E/B	1,040	75	45	360	325	0.34	0.31
	W/B	1,040	55	45	335	325	0.32	0.31

Table 4.16 Year 2031 Projected Traffic Flow for Critical Links during Peak Hours – Reference Scenario (Unit: PCU/Hour)

Critical Road Links	Direction	Carriageway Capacity (PCU/hour)	Year 2015 Observed Flow (PCU/Hour)		Year 2031 Reference Scenario (PCU/Hour)		Year 2031 Volume-to-Capacity (V/C) Ratio	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Lantau Link	E/B	6,100	3,570	4,480	6,635	7,240	1.09	1.18
	W/B	6,100	4,495	3,575	7,565	7,105	1.24	1.16
North Lantau Highway	E/B	6,100	3,090	3,840	4,825	5,750	0.79	0.94
	W/B	6,100	3,540	3,300	5,565	5,505	0.91	0.90
Cheung Tung Road Western Section	E/B	1,040	160	105	270	245	0.26	0.23
	W/B	1,040	160	110	230	195	0.22	0.19
Cheung Tung Road Eastern Section	E/B	1,040	165	165	350	405	0.34	0.39
	W/B	1,040	175	120	345	300	0.33	0.29
Discovery Bay Tunnel	E/B	1,280	120	70	420	360	0.33	0.28
	W/B	1,280	105	125	400	420	0.31	0.33
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	195	240	0.19	0.23
	S/B	1,040	155	175	200	225	0.19	0.22
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	230	280	0.22	0.27
	S/B	1,040	190	215	240	270	0.23	0.26
Discovery Valley Road	E/B	1,040	35	55	40	65	0.04	0.06
	W/B	1,040	30	50	40	60	0.04	0.06
Siena Avenue	E/B	1,040	75	45	350	320	0.34	0.31
	W/B	1,040	55	45	330	315	0.32	0.31

Table 4.17 Year 2031 Projected Traffic Flow for Critical Links during Peak Hours – Design Scenario (Unit: PCU/Hour)

Critical Road Links	Direction	Carriageway Capacity (PCU/hour)	Year 2015 Observed Flow (PCU/Hour)		Year 2031 Design Scenario (PCU/Hour)		Year 2031 Volume-to-Capacity (V/C) Ratio	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Lantau Link	E/B	6,100	3,570	4,480	6,640	7,245	1.09	1.19
	W/B	6,100	4,495	3,575	7,570	7,110	1.24	1.17
North Lantau Highway	E/B	6,100	3,090	3,840	4,830	5,755	0.79	0.94
	W/B	6,100	3,540	3,300	5,570	5,510	0.91	0.90
Cheung Tung Road Western Section	E/B	1,040	160	105	275	250	0.26	0.24
	W/B	1,040	160	110	230	195	0.22	0.19
Cheung Tung Road Eastern Section	E/B	1,040	165	165	355	405	0.34	0.39
	W/B	1,040	175	120	355	305	0.34	0.30
Discovery Bay Tunnel	E/B	1,280	120	70	435	370	0.34	0.29
	W/B	1,280	105	125	415	435	0.32	0.34
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	205	250	0.20	0.24
	S/B	1,040	155	175	210	230	0.20	0.22
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	260	310	0.25	0.30
	S/B	1,040	190	215	270	295	0.26	0.28
Discovery Valley Road	E/B	1,040	35	55	60	85	0.06	0.08
	W/B	1,040	30	50	60	80	0.06	0.08
Siena Avenue	E/B	1,040	75	45	360	325	0.34	0.31
	W/B	1,040	55	45	335	325	0.32	0.31

Table 4.18 Year 2026 Junction Performance

Junction		Type	Year 2015 Observed Performance *		Year 2026 Reference Scenario *		Year 2026 Design Scenario *	
			AM	PM	AM	PM	AM	PM
J1	Discovery Bay Tunnel / Discovery Bay Road	Roundabout	0.07	0.06	0.20	0.19	0.21	0.19
J2	Discovery Bay Road / Discovery Valley Road	Priority	0.06	0.09	0.08	0.12	0.11	0.15
J3	Discovery Bay Road / Plaza Lane	Priority	0.35	0.36	0.48	0.50	0.55	0.55
J4	Discovery Bay Road / Marina Drive	Priority	0.10	0.08	0.14	0.12	0.14	0.12
J5	Discovery Bay Road / Headland Drive	Priority	0.02	0.05	0.03	0.07	0.03	0.07
J6	Shun Tung Road / Tat Tung Road (West)	Signal	42%	33%	17%	20%	16%	20%
J7	Shun Tung Road / Tat Tung Road (East)	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J8	Tat Tung Road / Fu Tung Street	Priority	0.30	0.37	0.35	0.43	0.37	0.45
J9	Sunny Bay Road / Cheung Tung Road	Priority	0.05	0.05	0.50	0.52	0.52	0.53
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority	0.17	0.20	0.72	0.75	0.75	0.77
J11	Siena Avenue North Roundabout	Roundabout	0.06	0.04	0.28	0.25	0.28	0.25
J12	Discovery Bay Road / Vista Avenue	Priority	0.05	0.03	0.06	0.04	0.06	0.04
J13A	Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J13B	Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J14	Chek Lap Kok South Road Roundabout	Roundabout	0.49	0.44	0.52	0.52	0.52	0.52
J15	Shun Tung Road / Yu Tung Road	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J16	Tung Chung East Interchange	Roundabout	0.15	0.16	0.32	0.28	0.32	0.28
J17	Tat Tung Road / Mei Tung Street	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J18	Tat Tung Road / Hing Tung Street	Signal	>50%	>50%	>50%	>50%	>50%	>50%

* Figures shown represent "Design Flow/Capacity" (DFC) ratio for roundabout and priority junctions, and "Reserve Capacity" for signal junctions

Table 4.19 Year 2031 Junction Performance

Junction		Type	Year 2015 Observed Performance *		Year 2031 Reference Scenario *		Year 2031 Design Scenario *	
			AM	PM	AM	PM	AM	PM
J1	Discovery Bay Tunnel / Discovery Bay Road	Roundabout	0.07	0.06	0.20	0.19	0.21	0.19
J2	Discovery Bay Road / Discovery Valley Road	Priority	0.06	0.09	0.08	0.12	0.11	0.15
J3	Discovery Bay Road / Plaza Lane	Priority	0.35	0.36	0.48	0.50	0.55	0.55
J4	Discovery Bay Road / Marina Drive	Priority	0.10	0.08	0.14	0.12	0.14	0.12
J5	Discovery Bay Road / Headland Drive	Priority	0.02	0.05	0.03	0.07	0.03	0.07
J6	Shun Tung Road / Tat Tung Road (West)	Signal	42%	33%	17%	20%	16%	20%
J7	Shun Tung Road / Tat Tung Road (East)	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J8	Tat Tung Road / Fu Tung Street	Priority	0.30	0.37	0.41	0.41	0.43	0.43
J9	Sunny Bay Road / Cheung Tung Road	Priority	0.05	0.05	0.54	0.56	0.55	0.57
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority	0.17	0.20	0.72	0.75	0.75	0.78
J11	Siena Avenue North Roundabout	Roundabout	0.06	0.04	0.28	0.25	0.28	0.25
J12	Discovery Bay Road / Vista Avenue	Priority	0.05	0.03	0.06	0.04	0.06	0.04
J13A	Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J13B	Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J14	Chek Lap Kok South Road Roundabout	Roundabout	0.49	0.44	0.81	0.84	0.81	0.84
J15	Shun Tung Road / Yu Tung Road	Signal	>50%	>50%	20%	>50%	20%	>50%
J16	Tung Chung East Interchange	Roundabout	0.15	0.16	0.39	0.41	0.39	0.41
J17	Tat Tung Road / Mei Tung Street	Signal	>50%	>50%	>50%	>50%	>50%	>50%
J18	Tat Tung Road / Hing Tung Street	Signal	>50%	>50%	>50%	>50%	>50%	>50%

* Figures shown represent "Design Flow/Capacity" (DFC) ratio for roundabout and priority junctions, and "Reserve Capacity" for signal junctions

5 SUMMARY AND CONCLUSION

5.1 Summary

5.1.1 There are plans to optimize the residential potential of Discovery Bay, in particular in Area 6f with a total of 476 nos. of flats into residential development in additional to the current approved Outline Zoning Plan.

5.1.2 Under the existing comprehensive traffic control management for Discovery Bay, only authorized vehicles are allowed to access Discovery Bay via Discovery Bay Tunnel such as emergency vehicles, servicing buses and goods vehicles. Since 26 October 2014, designated areas in Discovery Bay (North) are also accessible by Urban and Lantau Taxis.

5.1.3 Comprehensive traffic counts were conducted at critical road links including Discovery Bay Road, Discovery Valley Road, Siena Avenue, Discovery Bay Tunnel, Cheung Tung Road and North Lantau Highway, Lantau Link, and key junctions in Discovery Bay, Tung Chung and Sunny Bay areas. They are all currently operating with significant spare capacity during both AM and PM peak hour.

5.1.4 To investigate the performance and handling capacity of the critical road links and junctions, an analysis was carried out to appraise the likely traffic impact generated by the additional developments (i.e. residential) in the Discovery Bay. Assessment on the existing ferry services has also been conducted

5.1.5 Both reference scenario (full development under current approved OZP with traffic generation for Yi Pak developments) and design scenario (with traffic generation from the additional residential development) have been assessed, for Year 2026 and 2031.

5.1.6 All key road links and junctions would be operated below v/c ratio of 1.2 (except Lantau Link W/B during AM Peak of Year 2031 Reference and Design Scenarios) and within practicable capacity during both AM and PM peak hour. Lantau Link W/B would be operating with v/c ratio of 1.24 during AM Peak, under both Year 2031 Reference and Year 2031 Design Scenario, indicating that the impact of traffic generation from the additional residential units on the said assessed road link is negligible.

5.1.7 In addition, the existing ferry service would still operate within capacity with the additional residential developments in place.

5.2 Conclusion

5.2.1 The proposed additional residential developments in Discovery Bay (i.e. Area 6f) would not generate adverse traffic impact to the ferry services and the critical road links and junctions in Discovery Bay, Tung Chung and Sunny Bay areas. Therefore, the additional residential developments are acceptable from traffic point of view.

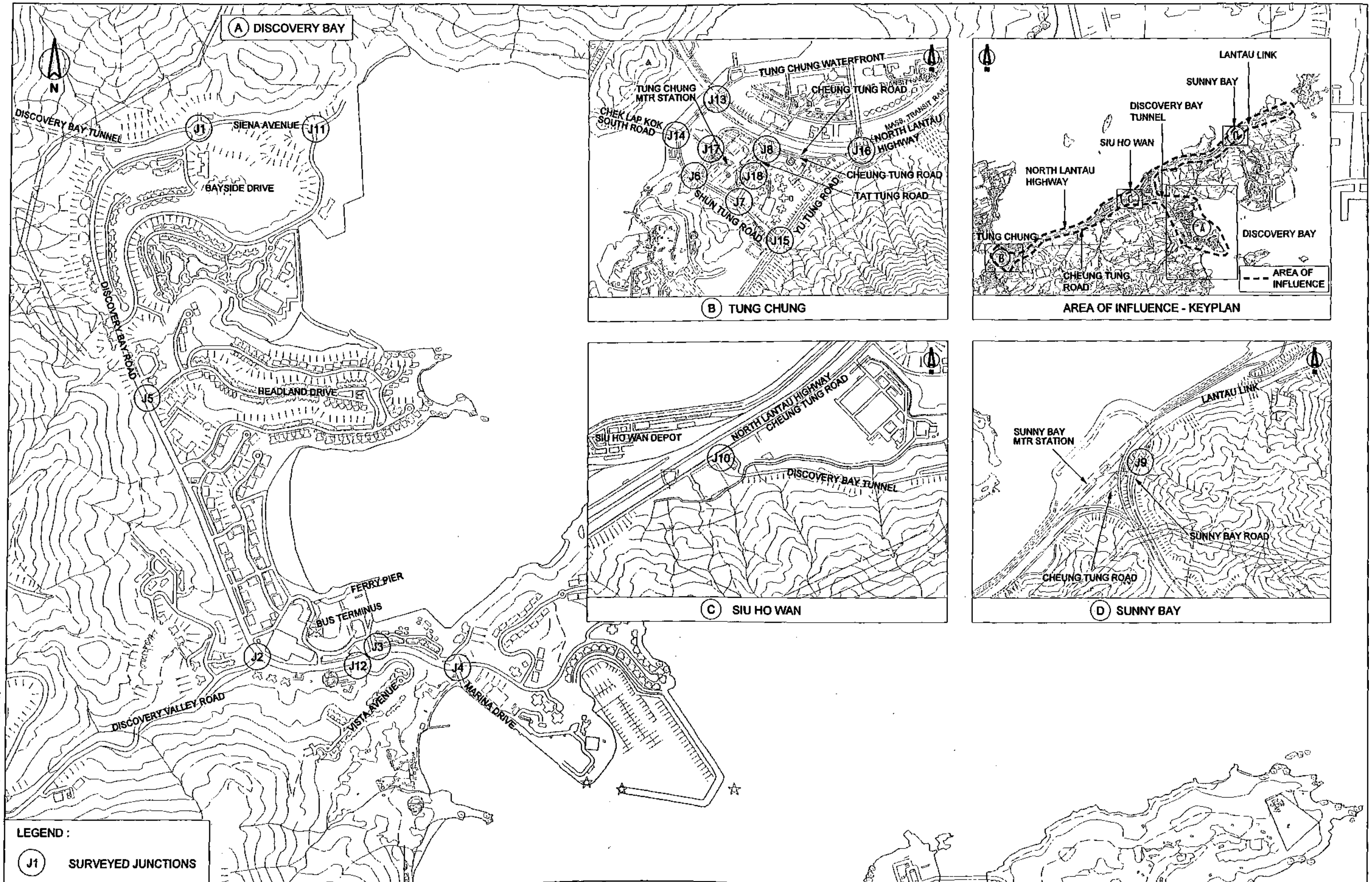
Figures

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

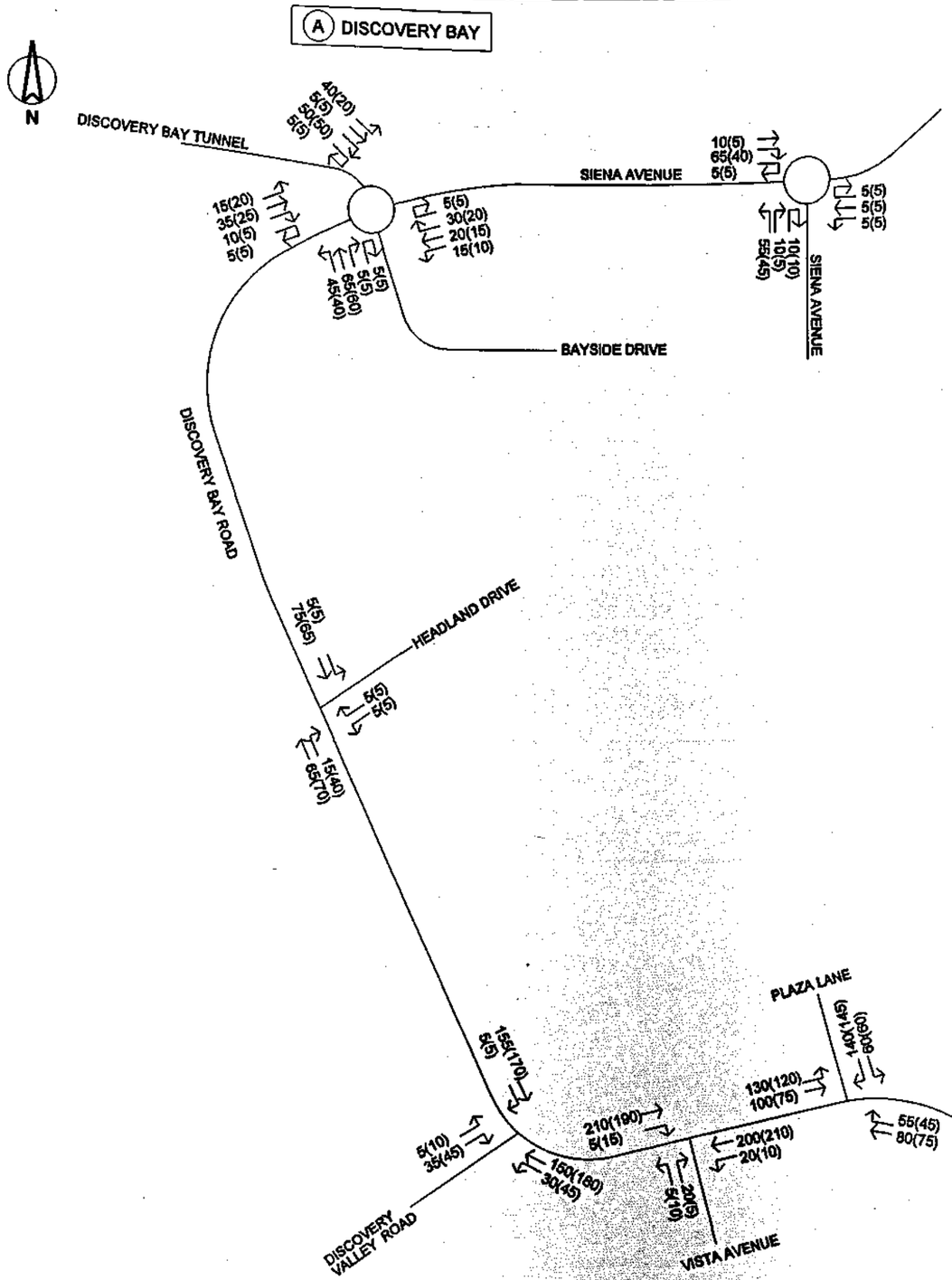
FIGURE 2.1

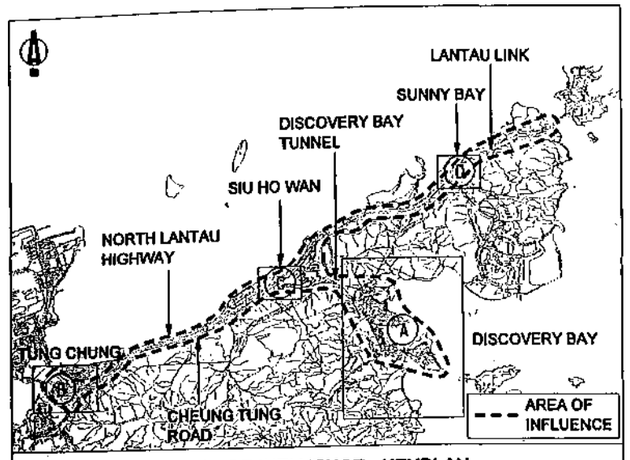
NOV 15	1:11000	EXISTING ROAD NETWORK IN DISCOVERY BAY
WTL	236078	

ARUP



OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F			FIGURE 2.2
NOV 15	N.T.S.	LOCATION OF SURVEYED KEY JUNCTIONS	ARUP
WTL	236078		





AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

↑ AM PEAK (PCU/HR)

Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

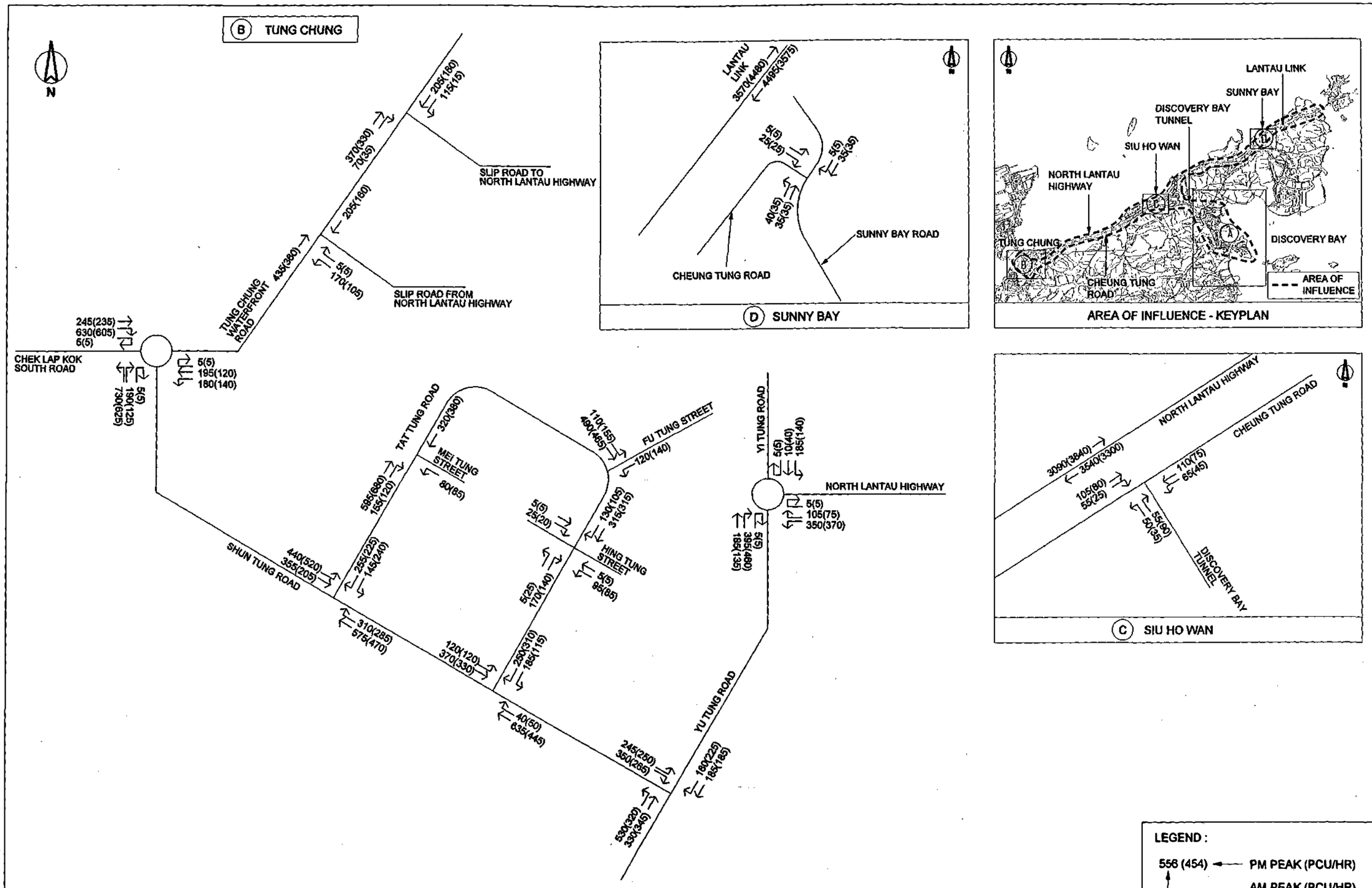
FIGURE 2.3

Date	Scale
NOV 15	N.T.S.
Drawn	Job No.
WTL	236078

Drawing Title: EXISTING YEAR 2015 OBSERVED TRAFFIC FLOWS (INTERNAL ROAD NETWORK)

ARUP

M:\Drawing\230000\236078 @Discovery Bay Plan\Drawing\2D\30\6F\FIGURE_2.3.dgn



OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

FIGURE 2.4

Date	Scale
NOV 15	N.T.S.
Drawn	Job No.
WTL	236078

EXISTING YEAR 2015 OBSERVED TRAFFIC FLOWS (EXTERNAL ROAD NETWORK)

ARUP

N

DISCOVERY BAY TUNNEL

SIENA AVENUE

DISCOVERY BAY ROAD

AREA 6f
NO. OF FLATS = 476

AREA 10b
POTENTIAL RESIDIENTIAL
DEVELOPMENT

DISCOVERY VALLEY
ROAD

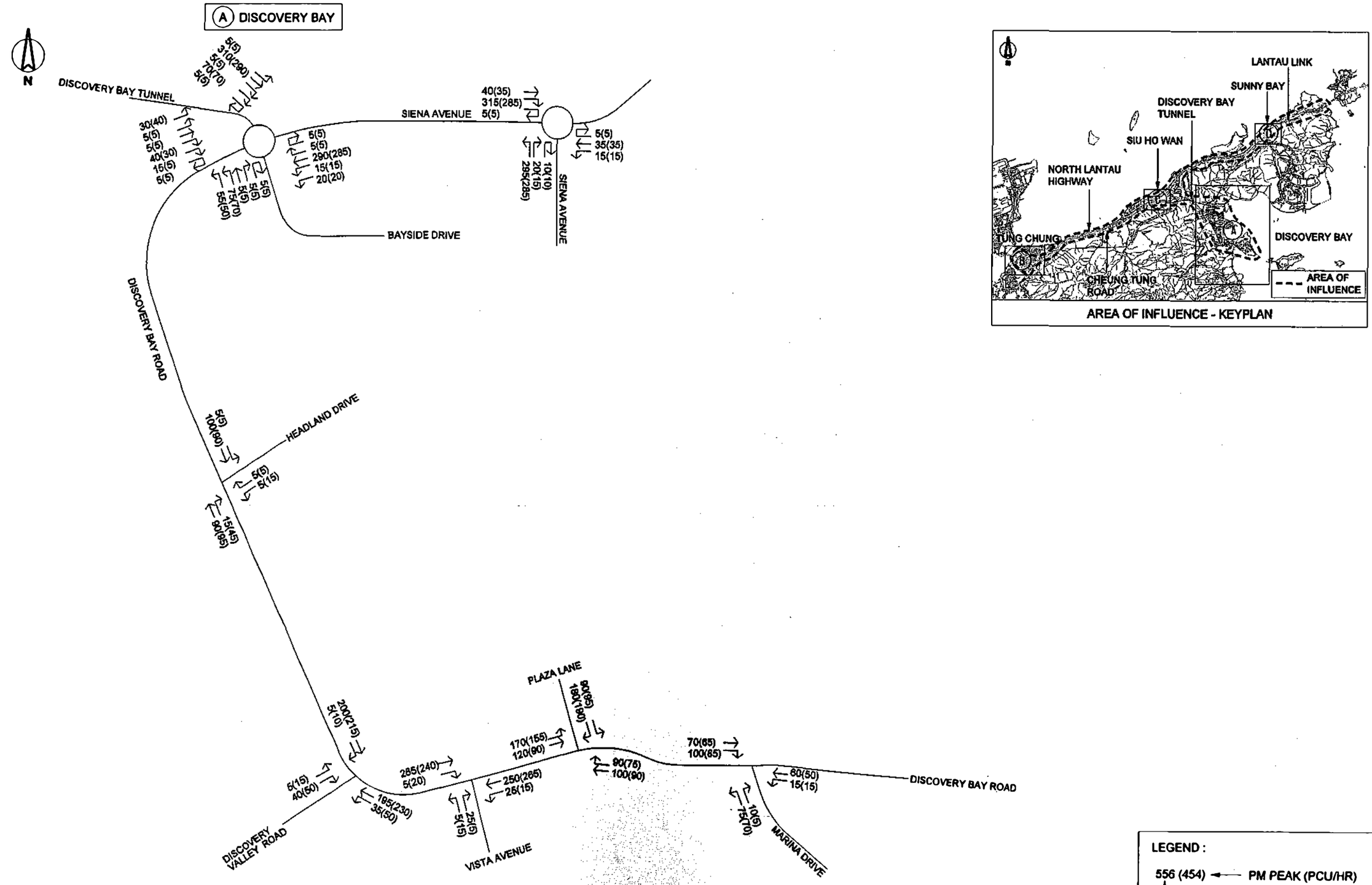
M:\Drawing\236000\236078 Discovery Bay 1\A\Drawing\20503D\6f\FIGURE_3.1.dgn

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

FIGURE 3.1

Date	Scale	Drawing Title
NOV 15	1:10000	PROPOSED DEVELOPMENT IN DISCOVERY BAY
Drawn	Job No.	
WTL	236078	

ARUP



AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

↑ AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

FIGURE 4.1

NOV 15	N.T.S.
WTL	236078

PROJECTED YEAR 2026 TRAFFIC FLOWS - REFERENCE SCENARIO (INTERNAL ROAD NETWORK)

ARUP

M:\Drawing\236000\236078 (Discovery Bay Tdm\Drawing\236078\FIGURE_4.1.dgn

B TUNG CHUNG

N

SLIP ROAD TO NORTH LANTAU HIGHWAY

SLIP ROAD FROM NORTH LANTAU HIGHWAY

TUNG CHUNG WATERFRONT ROAD

CHEK LAP KOK SOUTH ROAD

TAT TUNG ROAD

MEI TUNG STREET

FU TUNG STREET

SHUN TUNG ROAD

HING TUNG STREET

YI TUNG ROAD

YU TUNG ROAD

NORTH LANTAU HIGHWAY

D SUNNY BAY

LANTAU LINK

SUNNY BAY ROAD

CHEUNG TUNG ROAD

AREA OF INFLUENCE - KEYPLAN

LANTAU LINK

SUNNY BAY

DISCOVERY BAY TUNNEL

SIU HO WAN

NORTH LANTAU HIGHWAY

TUNG CHUNG

DISCOVERY BAY

CHEUNG TUNG ROAD

AREA OF INFLUENCE

C SIU HO WAN

CHEUNG TUNG ROAD

NORTH LANTAU HIGHWAY

DISCOVERY BAY TUNNEL

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

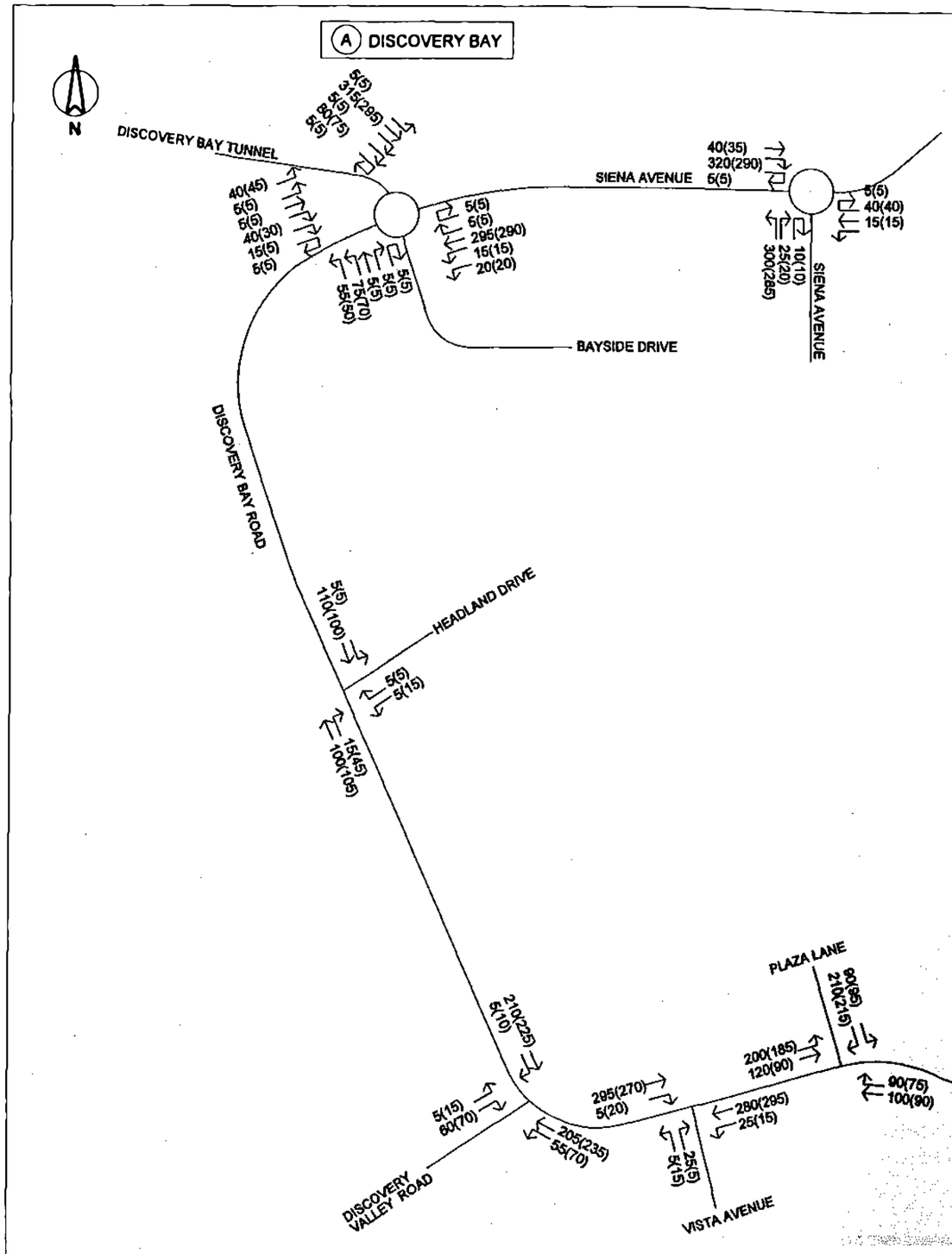
FIGURE 4.2

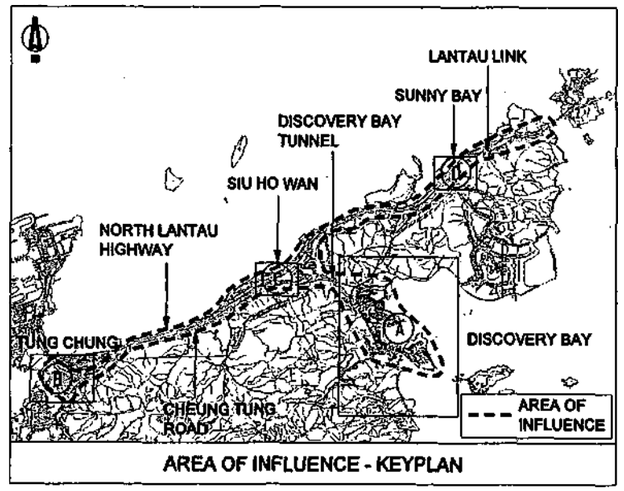
Date	Scale
NOV 15	N.T.S.
Drawn	Job No.
WTL	236078

PROJECTED YEAR 2026 TRAFFIC FLOWS : REFERENCE SCENARIO (EXTERNAL ROAD NETWORK)

ARUP

\\Hkgprojects\Traffic\Drawing\230000\236078 Discovery Bay Tai\Drawing\2005\3D\GF\FIGURE_42.dgn





AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

FIGURE 4.3

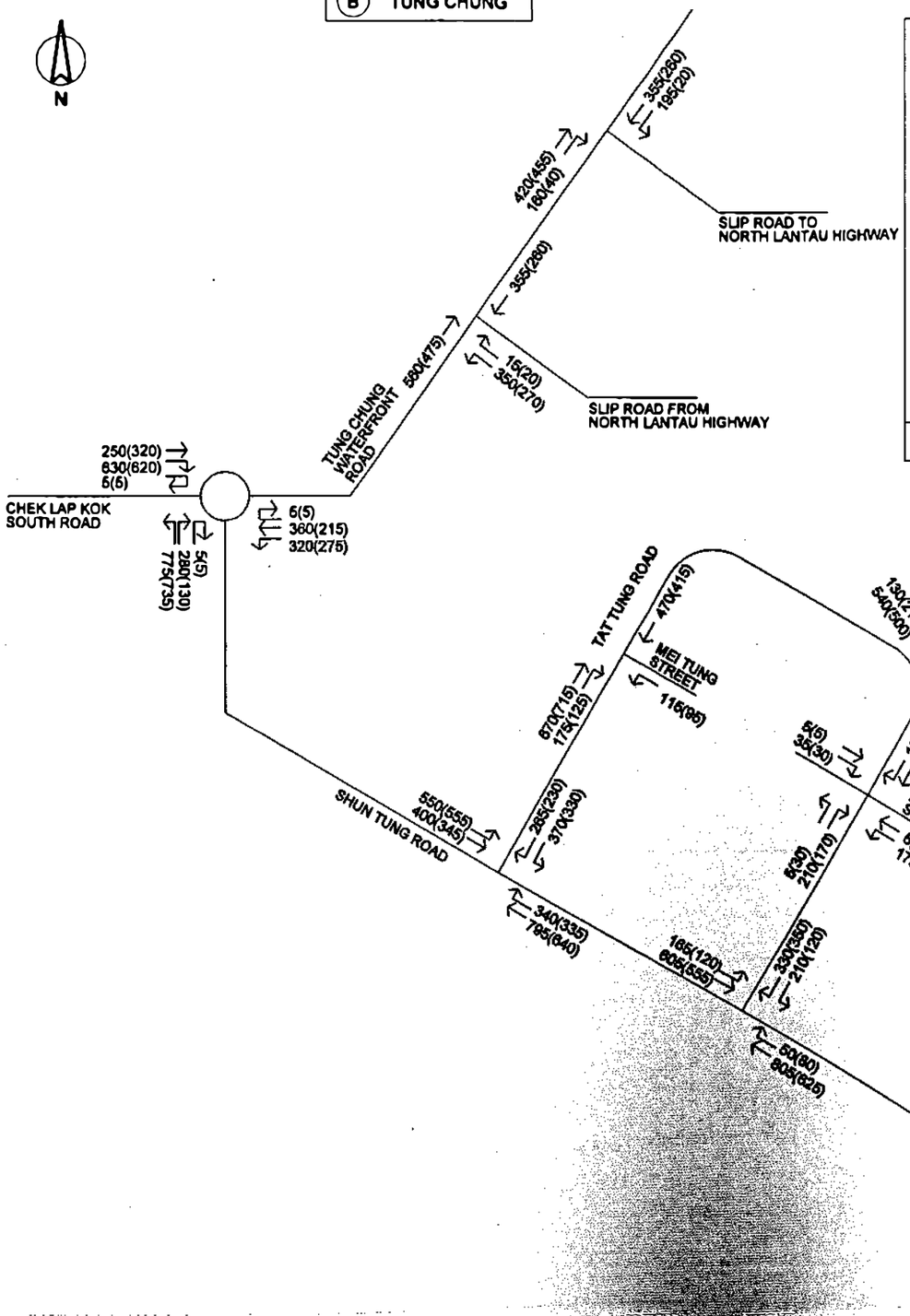
Date	Scale
NOV 15	N.T.S.
Drawn	Job No.
WTL	236078

PROJECTED YEAR 2026 TRAFFIC FLOWS - DESIGN SCENARIO (INTERNAL ROAD NETWORK)

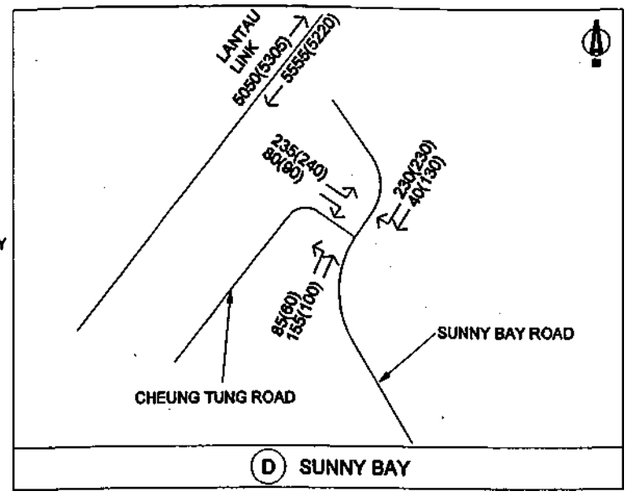
ARUP

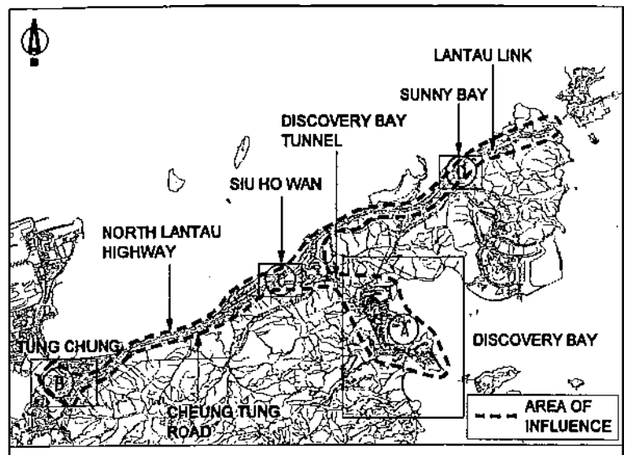
M:\Drawing\230000\236078 (Discovery Bay Tan)\Drawing\2D\3D\6F\VISUAL_4.3.dgn

(B) TUNG CHUNG



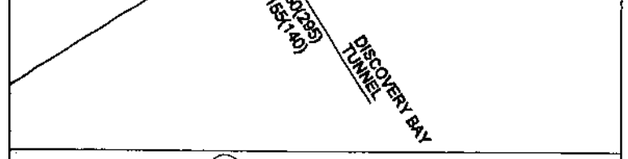
(D) SUNNY BAY





AREA OF INFLUENCE - KEYPLAN

(C) SIU HO WAN



LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

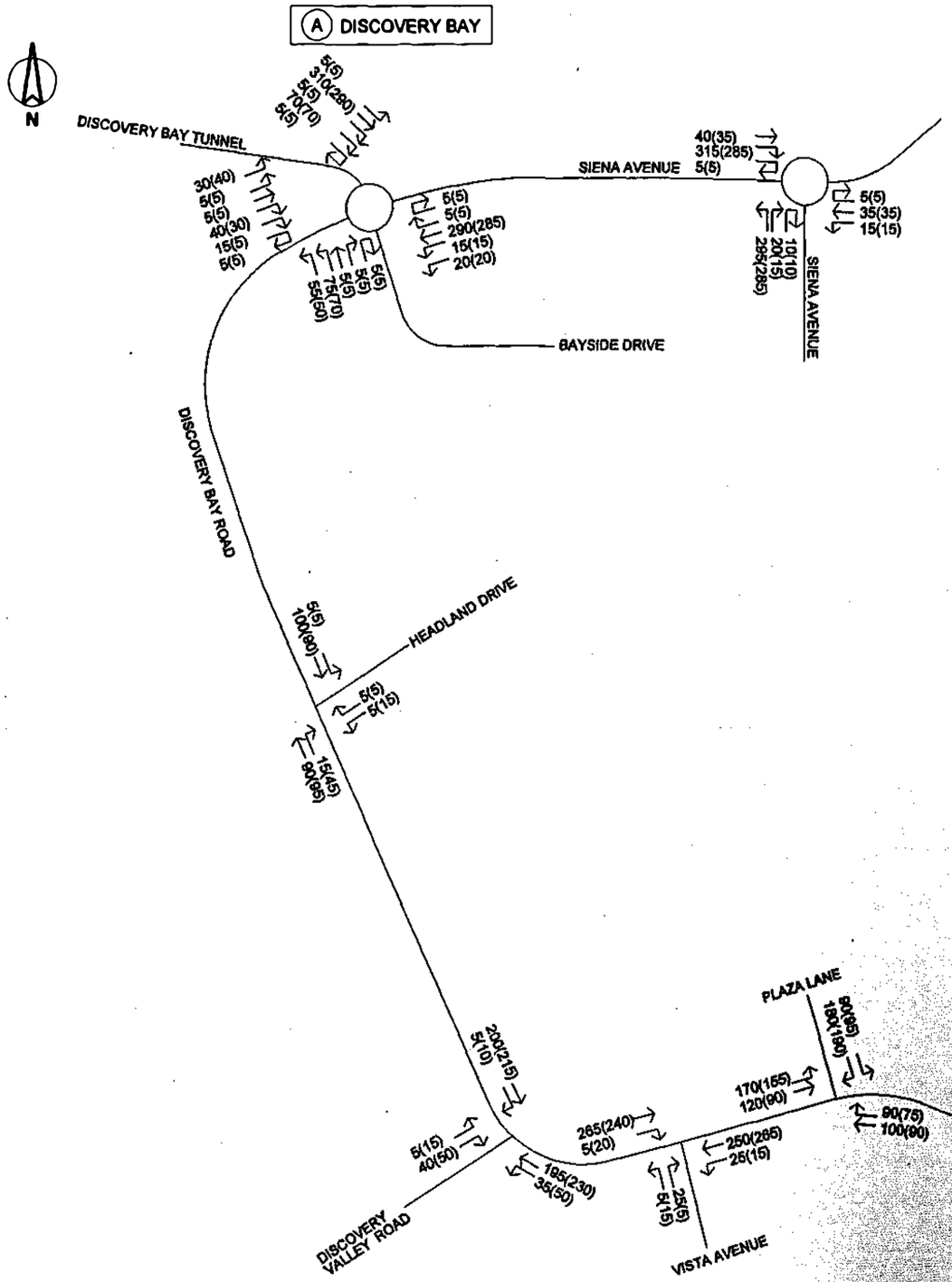
FIGURE 4.4

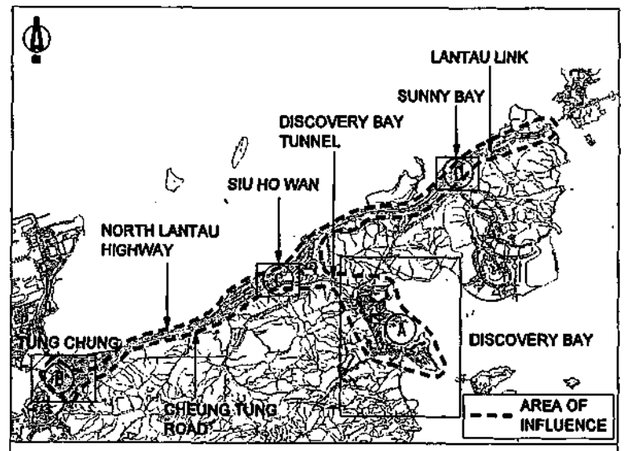
NOV 15	N.T.S.
WTL	236078

PROJECTED YEAR 2026 TRAFFIC FLOWS - DESIGN SCENARIO (EXTERNAL ROAD NETWORK)

ARUP

\\hkg1a65\Traffic\Drawing\236000\236078 @Discovery Bay TIA\Drawing\20540101\F\FIGURE_4.4.dgn





AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

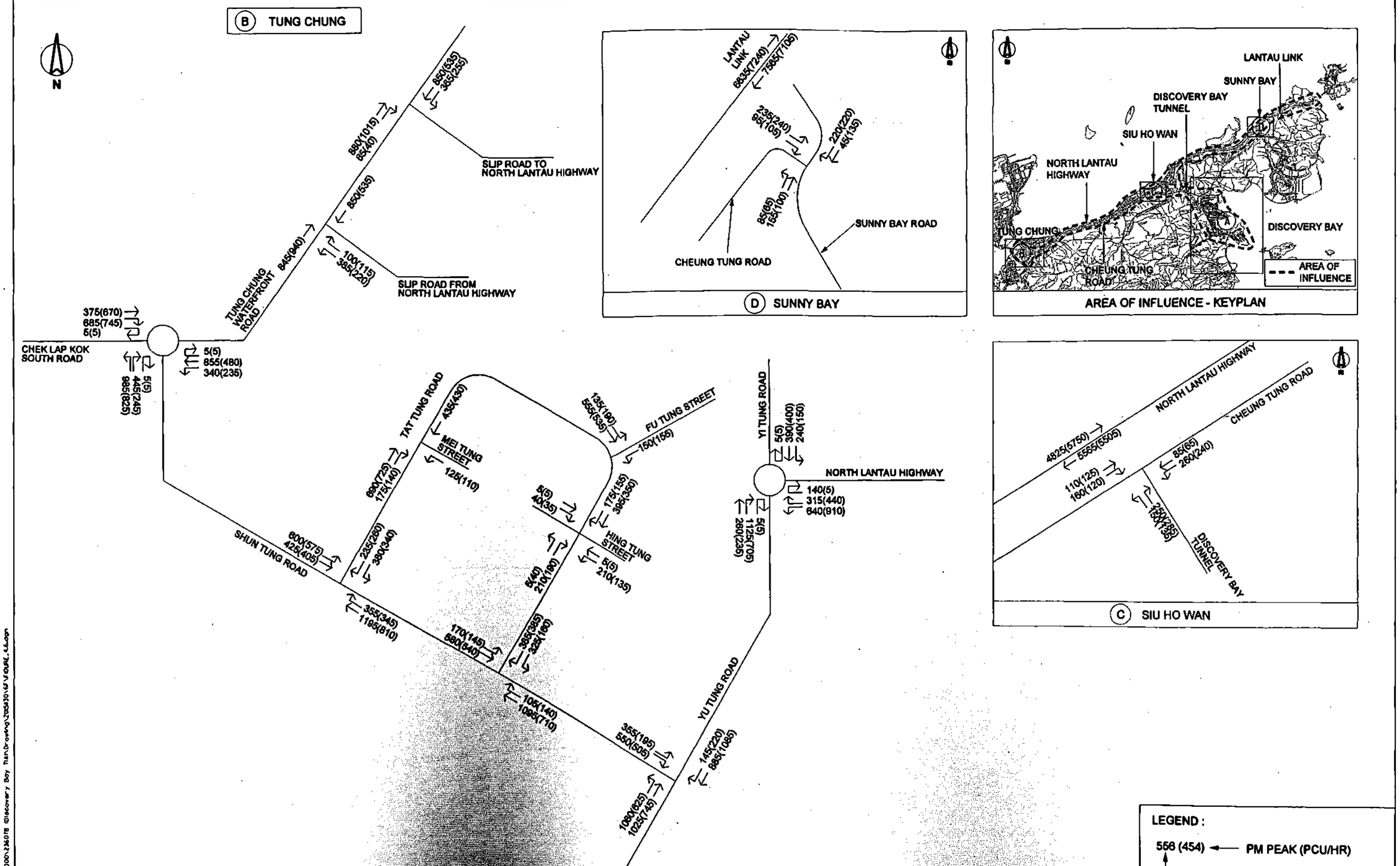
FIGURE 4.5

Date: NOV 15	Scale: N.T.S.
Drawn: WTL	Job No.: 236078

PROJECTED YEAR 2031 TRAFFIC FLOWS - REFERENCE SCENARIO (INTERNAL ROAD NETWORK)

ARUP

M:\Drawing\230000\236078 @Discovery Bay TIA\Drawing\205310\6F\FIGURE_4.5.dgn



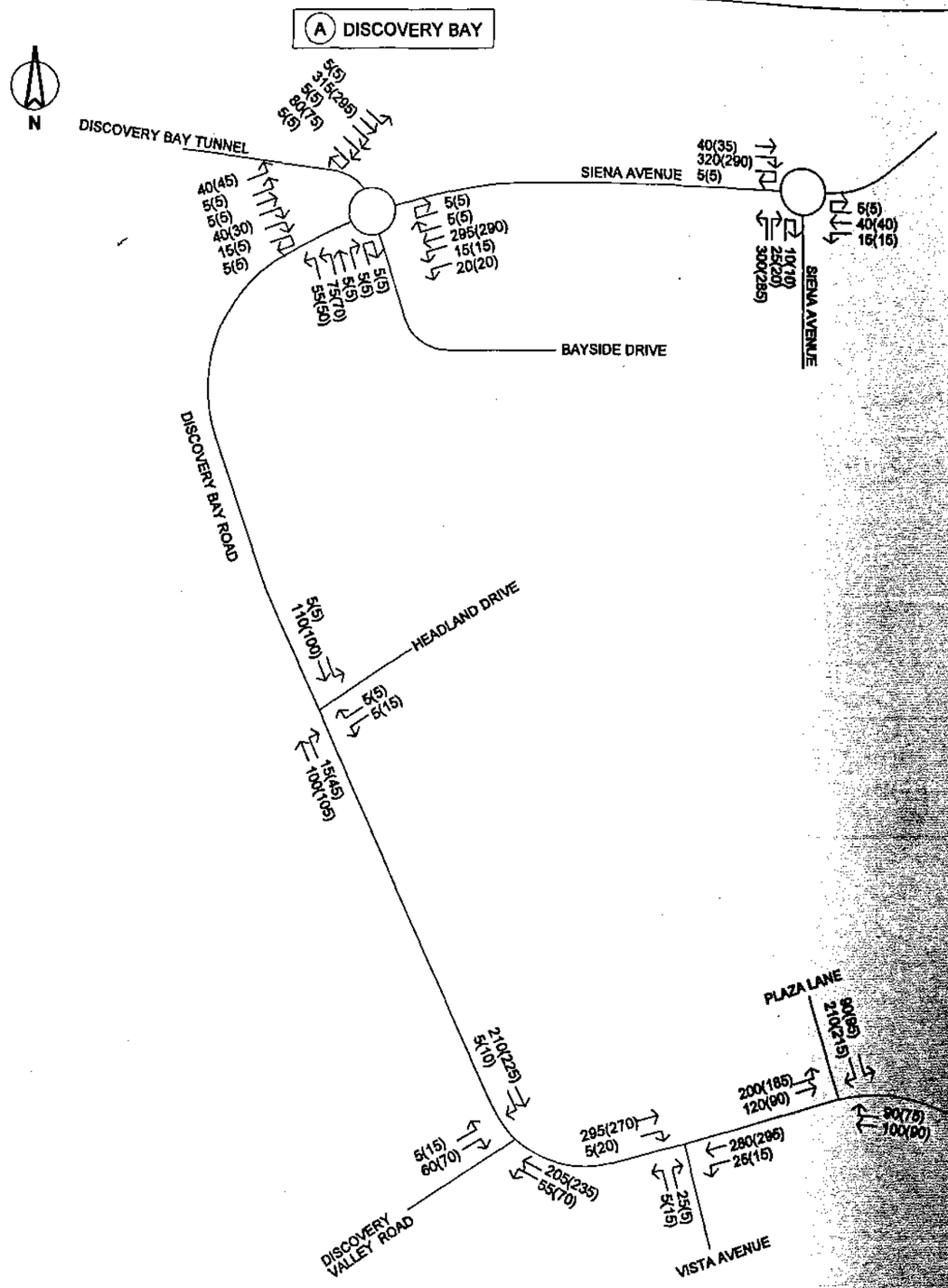
OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

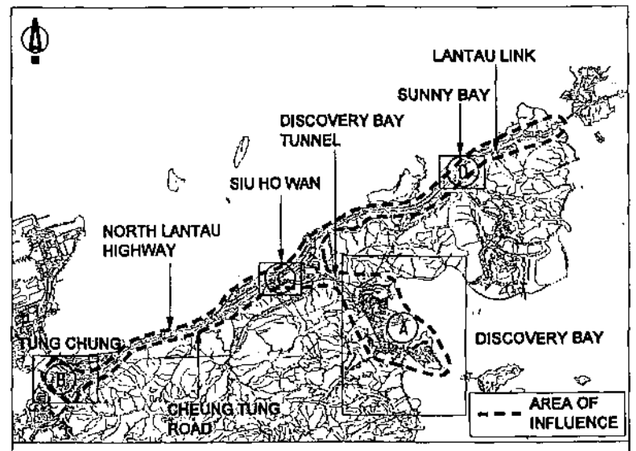
FIGURE 4.6

PROJECTED YEAR 2031 TRAFFIC FLOWS - REFERENCE SCENARIO (EXTERNAL ROAD NETWORK)

NOV 15 | N.T.S. | WTL | 236078

ARUP





AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

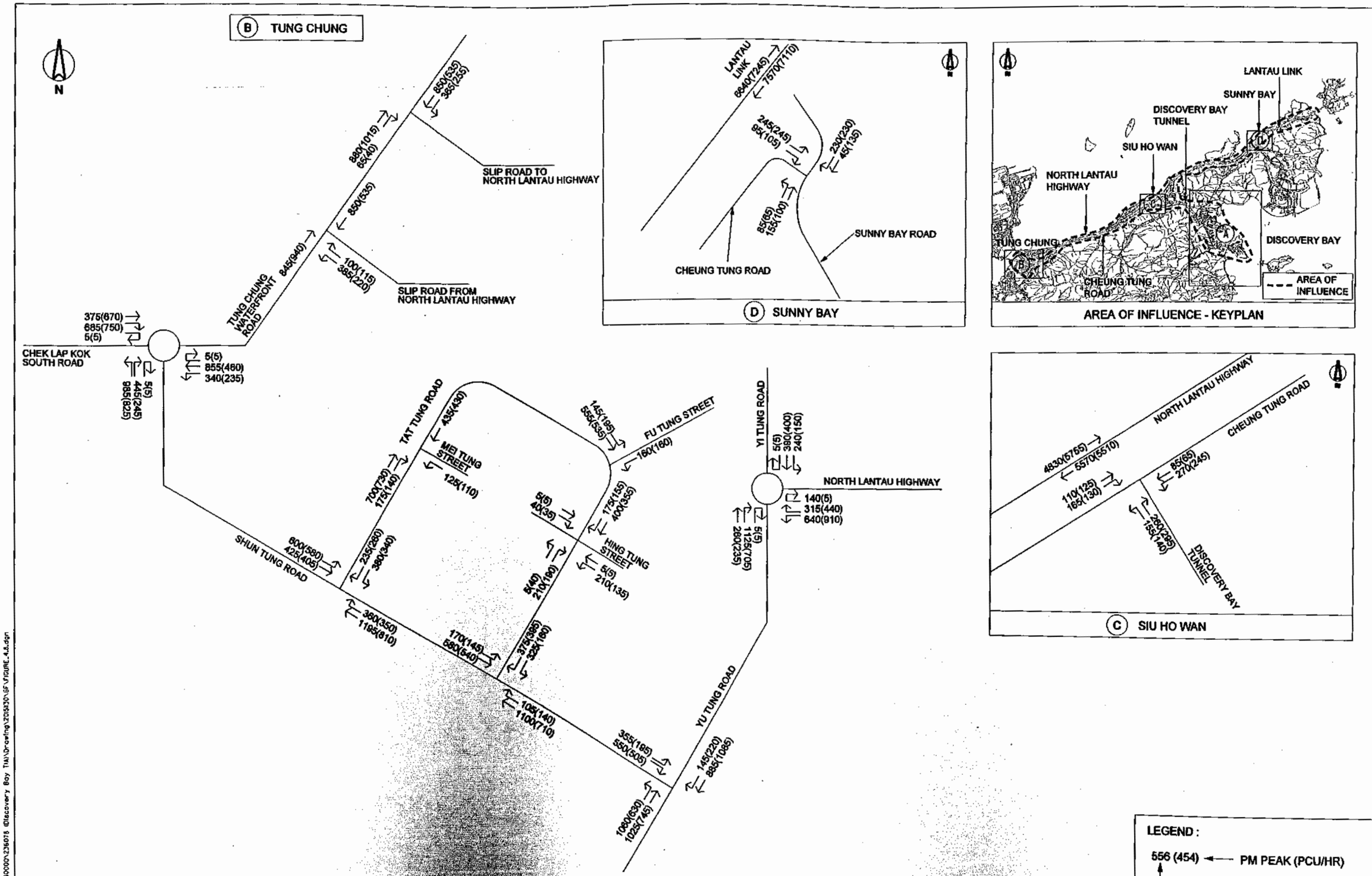
FIGURE 4.7

Date: NOV 15	Scale: N.T.S.
Drawn: WTL	Job No.: 236078

PROJECTED YEAR 2031 TRAFFIC FLOWS - DESIGN SCENARIO (INTERNAL ROAD NETWORK)

ARUP

M:\Drawing\236000\236078 (Discovery Bay Plan)\Drawing\236078\FIGURE_4.7.dgn



OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 6F

FIGURE 4.8

Date	Scale
NOV 15	N.T.S.
Drawn	Job No.
WTL	236078

PROJECTED YEAR 2031 TRAFFIC FLOWS - DESIGN SCENARIO (EXTERNAL ROAD NETWORK)

ARUP

\\hkgnts69\Traffic\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\205830\GFX\FIGURE_4.8.dgn

Appendix A

Bus Octopus and Ferry Ticket Gate Count Provided by Operators

Bus Octopus Count Provided by Operators (Typical Weekday)

DB01R	to TC	to DB
	2082	2125
00:00	4	8
01:00		19
02:00		
03:00		
04:00		
05:00	27	39
06:00	54	58
07:00	149	110
08:00	157	149
09:00	94	124
10:00	129	87
11:00	88	105
12:00	194	56
13:00	152	132
14:00	136	149
15:00	104	89
16:00	174	178
17:00	148	168
18:00	173	177
19:00	124	143
20:00	73	126
21:00	43	99
22:00	38	85
23:00	31	26

DB02R	to DB	to DBN
	1376	113
00:00	16	
01:00	13	
02:00	8	
03:00	2	
04:00	13	
05:00	31	
06:00	70	
07:00	98	14
08:00	105	16
09:00	43	12
10:00	51	8
11:00	51	1
12:00	56	1
13:00	63	11
14:00	74	5
15:00	92	12
16:00	69	4
17:00	60	10
18:00	76	10
19:00	84	7
20:00	54	1
21:00	95	1
22:00	102	
23:00	70	

DB03R	to SB	to DB
	3026	3177
00:00		39
01:00		10
02:00		
03:00		
04:00		
05:00		
06:00	141	31
07:00	403	154
08:00	424	266
09:00	298	129
10:00	210	91
11:00	162	91
12:00	134	82
13:00	147	109
14:00	114	93
15:00	122	92
16:00	109	211
17:00	272	175
18:00	193	390
19:00	109	338
20:00	55	254
21:00	46	282
22:00	48	219
23:00	39	121

DB03F	to SB	to DB
	832	523
00:00		
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00	49	10
08:00	115	43
09:00	52	37
10:00	89	11
11:00	60	21
12:00	54	16
13:00	53	25
14:00	44	21
15:00	53	36
16:00	68	30
17:00	89	32
18:00	52	43
19:00	30	74
20:00	14	67
21:00	10	39
22:00		18
23:00		

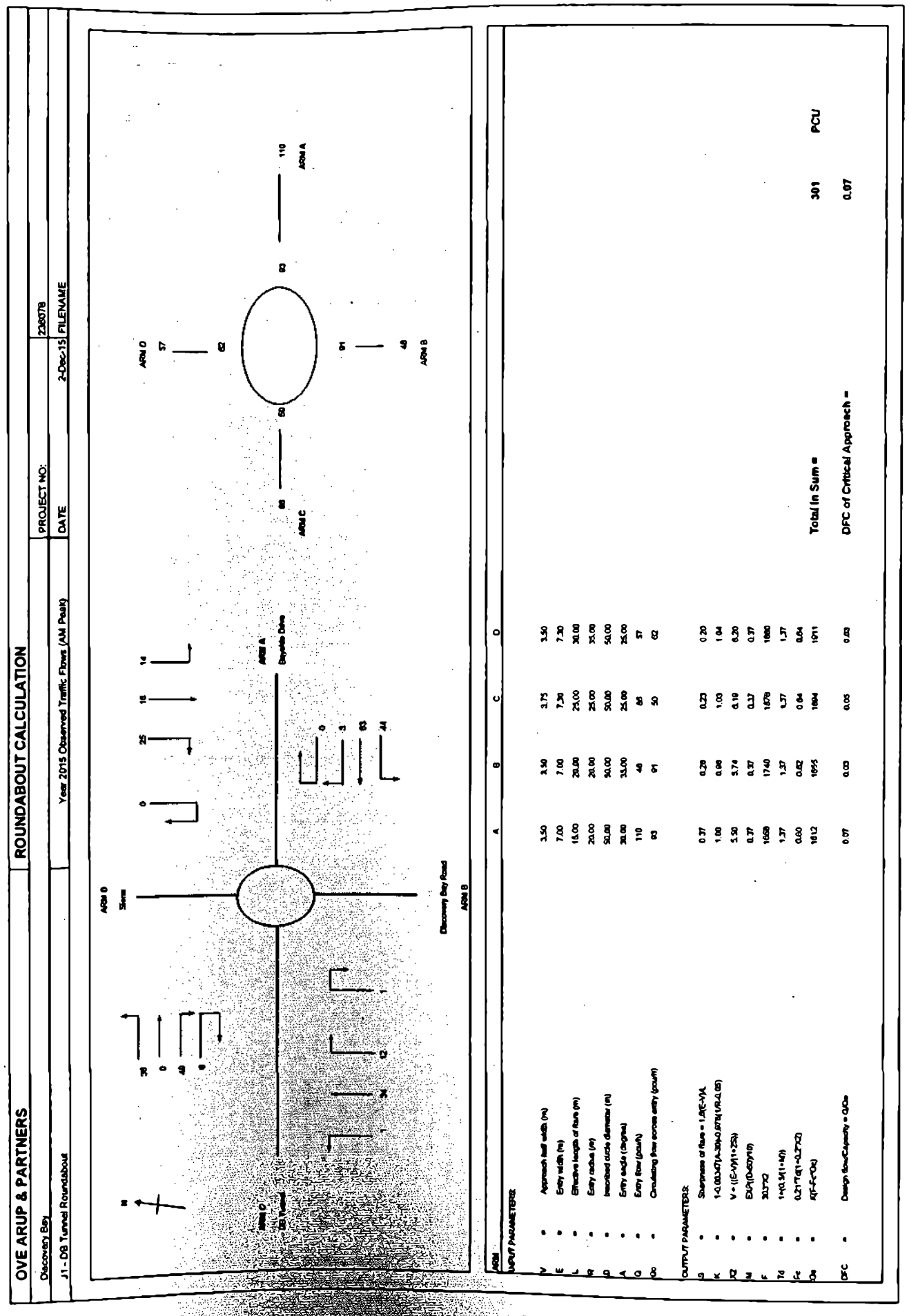
Ferry Ticket Gate Count Provided by Operators (Typical Weekday)

from Central Pier	Total	
	ridership	capacity
	5437	21290
00:00	87	793
01:00	35	496
02:00	31	298
03:00	18	298
04:00		
05:00	15	298
06:00	20	298
07:00	117	1485
08:00	177	1485
09:00	88	990
10:00	114	990
11:00	127	990
12:00	119	890
13:00	176	990
14:00	249	990
15:00	371	1485
16:00	277	990
17:00	440	990
18:00	926	1485
19:00	563	990
20:00	603	990
21:00	418	990
22:00	364	990
23:00	204	990

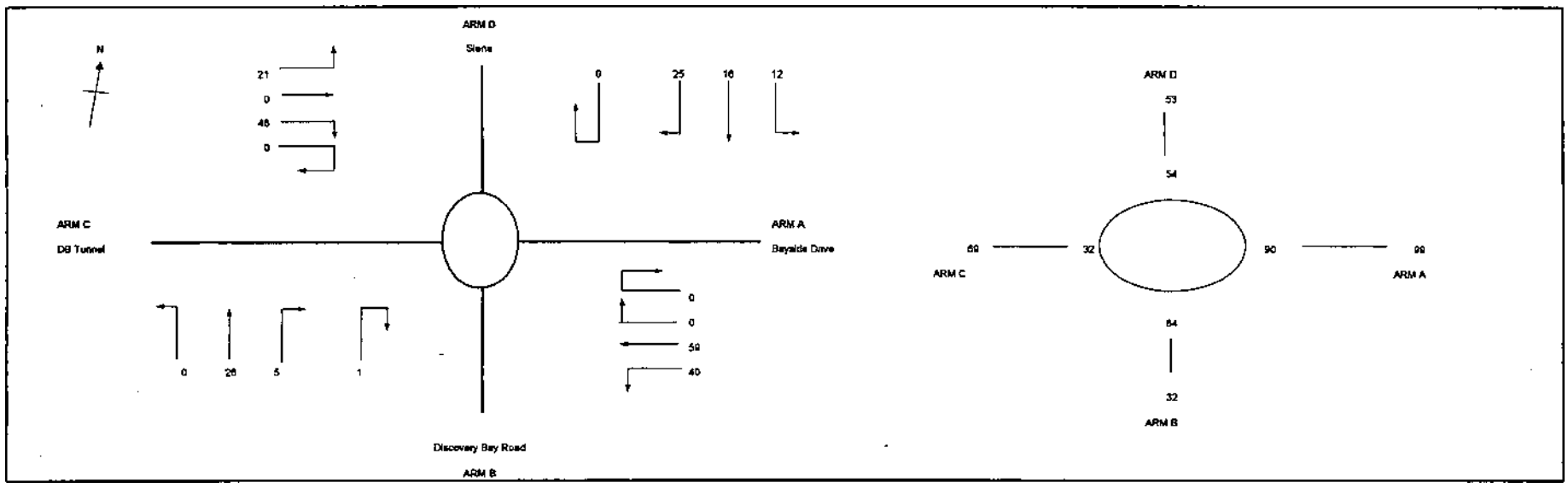
from DB Pier	Total	
	ridership	capacity
	5312	22280
00:00	9	793
01:00	6	298
02:00	0	298
03:00		
04:00	4	298
05:00		
06:00	210	1288
07:00	651	1980
08:00	1277	1980
09:00	511	990
10:00	451	990
11:00	304	990
12:00	299	990
13:00	272	990
14:00	238	990
15:00	167	990
16:00	172	990
17:00	199	990
18:00	249	1485
19:00	97	990
20:00	45	990
21:00	64	990
22:00	57	990
23:00	30	990

Appendix B

2015 Junction Calculation Sheets

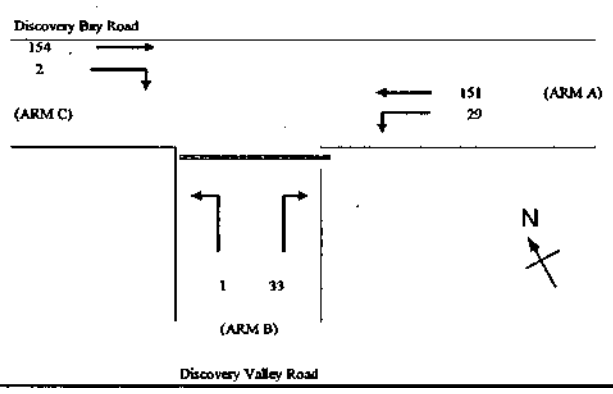


OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2015 Observed Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	99	32	69	53			
Qc	=	Circulating flow across entry (pcu/h)	90	64	32	54			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20			
K	=	1+0.0047(A-30)-0.076(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303*X2	1668	1740	1876	1880			
Td	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1013	1058	1906	1916	Total In Sum =	253	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.02	0.04	0.03	DFC of Critical Approach =	0.06	

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

- W = MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
- W cr = CENTRAL RESERVE WIDTH (0m, 1.2-9m)
- W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
- W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
- W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
- Vl b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
- Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
- Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
- Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
- D = STREAM-SPECIFIC B-A
- E = STREAM-SPECIFIC B-C
- F = STREAM-SPECIFIC C-B
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	29	(pcu/hr)
q a-c	=	151	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	154.2	(pcu/hr)
q c-b	=	2.028	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	33	(pcu/hr)
q b-c	=	1	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.886
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	559
Q b-c	=	718
Q c-b	=	695
Q b-ac	=	562.7

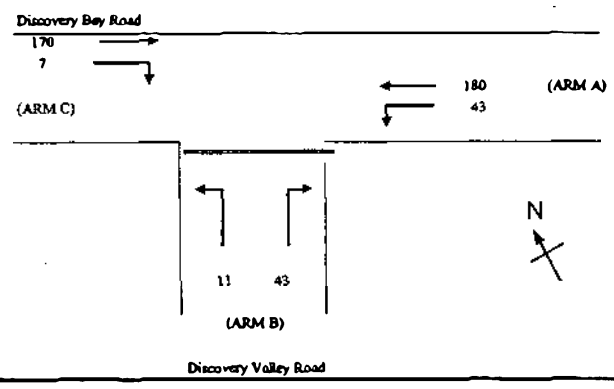
TOTAL FLOW = 371.2285714 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0599
DFC b-c	=	0.0014
DFC c-b	=	0.0029
DFC b-ac	=	0.0613

CRITICAL DFC = 0.061

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	43	(pcu/hr)
q a-c	=	180	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	189.5	(pcu/hr)
q c-b	=	7.37	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	43	(pcu/hr)
q b-c	=	11	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.988
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	548
Q b-c	=	711
Q c-b	=	888
Q b-ac	=	573.8

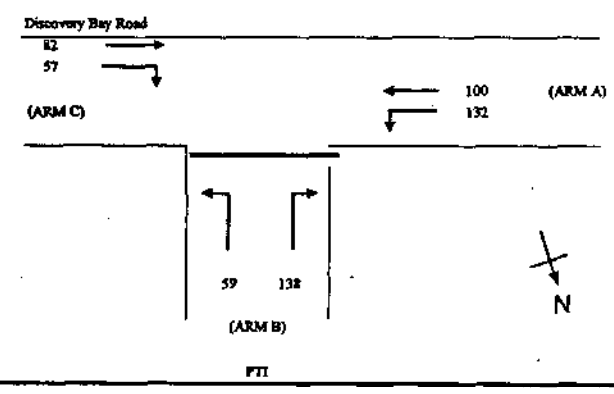
TOTAL FLOW = 453.7818466 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0788
DFC b-c	=	0.0148
DFC c-b	=	0.0107
DFC b-ac	=	0.0936

CRITICAL DFC = 0.094

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	132	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	81.7	(pcu/hr)
q c-b	=	57.2	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	138	(pcu/hr)
q b-c	=	59	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.821

THE CAPACITY OF MOVEMENT :

Q b-a	=	528
Q b-c	=	688
Q c-b	=	701
Q b-ac	=	567.8

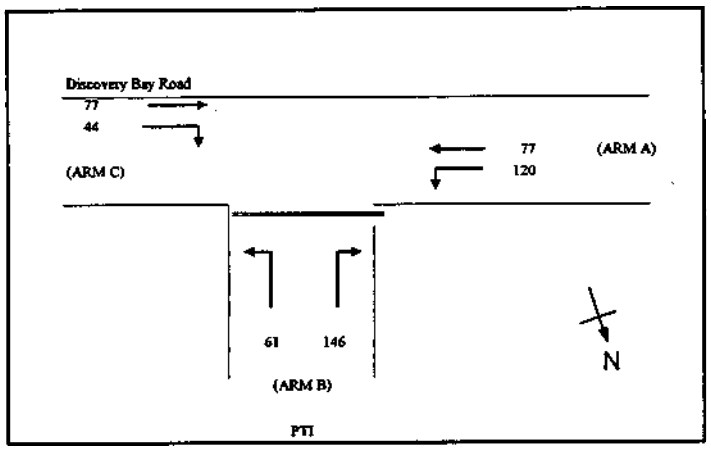
TOTAL FLOW = 568 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.2612
DFC b-c	=	0.0859
DFC c-b	=	0.0816
DFC b-ac	=	0.3471

CRITICAL DFC = 0.347

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	120	(pcu/hr)
q a-c	=	77	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	76.5	(pcu/hr)
q c-b	=	44	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	146	(pcu/hr)
q b-c	=	61	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	539
Q b-c	=	694
Q c-b	=	709
Q b-ac	=	577

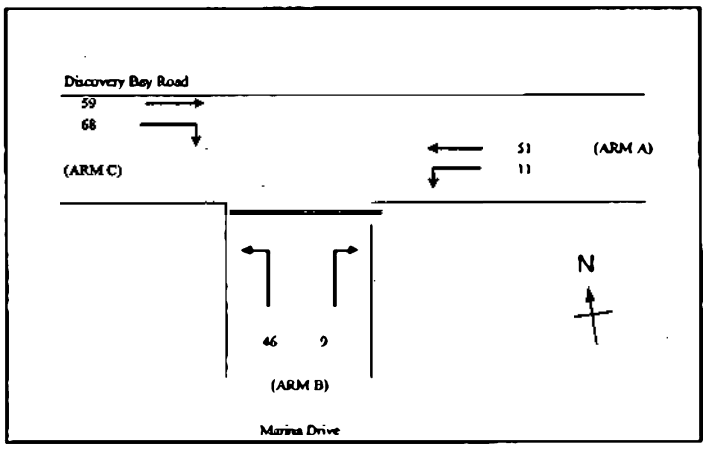
TOTAL FLOW = 524.3 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.2711
DFC b-c	=	0.0879
DFC c-b	=	0.0621
DFC b-ac	=	0.3590

CRITICAL DFC = 0.359

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	11	(pcu/hr)
q a-c	=	51	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	58.34	(pcu/hr)
q c-b	=	68.1	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	9	(pcu/hr)
q b-c	=	46	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	523
Q b-c	=	682
Q c-b	=	706
Q b-ac	=	651

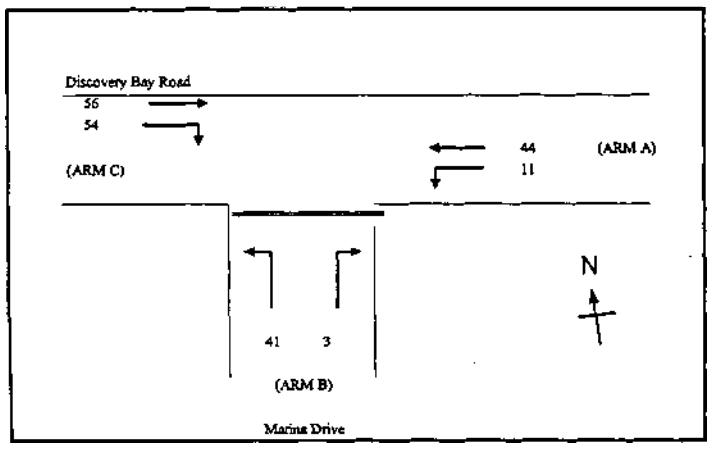
TOTAL FLOW = 243.87 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0164
DFC b-c	=	0.0678
DFC c-b	=	0.0965
DFC b-ac	=	0.0842

CRITICAL DFC = 0.096

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	11	(pcu/hr)
q a-c	=	44	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	55.66	(pcu/hr)
q c-b	=	54.34	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	3	(pcu/hr)
q b-c	=	41	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905	
E	=	0.833	
F	=	0.968	
Y	=	0.707	

THE CAPACITY OF MOVEMENT :

Q b-a	=	530	
Q b-c	=	683	
Q c-b	=	708	
Q b-ac	=	669.3	

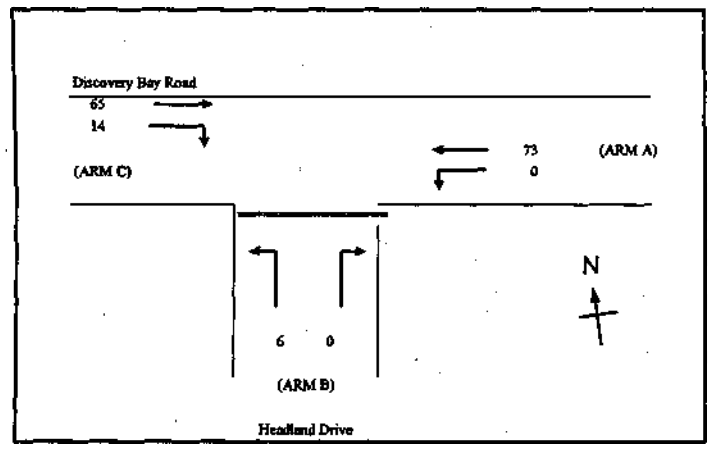
TOTAL FLOW = 208.65 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0058
DFC b-c	=	0.0598
DFC c-b	=	0.0767
DFC b-ac	=	0.0654

CRITICAL DFC = 0.077

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	73	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	64.91	(pcu/hr)
q c-b	=	14.2	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	8	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793	
E	=	0.854	
F	=	0.95	
Y	=	0.738	

THE CAPACITY OF MOVEMENT :

Q b-a	=	458	
Q b-c	=	620	
Q c-b	=	689	
Q b-ac	=	620	

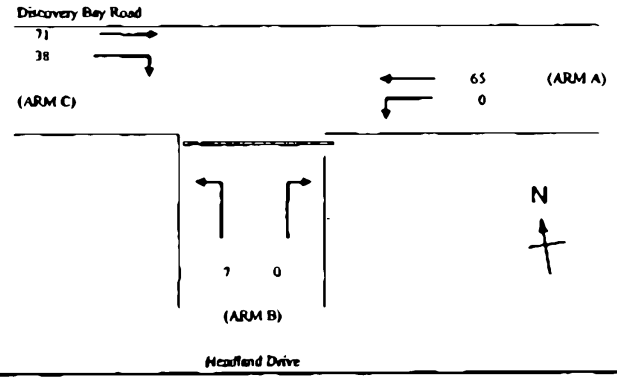
TOTAL FLOW = 158.2285714 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0098
DFC c-b	=	0.0206
DFC b-ac	=	0.0098

CRITICAL DFC = 0.021

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	65	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	70.54	(pcu/hr)
q c-b	=	37.9	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	462
Q b-c	=	621
Q c-b	=	691
Q b-ac	=	621

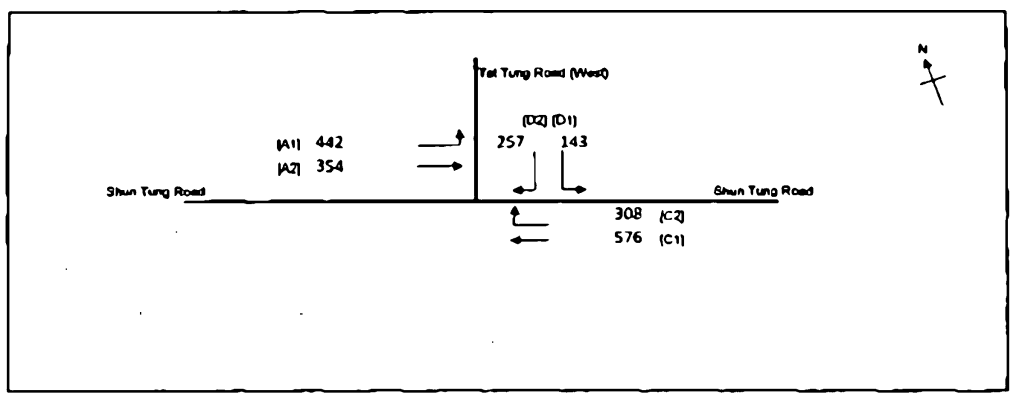
TOTAL FLOW = 181.0835341 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

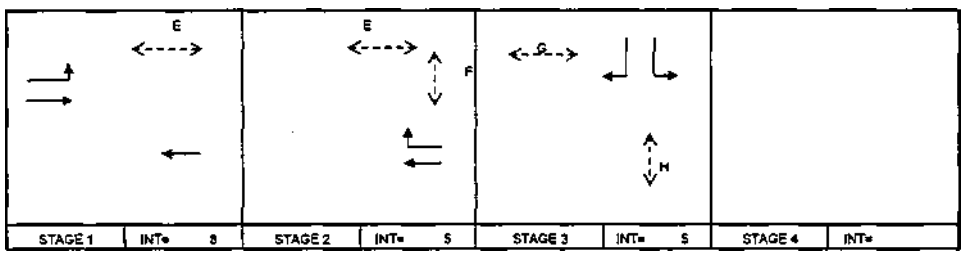
DFC b-a	=	0.0000
DFC b-c	=	0.0119
DFC c-b	=	0.0548
DFC b-ac	=	0.0119

CRITICAL DFC = 0.055

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	90 sec
Sum(y)	Y =	0.529
Loss time	L =	15 sec
Total Flow	=	2079.845 pcu
Co = (1.5*L+5)/(1-Y)	=	58.4 sec
Cm = L/(1-Y)	=	31.9 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	48.8 %
Cp = 0.9*L/(0.9-Y)	=	38.4 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	41.7 %

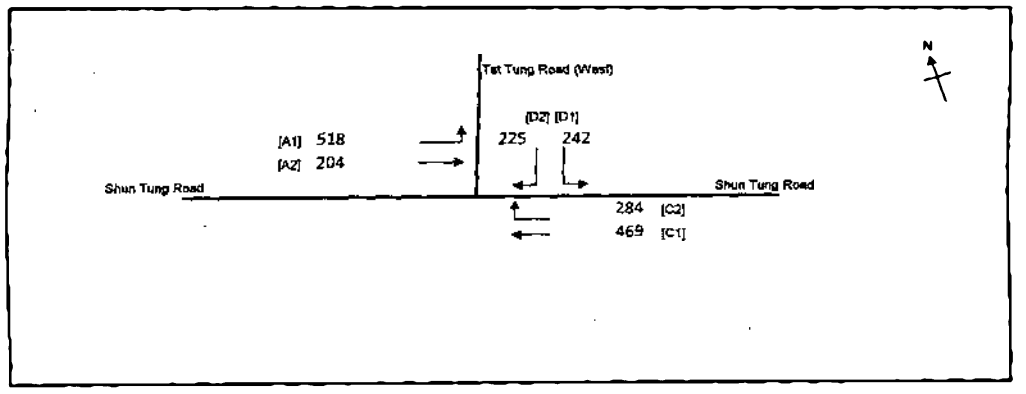


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	59	1	8	OK
F	8	5	1	7	16	1	7	OK
G	8	5	6	7	9	6	7	OK
H	11	5	2	9	11	2	9	OK

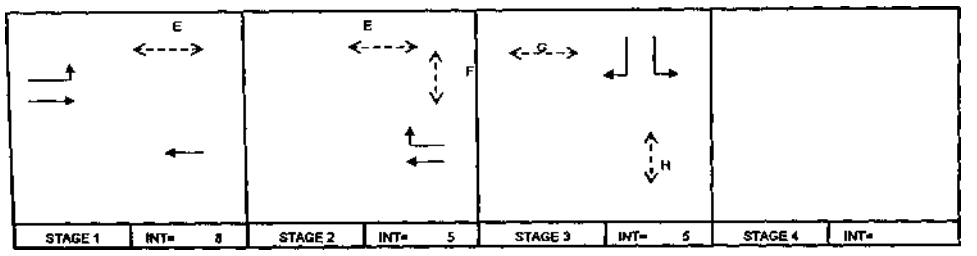
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1985	442			442	1.00	1786			1786	0.248	0.248		35	35	0.635	40
A2	1	3.50	A	1				2105		354		354	0.00	2105			2105	0.168			24	35	0.431	32
C1	1,2	3.50	B	2			N	4070		576		576	0.00	4070			4070	0.141			20	60	0.213	14
C2	2	3.50	C	1	30			2105			308	308	1.00	2005			2005	0.154	0.154		22	22	0.635	35
D1	3	3.50	D	1	15		N	1985	143			143	1.00	1786			1786	0.080	0.128		11	18	0.397	17
D1,D2	3	3.50	D	1	30			2105	0		257	257	1.00	2005			2005	0.128			18	18	0.635	31

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J8 - Shun Tung Road / Tat Tung Road (West)	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	80 sec
Sum(y)	Y =	0.555
Loss time	L =	15 sec
Total Flow	=	1041.854 pcu
Co = (1.5*L+5)/(1-Y)	=	61.8 sec
Cm = L/(1-Y)	=	33.7 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	41.9 %
Cp = 0.9*L/(0.9-Y)	=	39.1 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.8*Ymax-Y)/Y*100%	=	33.2 %

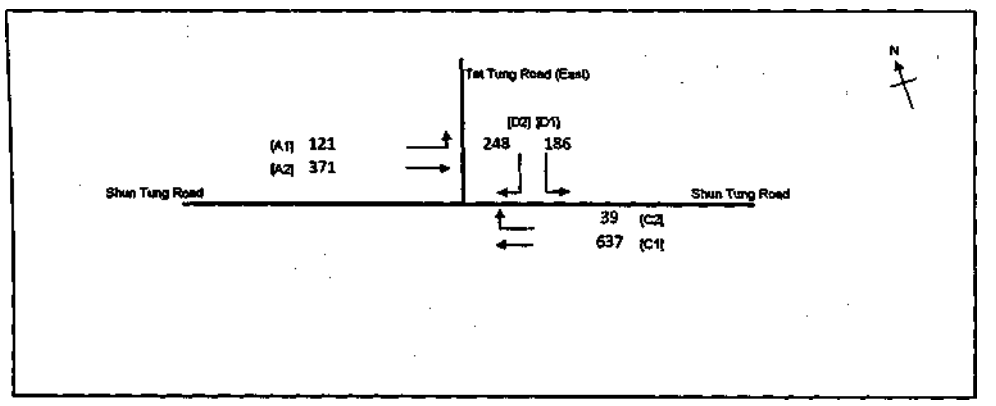


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	61	1	8	OK
F	8	5	1	7	15	1	7	OK
G	8	5	6	7	8	6	7	OK
H	11	5	2	9	10	2	9	OK

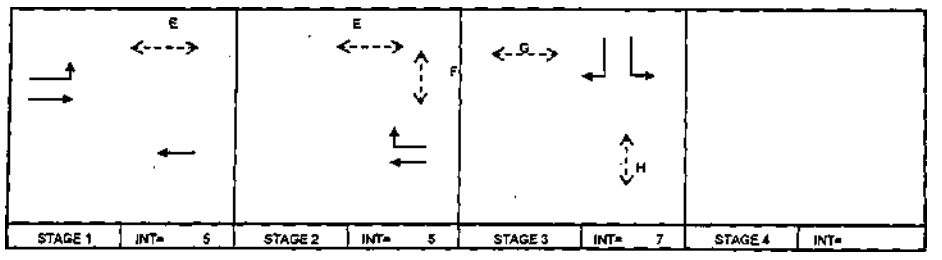
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	518			518	1.00	1786			1786	0.290	0.290		39	39	0.666	44
A2	1	3.50	A	1				2105		204		204	0.00	2105			2105	0.097			13	39	0.223	17
C1	1,2	3.50	B	2			N	4070		469		469	0.00	4070			4070	0.115			16	61	0.169	11
C2	2	3.50	C	1	30			2105			284	284	1.00	2005			2005	0.142	0.142		19	19	0.666	34
D1	3	3.50	D	1	15		N	1965	220			220	1.00	1786			1786	0.123	0.123		17	17	0.665	27
D1,D2	3	3.50	D	1	30			2105	22		225	247	1.00	2005			2005	0.123			17	17	0.668	30

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	80 sec
Sum(y)	Y =	0.273
Loss time	L =	23 sec
Total Flow	=	1601.805 pcu
Co = (1.5*L+5)/(1-Y)	=	54.3 sec
Cm = L/(1-Y)	=	31.8 sec
Yult	=	0.728
R.C.ult = (Yult-Y)/Y*100%	=	166.8 %
Cp = 0.9*L/(0.9-Y)	=	33.0 sec
Ymax = 1-L/C	=	0.744
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	145.5 %

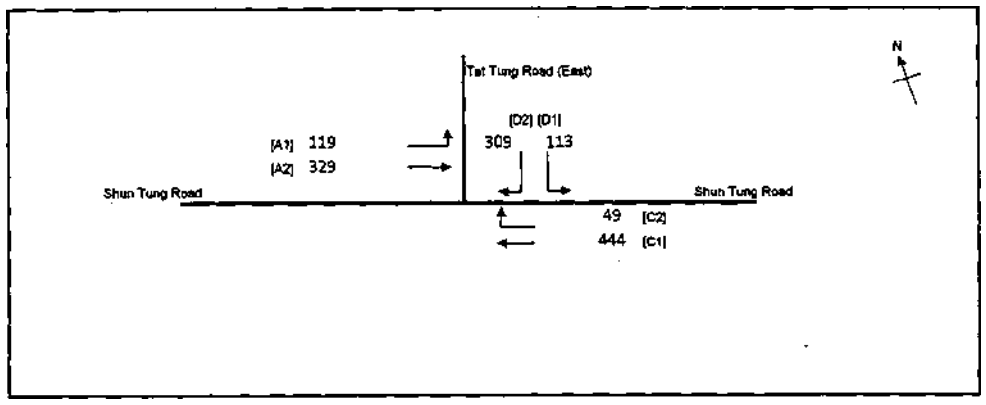


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	43	1	8	OK
F	8	5	7	7	4	7	7	not OK
G	8	5	7	7	24	7	7	OK
H	10	5	2	8	26	2	8	OK

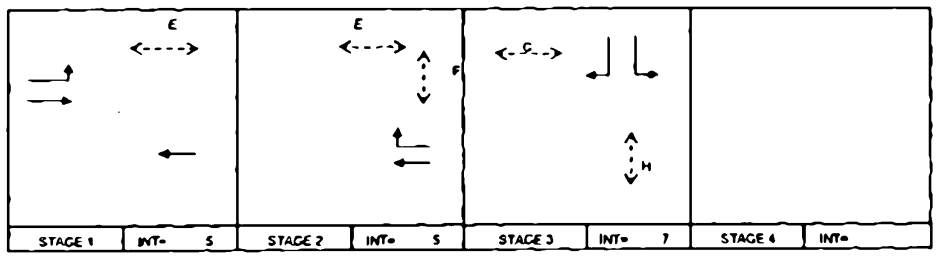
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	121	110		231	0.52	1967			1967	0.124	0.124		30	30	0.368	23
A2	1	3.50	A	1				2105		261		261	0.00	2105			2105	0.124			30	30	0.367	26
C1	1,2	3.50	B	2			N	4070		637		637	0.00	4070			4070	0.156			36	47	0.298	23
C2	2	3.50	C	1	30			2105			39	39	1.00	2005			2005	0.019	0.019	9	9	14	0.126	5
D1	3	3.50	D	1	15		N	1965	186			186	1.00	1786			1786	0.104	0.129		28	32	0.295	18
D1,D2	3	3.50	D	1	15			2105	0		248	248	1.00	1914			1914	0.129			32	32	0.357	24

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	3	
Cycle time	C =	80	sec
Sum(y)	Y =	0.301	
Loss time	L =	27	sec
Total Flow	=	1362.561	pcu
Co = (1.5*L+5)/(1-Y)	=	65.1	sec
Cm = L/(1-Y)	=	38.6	sec
Yult	=	0.698	
R.C.ult = (Yult-Y)/Y*100%	=	131.8	%
Cp = 0.9*L/(0.9-Y)	=	40.6	sec
Ymax = 1-L/C	=	0.700	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	109.4	%

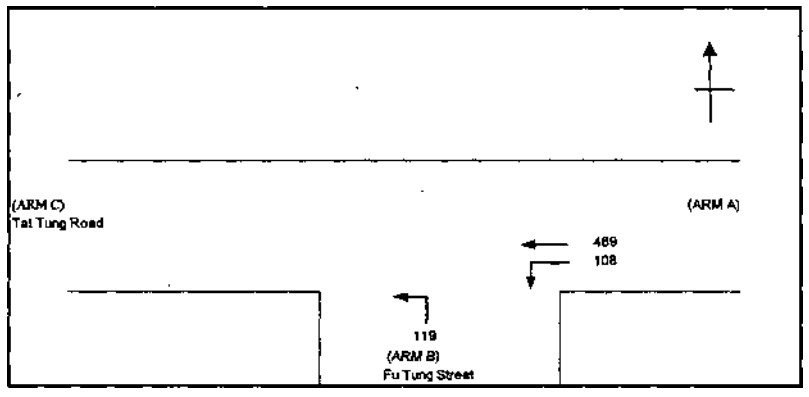


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	6	41	1	6	OK
F	6	5	7	7	6	7	7	OK
G	6	5	7	7	26	7	7	OK
H	10	5	2	6	30	2	6	OK

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1865	119	95		214	0.56	1881			1881	0.115	0.115		24	24	0.430	24
A2	1	3.50	A	1				2105		234		234	0.00	2105			2105	0.111			23	24	0.415	26
C1	1,2	3.50	B	2			N	4070		444		444	0.00	4070			4070	0.109			23	45	0.217	17
C2	2	3.50	C	1	30			2105			49	49	1.00	2005			2005	0.024	0.024	13	5	18	0.121	6
D1	3	3.50	D	1	15		N	1865	113			113	1.00	1766			1766	0.063	0.161		13	34	0.158	11
D1,D2	3	3.50	D	1	15			2105	0		309	309	1.00	1914			1914	0.161			34	34	0.430	29

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2015 Observed Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.6	(metres)
W cr	=	0	(metres)
q a-b	=	108	(pcu/hr)
q a-c	=	489	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	119	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7821
E	=	0.6451
F	=	0.5850
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	369
Q b-c	=	388
Q c-b	=	342
Qb-ac	=	388

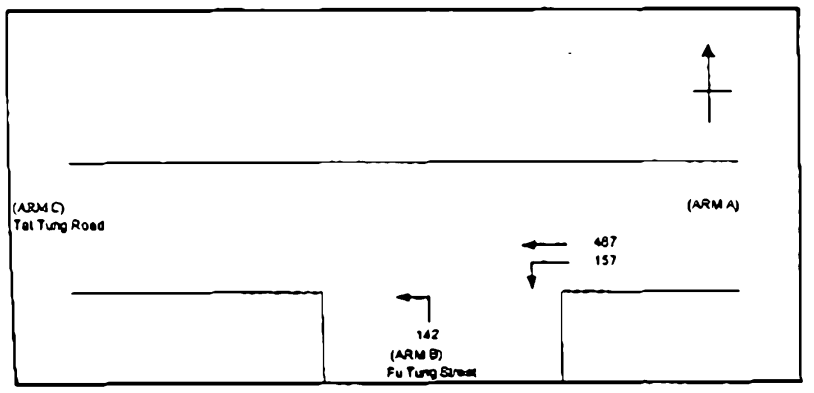
TOTAL FLOW = 716 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3067
DFC c-b	=	0.0000
DFC b-ac	=	0.3067

CRITICAL DFC = 0.31

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2015 Observed Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	157	(pcu/hr)
q a-c	=	487	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	6.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	3.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	142	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7521
E	=	0.8451
F	=	0.5880
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	369
Q b-c	=	368
Q c-b	=	338
Qb-ac	=	388

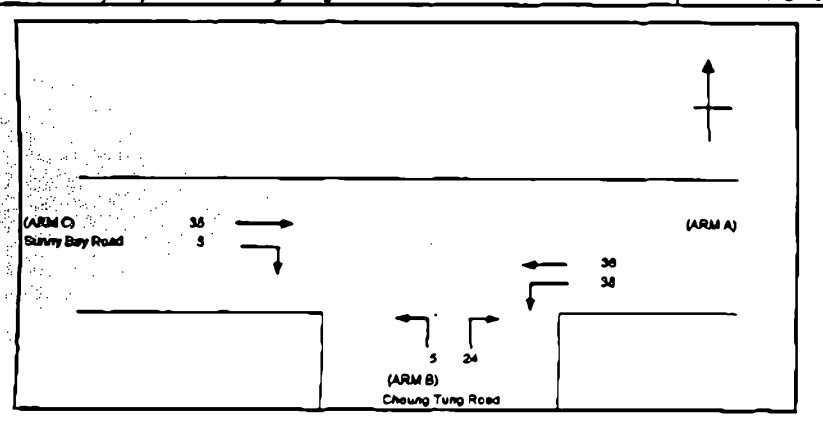
TOTAL FLOW = 768 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3660
DFC c-b	=	0.0000
DFC b-ac	=	0.3660

CRITICAL DFC = 0.37

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2015 Observed Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	38	(pcu/hr)
q a-c	=	38	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	35	(pcu/hr)
q c-b	=	5	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	24	(pcu/hr)
q b-c	=	5	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.1724

THE CAPACITY OF MOVEMENT :

Q b-a	=	583
Q b-c	=	686
Q c-b	=	708
Qb-ac	=	598

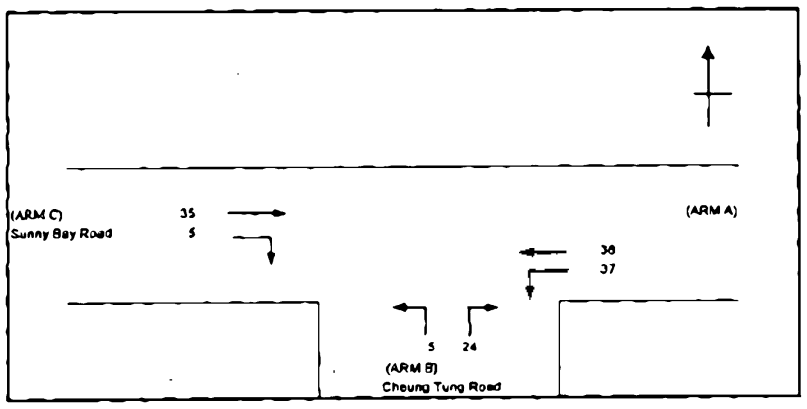
TOTAL FLOW = 143 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0412
DFC b-c	=	0.0073
DFC c-b	=	0.0071
DFC b-ac	=	0.0485

CRITICAL DFC = 0.05

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2015 Observed Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	37	(pcu/hr)
q a-c	=	38	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	35	(pcu/hr)
q c-b	=	5	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	24	(pcu/hr)
q b-c	=	5	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.1724

THE CAPACITY OF MOVEMENT :

Q b-a	=	583
Q b-c	=	657
Q c-b	=	709
Qb-ac	=	599

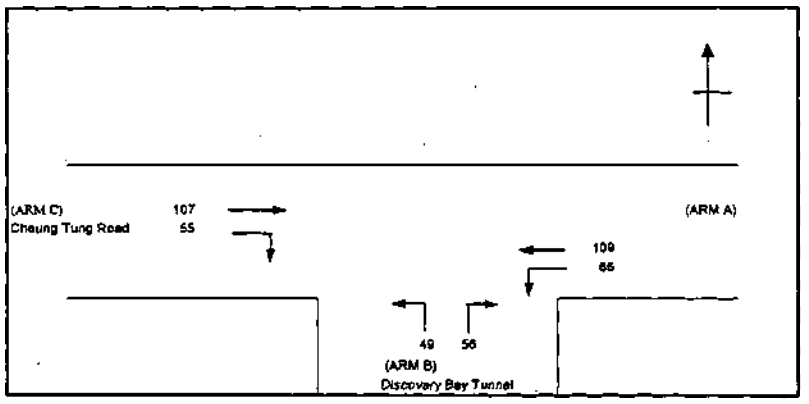
TOTAL FLOW = 142 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0412
DFC b-c	=	0.0073
DFC c-b	=	0.0071
DFC b-ac	=	0.0484

CRITICAL DFC = 0.05

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2015 Observed Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	88	(pcu/hr)
q a-c	=	109	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	107	(pcu/hr)
q c-b	=	55	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	56	(pcu/hr)
q b-c	=	49	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9406
Y	=	0.7309
P	=	0.4648

THE CAPACITY OF MOVEMENT :

Q b-a	=	538
Q b-c	=	741
Q c-b	=	857
Qb-ac	=	615

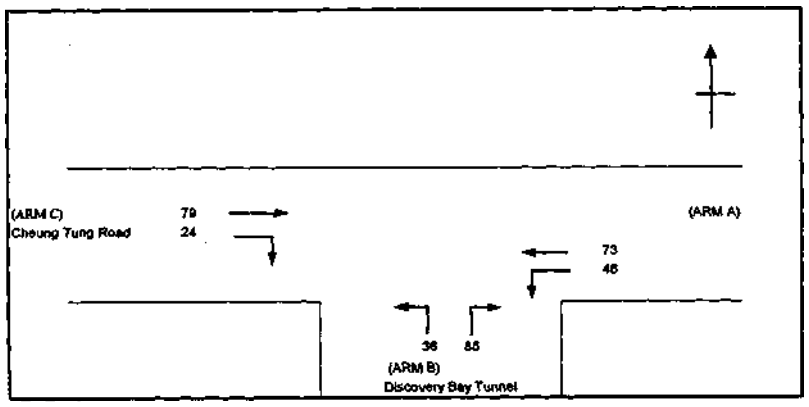
TOTAL FLOW = 442 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1045
DFC b-c	=	0.0636
DFC c-b	=	0.0842
DFC b-ac	=	0.1701

CRITICAL DFC = 0.17

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2015 Observed Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	46	(pcu/hr)
q a-c	=	73	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	79	(pcu/hr)
q c-b	=	24	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	46	(metres)
q b-a	=	88	(pcu/hr)
q b-c	=	36	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.8408
Y	=	0.7309
P	=	0.2681

THE CAPACITY OF MOVEMENT :

Q b-a	=	563
Q b-c	=	754
Q c-b	=	671
Qb-ac	=	887

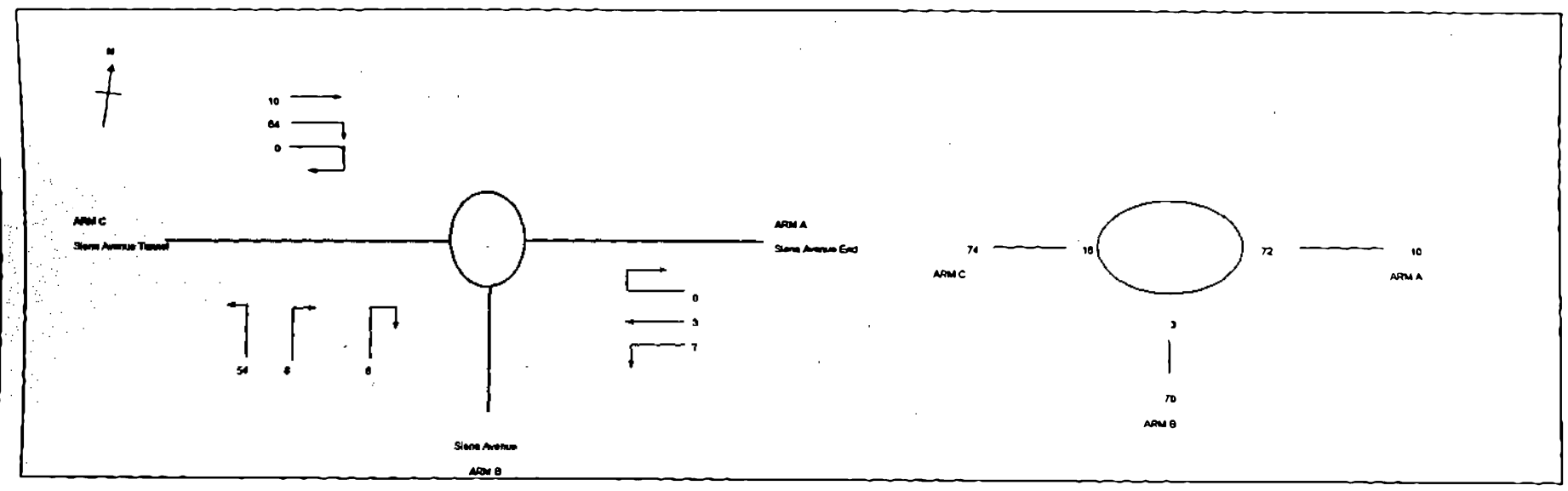
TOTAL FLOW = 345 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1558
DFC b-c	=	0.0471
DFC c-b	=	0.0361
DFC b-ac	=	0.1029

CRITICAL DFC = 0.20

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2015 Observed Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME

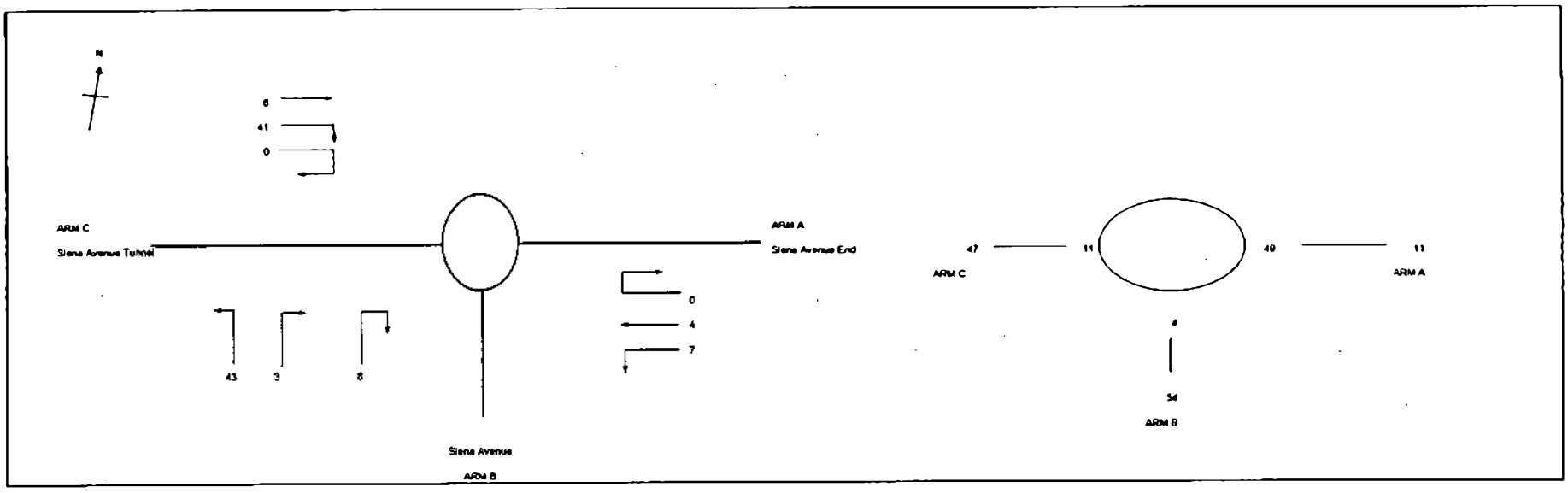


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.60	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	10	70	74
Qc	=	Circulating flow across entry (pcu/h)	72	3	99
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11
K	=	1-0.00047(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87
X2	=	V + ((E-V)/(1+2S))	3.67	5.33	4.67
M	=	EXP((D-60)/10)	0.05	0.05	0.05
F	=	303*X2	1174	1615	1479
Tc	=	1-(0.5/(1+M))	1.48	1.48	1.48
Fc	=	0.21*Tc(1+0.2*X2)	0.55	0.64	0.61
Qe	=	K(F-Fc*Qc)	1007	1509	1283
DFC	=	Design Flow/Capacity = Q/Qe	0.01	0.05	0.06

Total In Sum = 154 PCU

DFC of Critical Approach = 0.06

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2015 Observed Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

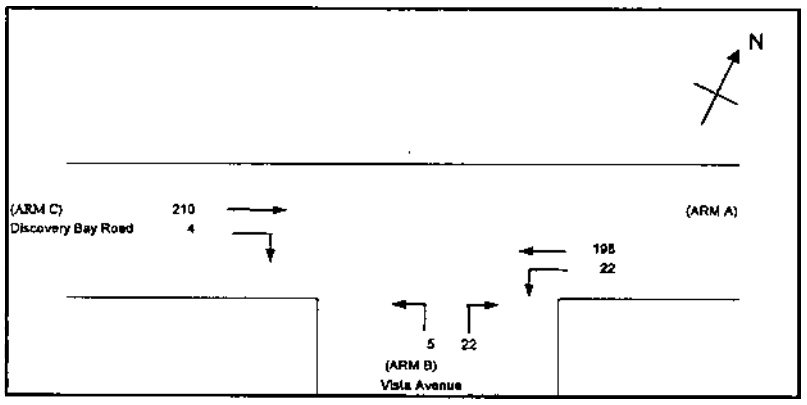


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	11	54	47
Qc	=	Circulating flow across entry (pcu/h)	49	4	11
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.83	0.87
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87
M	=	EXP((D-60)/10)	0.05	0.05	0.05
F	=	303-X2	1174	1015	1478
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.84	0.61
Qe	=	*(F-Fc*Qc)	1019	1508	1785
DFC	=	Design flow/Capacity = Q/Qe	0.01	0.04	0.04

Total In Sum = 112 PCU

DFC of Critical Approach = 0.04

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2015 Observed Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

- W = MAJOR ROAD WIDTH
- W cr = CENTRAL RESERVE WIDTH
- W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
- W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
- W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
- Vl b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
- Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
- Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
- Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
- D = STREAM-SPECIFIC B-A
- E = STREAM-SPECIFIC B-C
- F = STREAM-SPECIFIC C-B
- Y = (1-0.0345W)
- P = PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	22	(pcu/hr)
q a-c	=	198	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	210	(pcu/hr)
q c-b	=	4	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.9	(metres)
W b-c	=	3.9	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	22	(pcu/hr)
q b-c	=	5	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8481
E	=	0.9774
F	=	1.1105
Y	=	0.8203
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	521
Q b-c	=	683
Q c-b	=	772
Qb-ac	=	545

TOTAL FLOW = 481 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0422
DFC b-c	=	0.0073
DFC c-b	=	0.0052
DFC b-ac	=	0.0495

CRITICAL DFC = 0.05

OVE ARUP & PARTNERS — PRIORITY JUNCTION CALCULATION

Discovery Bay

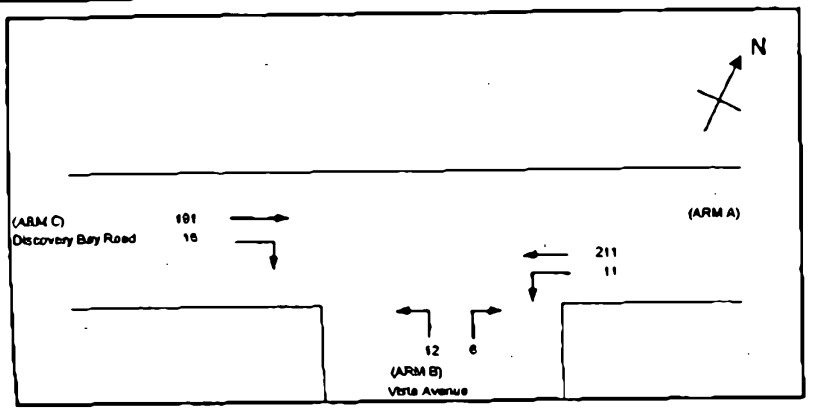
J12 - DB Road / Vista Avenue

Year 2015 Observed Traffic Flows (PM Peak)

Project No. : 236078

DATE : Nov 2015

JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q b-a	=	11	(pcu/hr)
q b-c	=	211	(pcu/hr)

MAJOR ROAD (ARM C)

W	=	5.5	(metres)
W cr	=	0	(metres)
q c-a	=	191	(pcu/hr)
q c-b	=	16	(pcu/hr)

MINOR ROAD (ARM B)

W	=	3.5	(metres)
Vl b-a	=	4.5	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	70	(metres)
Vr c-b	=	70	(metres)
q b-a	=	6	(pcu/hr)
q b-c	=	12	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.6667

THE CAPACITY OF MOVEMENT :

Q b-a	=	518
Q b-c	=	661
Q c-b	=	771
Qb-ac	=	618

TOTAL FLOW = 448 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0116
DFC b-c	=	0.0176
DFC c-b	=	0.0208
DFC b-ac	=	0.0292

CRITICAL DFC = 0.03

OVE ARUP & PARTNERS — TRAFFIC SIGNAL CALCULATION

Discovery Bay

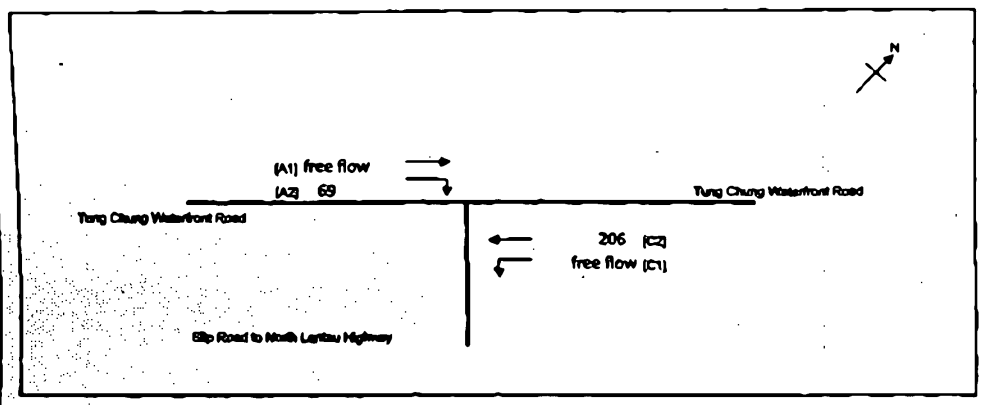
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway

Year 2015 Observed Traffic Flows (AM Peak)

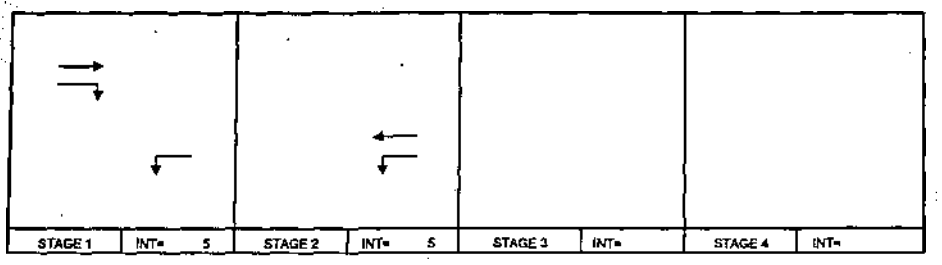
PROJECT NO. 239078

DATE : 30-Nov-15

FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	60	sec
Sum(y)	Y =	0.085	
Loss time	L =	8	sec
Total Flow	=	273	pcu
Co = (1.5*L+5)/(1-Y)	=	18.6	sec
Cm = L/(1-Y)	=	8.7	sec
Ymax	=	0.840	
R.C.max	= (Ymax-Y)/Y*100%	=	888.4 %
Cp = 0.9*L/(0.9-Y)	=	8.8	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	917.8	%

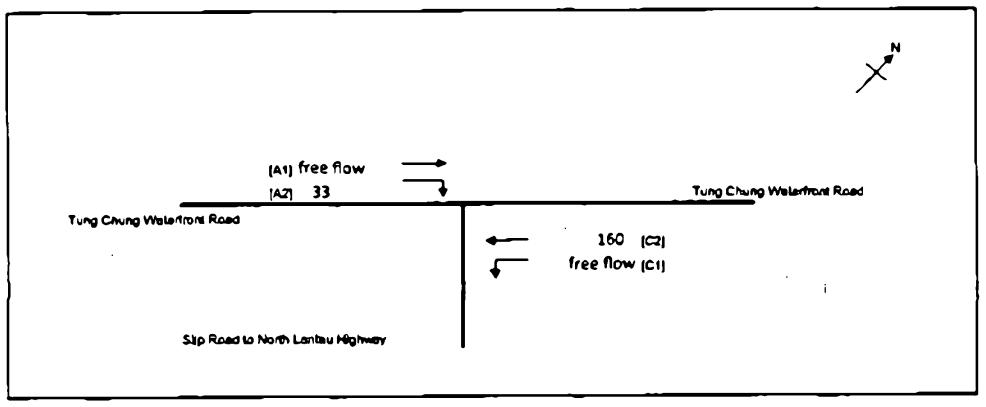


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

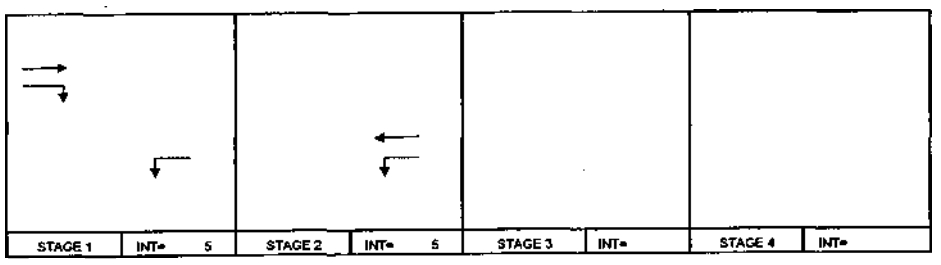
Move-ment	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greatest y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			69	69	1.00	1914			1914	0.036	0.036		22	17	0.127	5
C2	2	3.50	B	2				4210		206		206	0.00	4210			4210	0.049	0.049		30	33	0.069	6

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.055
Lost time	L =	8 sec
Total Flow	=	193 pcu
Co = (1.5*L+5)/(1-Y)	=	18.0 sec
Cm = L/(1-Y)	=	8.3 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	1420.4 %
Cp = 0.9*L/(0.9-Y)	=	8.5 sec
Ymax = 1-L/C	=	0.867
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	1311.8 %

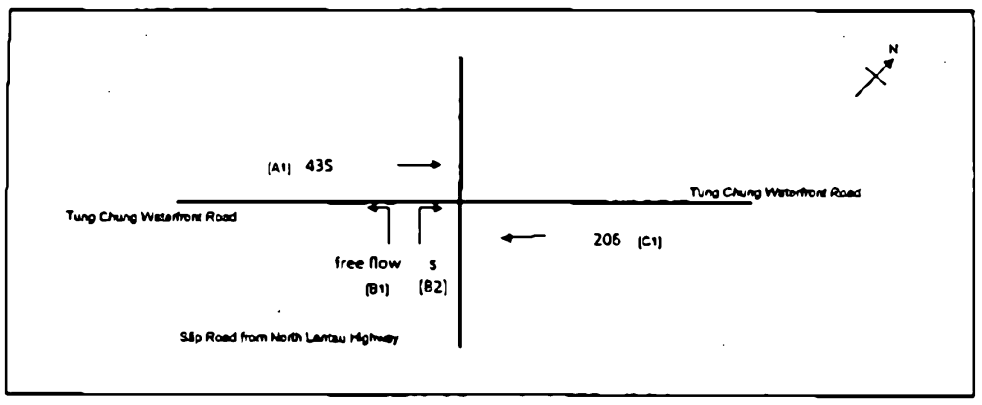


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

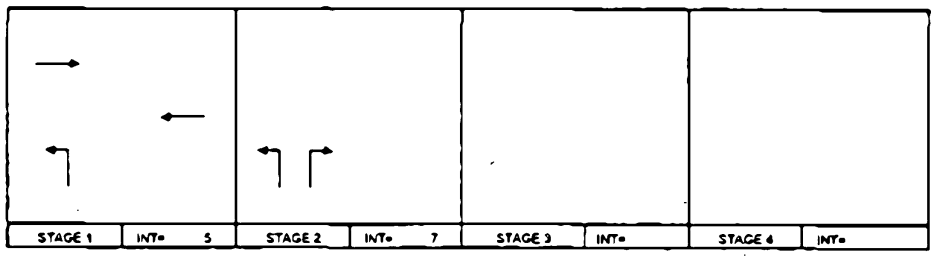
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			33	33	1.00	1914			1914	0.017	0.017		16	17	0.081	2
C2	2	3.50	B	2				4210		160		160	0.00	4210			4210	0.038	0.038		36	33	0.069	4

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.108
Lost time	L =	10 sec
Total Flow	=	648.1 pcu
Co = (1.5*L+5)/(1-Y)	=	22.4 sec
Cm = L/(1-Y)	=	11.2 sec
Yult	=	0.625
R.C.ult = (Yult-Y)/Y*100%	=	578.4 %
Cp = 0.9*L/(0.9-Y)	=	11.3 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	607.8 %

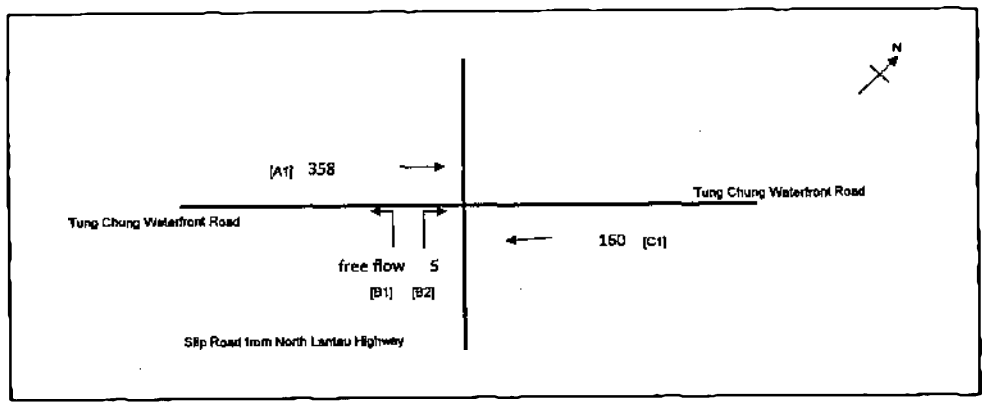


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

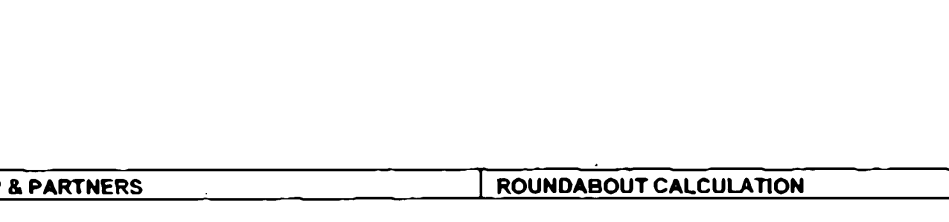
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				10				
A1	1	3.50	A	2				4210		435		435	0.00	4210			4210	0.103	0.103		49	36	0.172	9
B2	2	3.50	B	1	15			2105			6	6	1.00	1914			1914	0.003	0.003		1	12	0.013	0
C1	1	3.50	A	2				4210		206		206	0.00	4210			4210	0.049			23	36	0.082	4

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle		N =	2
No. of stage using for calculation		N =	2
Cycle time		C =	60 sec
Sum(y)		Y =	0.668
Loss time		L =	10 sec
Total Flow		=	5723.1 pcu
Co	= (1.5*L+5)/(1-Y)	=	21.9 sec
Cm	= L/(1-Y)	=	19.0 sec
YuR		=	0.825
R.C.uR	= (YuR-Y)/Y*100%	=	848.7 %
Cp	= 0.9*L/(0.9-Y)	=	11.1 sec
Ymax	= 1-L/C	=	0.833
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	755.2 %



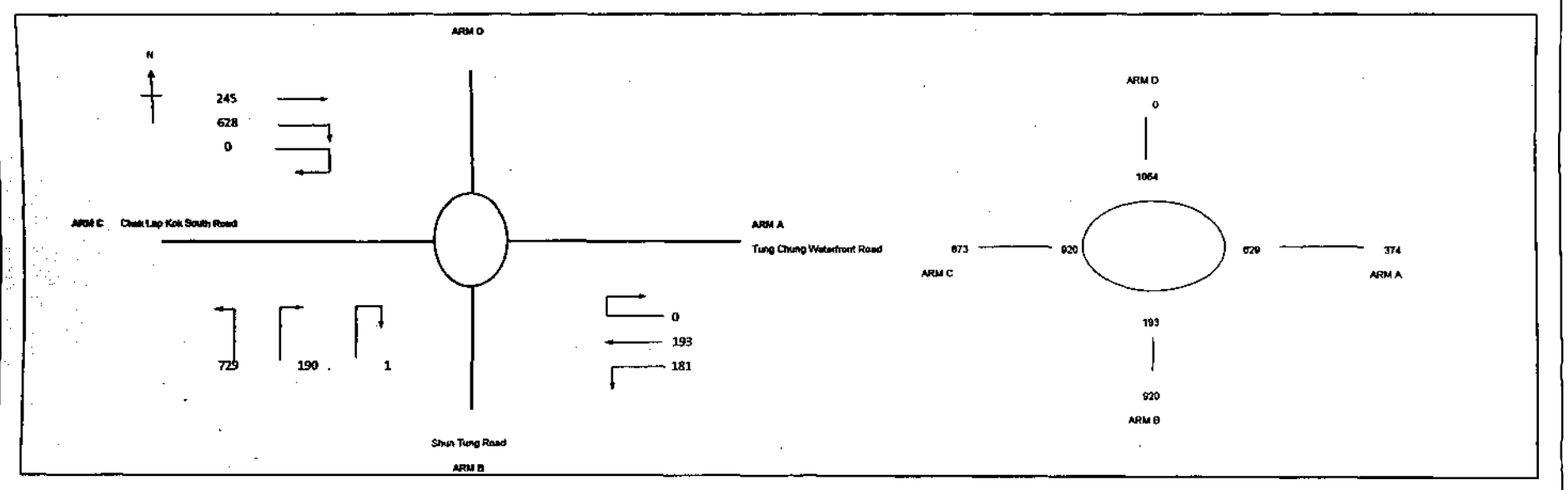
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (g) SG	Delay	FG	Green Time Provided (g) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Move-ment	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A		3.50	A	2				4210		350		350	0.00	4210			4210	0.085	0.085		46	36	0.142	7
B		3.50		1				2106			5	5	1.00	1914			1914	0.003	0.003		2	12	0.013	0
C		3.50		2				4210		160		160	0.00	4210			4210	0.038			22	36	0.063	3

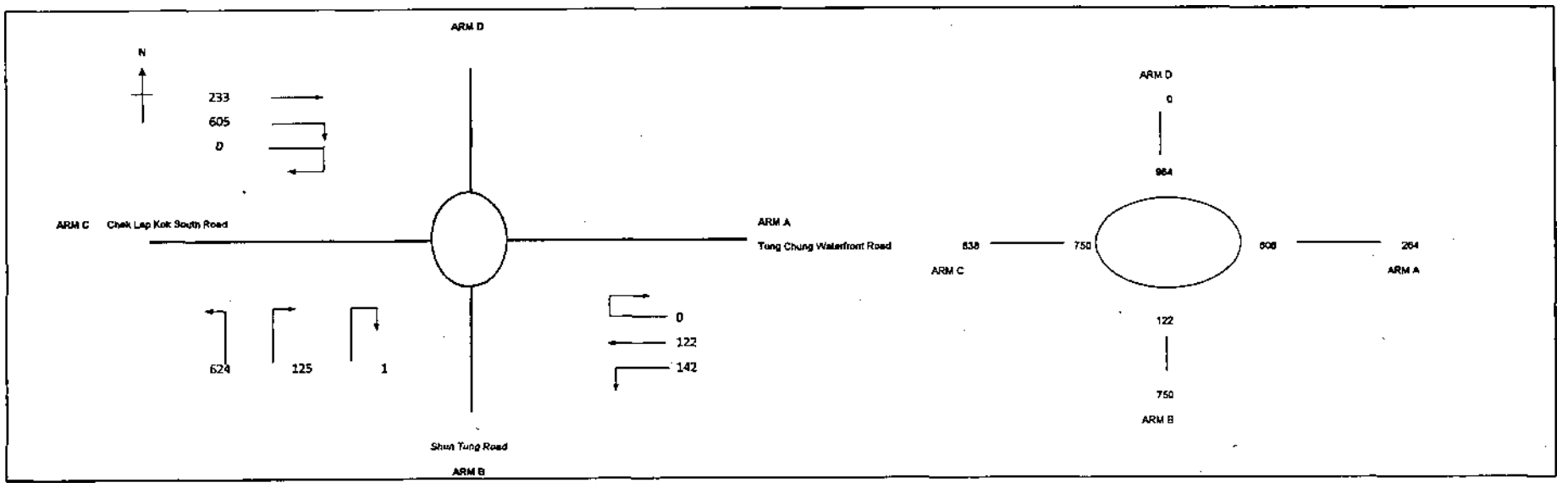
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2015 Observed Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



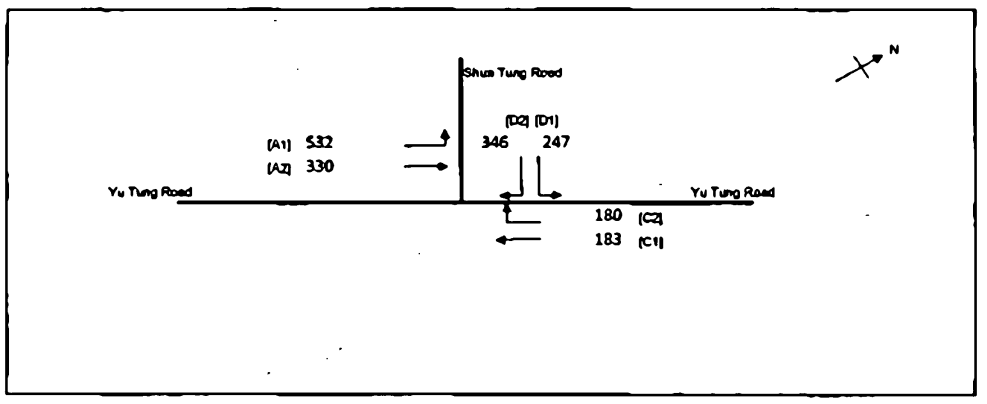
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	374	920	673			
Qc	=	Circulating flow across entry (pcu/h)	629	193	920			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.76	0.96	0.96			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.98			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2071	2211	1782	Total in Sum =	2167	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.42	0.49	DFC of Critical Approach =	0.49	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2015 Observed Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

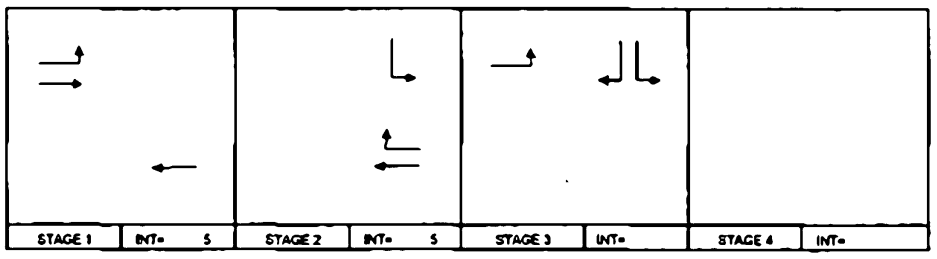


ARM			A	B	C		
INPUT PARAMETERS:							
V	=	Approach half width (m)	7.00	7.00	7.00		
E	=	Entry width (m)	11.00	10.00	10.00		
L	=	Effective length of flare (m)	5.00	5.00	5.00		
R	=	Entry radius (m)	35.00	27.50	22.50		
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00		
A	=	Entry angle (degree)	30.00	45.00	35.00		
Q	=	Entry flow (pcu/h)	264	750	838		
Qc	=	Circulating flow across entry (pcu/h)	608	122	750		
OUTPUT PARAMETERS:							
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.98	0.98		
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.86	0.89		
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03		
M	=	EXP((D-60)/10)	1.00	1.00	1.00		
F	=	303*X2	2461	2432	2432		
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25		
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68		
Qe	=	K(F-Fc*Qc)	2067	2258	1688	Total in Sum =	1852 PCU
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.33	0.44	DFC of Critical Approach =	0.44

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	70	sec
Sum(y)	Y =	0.388	
Loss time	L =	8	sec
Total Flow	=	1818	pcu
Co = (1.5*L+5)/(1-Y)	=	27.8	sec
Cm = L/(1-Y)	=	13.1	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	116.7	%
Cp = 0.9*L/(0.9-Y)	=	14.1	sec
Ymax = 1-L/C	=	0.886	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	105.7	%

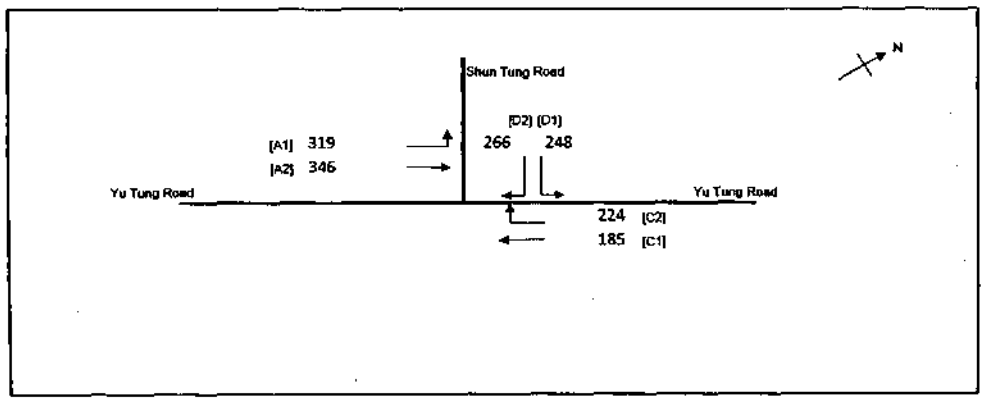


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

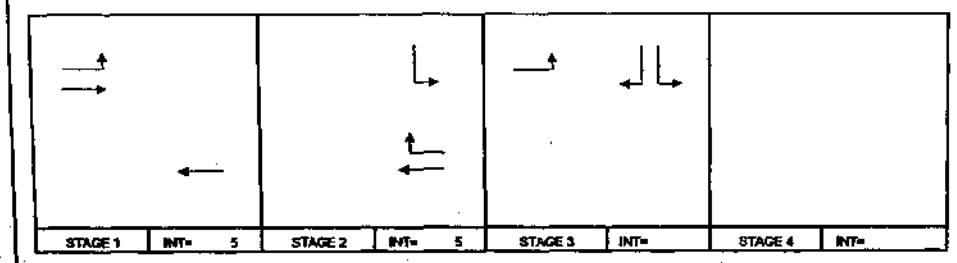
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1865	532			532	1.00	1788			1788	0.298	0.298		48	43	0.465	24
A2	1	3.50	A	2				4210		330		330	0.00	4210			4210	0.078			13	15	0.368	15
C1	1,2	3.50	F	2			N	4070		183		183	0.00	4070			4070	0.045			7	8	0.172	9
C2	2	3.50	E	1	30			2105		180		180	1.00	2005			2005	0.090	0.090		14	10	0.529	18
D1	2,3	3.50	D	1	15		N	1865	247			247	1.00	1788			1788	0.138			22	41	0.296	12
D2	3	3.50	C	2	30			4210			346	346	1.00	4018			4018	0.086			14	30	0.201	12

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	70	sec
Sum(y)	Y =	0.290	
Loss time	L =	8	sec
Total Flow	=	1588	pcu
Co = (1.5*L+5)/(1-Y)	=	24.0	sec
Cm = L/(1-Y)	=	11.3	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	189.3	%
Cp = 0.9*L/(0.9-Y)	=	11.8	sec
Ymax = 1-L/C	=	0.886	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	174.6	%

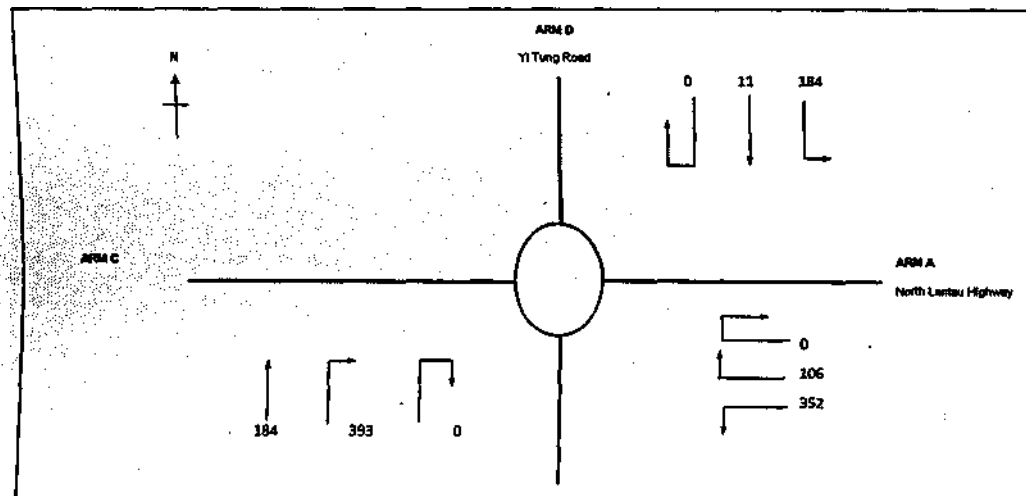


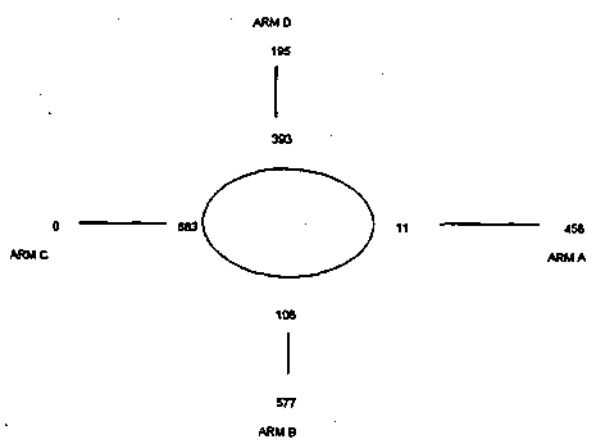
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
																							0.291 / 0.384	14 / 16
																							0.155	9

NOTE: O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

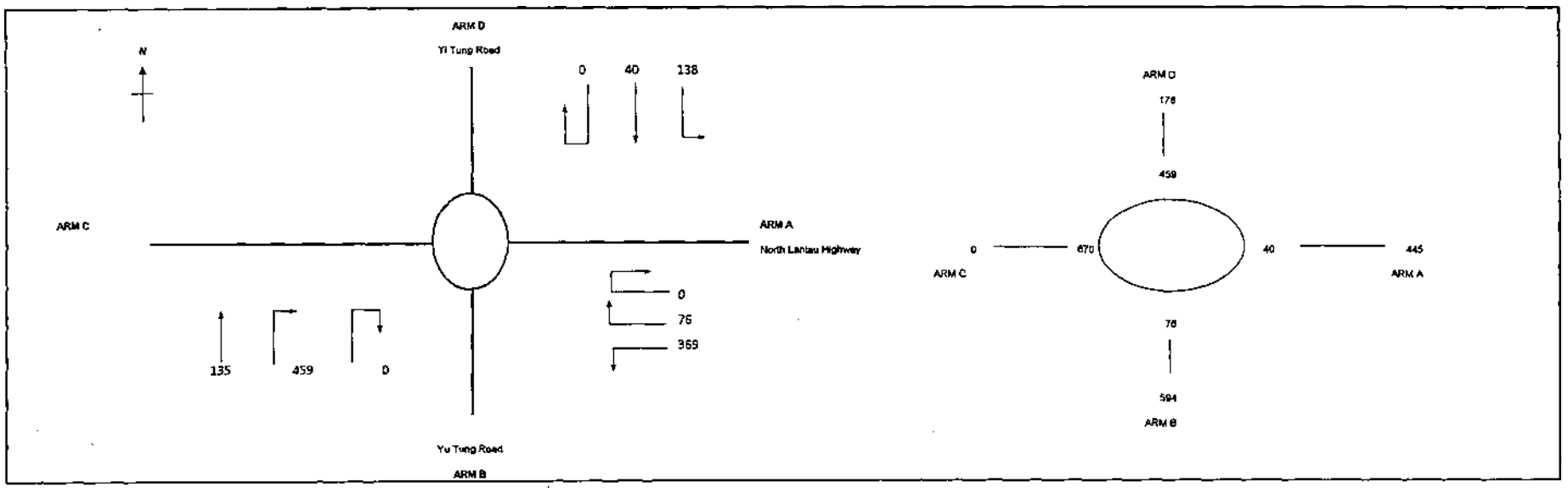
OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2015 Observed Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME





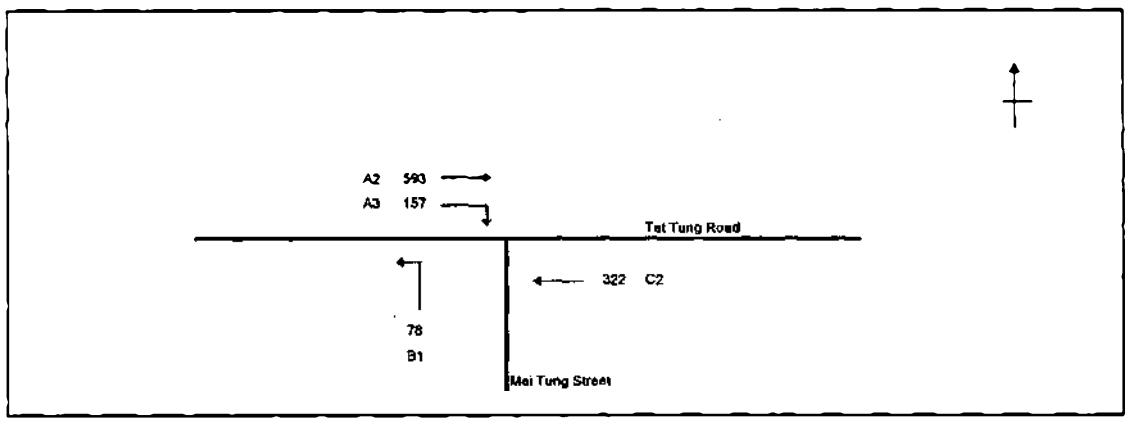
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	80.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	458	577	195			
Qo	=	Circulating flow across entry (pcu/h)	11	106	393			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.88	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3680	3336			
Tc	=	1-(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Tc(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3540	3777	3117	Total In Sum =	1230	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.15	0.06	DFC of Critical Approach =	0.15	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2015 Observed Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

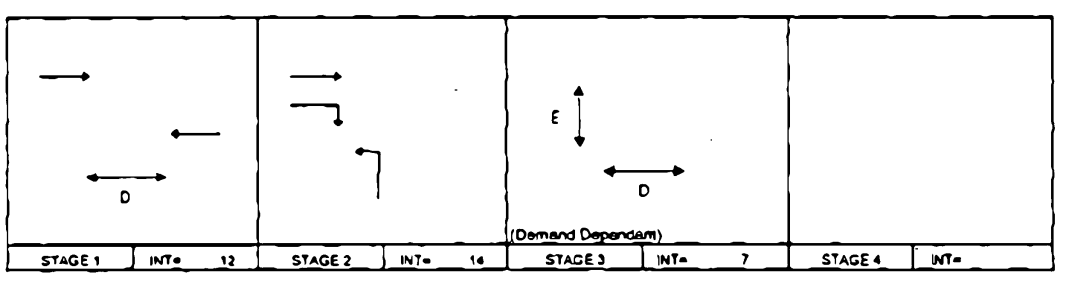


ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	445	594	178			
Qc	=	Circulating flow across entry (pcu/h)	40	76	459			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.26	0.16	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3899	3335			
Td	=	1-(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.217*(1-0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3520	3799	3072	Total In Sum =	1217	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.16	0.06	DFC of Critical Approach =	0.16	

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	2
Cycle time	C =	120 sec
Sum(y)	Y =	0.273
Loss time	L =	51 sec
Total Flow	=	618 pcu
Co = (1.5*L+5)/(1-Y)	=	112.1 sec
Cm = L/(1-Y)	=	70.1 sec
Yull	=	0.518
R.C.ull = (Yull-Y)/Y*100%	=	89.6 %
Cp = 0.9*L/(0.9-Y)	=	73.2 sec
Ymax = 1-L/C	=	0.575
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	89.8 % (Optimized)

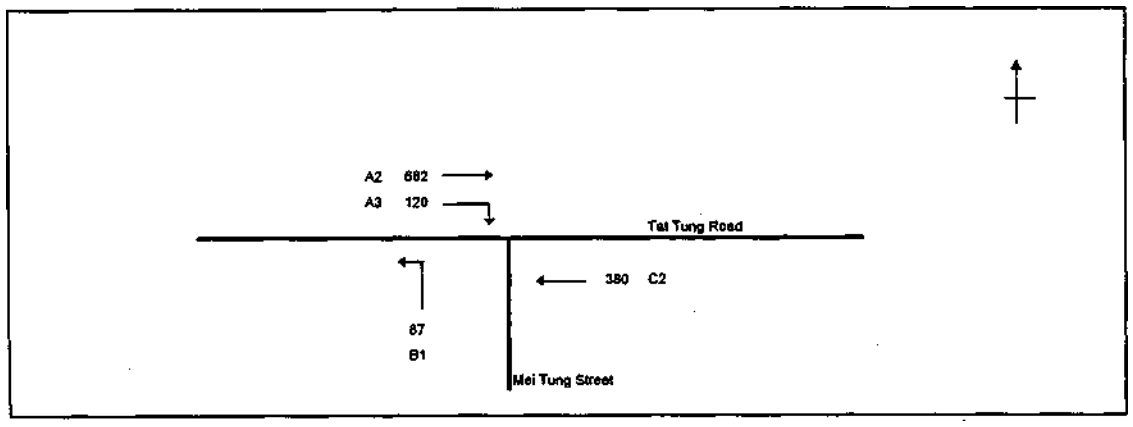


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

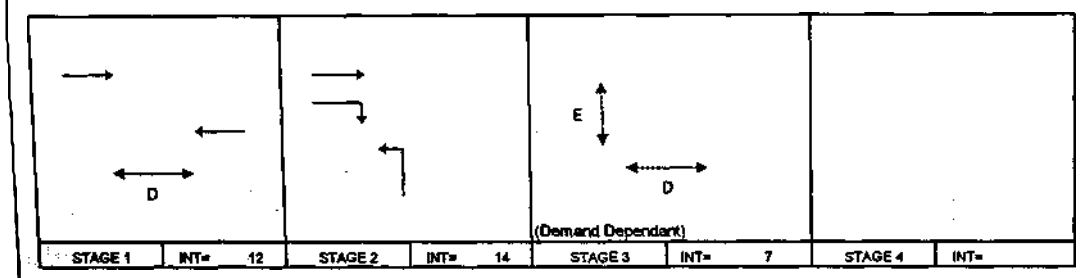
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				31				
A2	1,2	3.30	A	1			N	1945		532		532	0.00	1945			1945	0.273			69	69	0.475	0
A2,A3	2	3.30	A	1	30			2083		61	157	218	0.72	2012			2012	0.108	0.108		27	69	0.158	19
B1	2	3.20	B	2	15		N	4010	78			78	1.00	3845			2916	0.027			7	7	0.475	7
C2	1	3.40	C	1			N	1955		322		322	0.00	1955			1955	0.164	0.164		42	42	0.475	42
PED	3																			20				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: Z36078	
J17 - Tai Tung Road / Mei Tung Street	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	120 sec
Sum(y)		Y =	0.301
Loss time		L =	51 sec
Total Flow		=	683 pcu
Co	= (1.5*L+5)/(1-Y)	=	116.6 sec
Cm	= L/(1-Y)	=	73.0 sec
Yult		=	0.516
R.C ult	= (Yult-Y)/Y*100%	=	72.0 %
Cp	= 0.9*L/(0.9-Y)	=	76.6 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	72.0 % (Optimized)



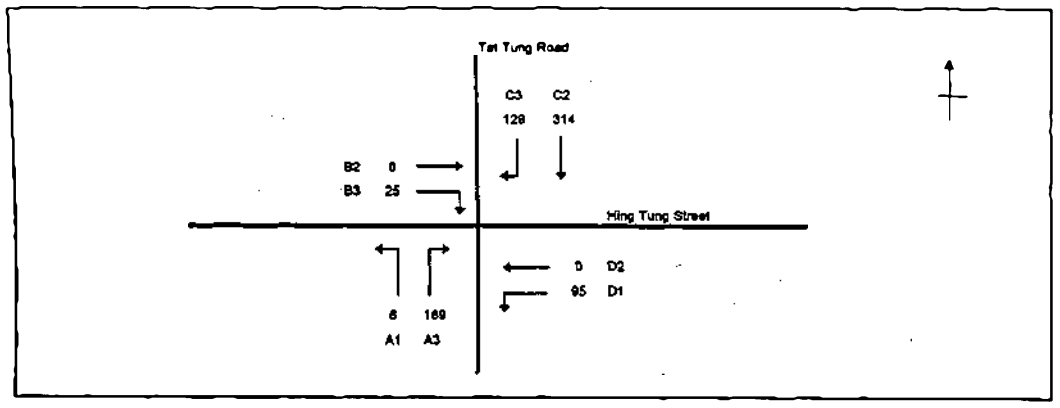
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	8	9	5	8	9	5	OK
E	6.4	5	8	5	7	8	5	OK

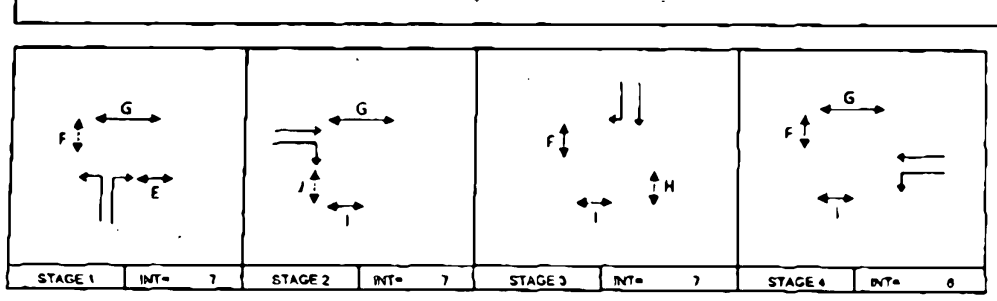
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	586	[illegible]	586	0.00	1946			1945	0.301			69	69	0.823	0
A2,A3	C	3.30	A	1	30			2089		98	120	218	0.55	2029			2029	0.108	0.108		24	69	0.185	18
B1	B	3.20	B	2	15		N	4010	87			87	1.00	3845			2916	0.030			7	7	0.323	8
C1	C	3.40	C	2	15	D	N	1955		380		380	0.00	1955			1953	0.195	0.195		45	45	0.523	48
PED	3																			20				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: Z36078	
J18 - Tai Tung Road / Hing Tung Street	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	2
Cycle time		C =	120 sec
Sum(y)		Y =	0.133
Loss time		L =	59 sec
Total Flow		=	733 pcu
Co	= (1.5*L+5)/(1-Y)	=	107.6 sec
Cm	= L/(1-Y)	=	68.0 sec
Yult		=	0.456
R.C.ult	= (Yult-Y)/Y*100%	=	244.6 %
Cp	= 0.9*L/(0.9-Y)	=	69.2 sec
Ymax	= 1-L/C	=	0.508
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	244.6 % (Optimized)



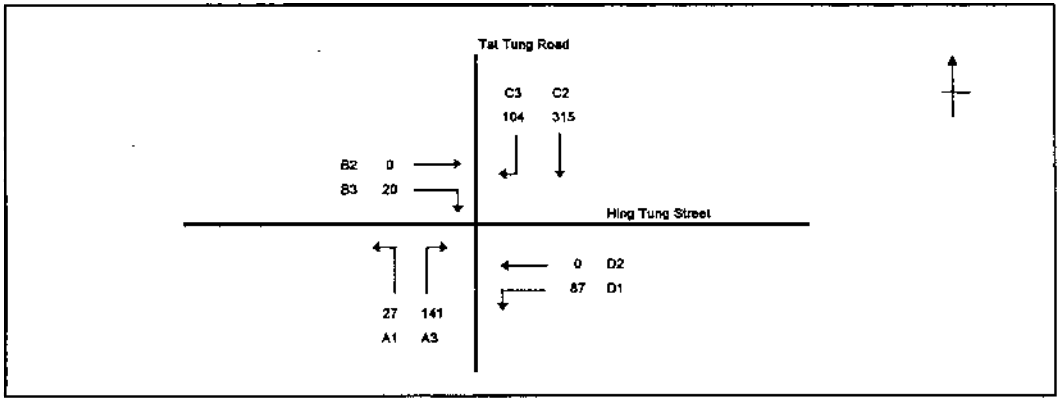
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	8.7	5	7	8	31	7	8	OK
F	6.3	5	2	5	82	2	5	OK
G	8.1	5	2	5	82	2	5	OK
H	6.3	5	7	5	5	7	5	OK
I	7.4	5	2	8	54	2	8	OK
J	8.8	5	8	8	5	8	8	OK

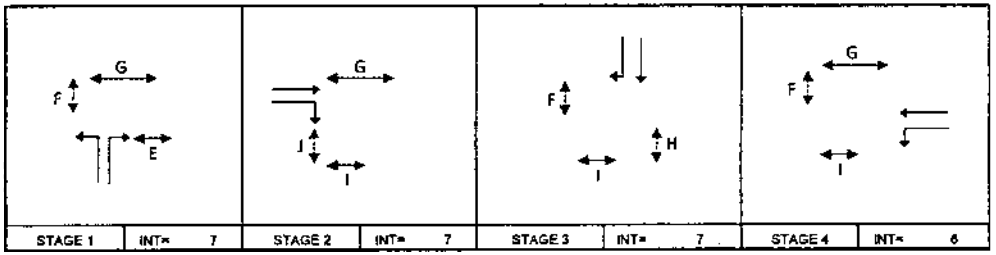
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1865	6			6	1.00	1758			1786	0.003	0.084		1	38	0.010	0
A1,A3	1	3.50	A	1	40			2105	0		169	169	1.00	2029			2029	0.084			38	38	0.281	23
B2,B3	2	3.00	B	1	30		N	1915		0	11	11	1.00	1824			1458	0.008			3	11	0.082	2
B3	2	3.00	B	1	30			2055			14	14	1.00	1957			1566	0.009			4	11	0.098	3
C2	3	3.00	C	1	25		N	2005		228		228	0.00	2005			2005	0.112			52	11	1.227	41
C2,C3	3	3.00	C	1	25		N	2005		88	129	217	0.60	1938			1936	0.112			52	11	1.226	40
PED	2																			17				
PED	3																			17				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236076	
J16 - Tai Tung Road / Hing Tung Street	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	4	
No. of stage using for calculation	N =	3	
Cycle time	C =	120	sec
Sum(y)	Y =	0.221	
Loss time	L =	41	sec
Total Flow	=	867	pcu
Co = (1.5*L+5)/(1-Y)	=	85.4	sec
Cm = L/(1-Y)	=	52.6	sec
Yult	=	0.593	
R.C.ult = (Yult-Y)/Y*100%	=	168.2	%
Cp = 0.9*L/(0.9-Y)	=	54.3	sec
Ymax = 1-L/C	=	0.658	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	168.2	% (Optimized)



STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	8.7	5	7	6	18	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	62	2	5	OK
H	6.3	5	7	5	32	7	5	OK
I	7.4	5	2	6	74	2	6	OK
J	6.6	5	6	6	5	6	6	OK

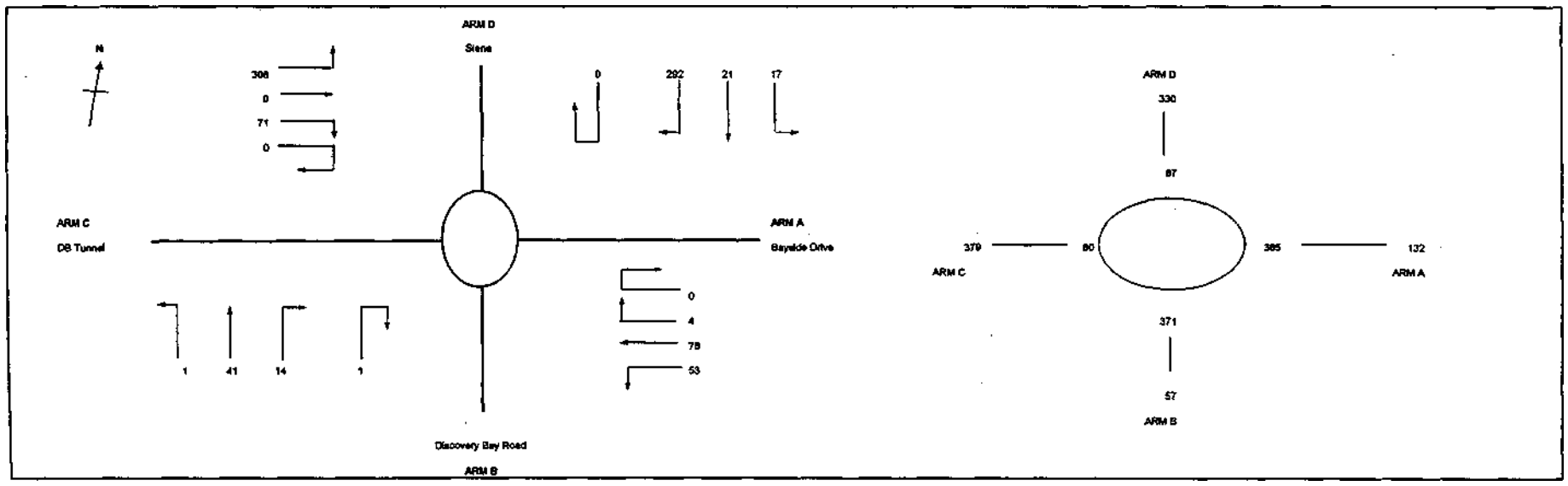
Move-ment	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m LoR pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1883	27			27	1.00	1788			1788	0.015	0.070		5	25	0.072	0
A1,A3	1	3.50	A	1	40			2106	0		141	141	1.00	2029			2029	0.070			23	25	0.336	22
B2,B3	2	3.00	B	1	30		N	1915		0	9	9	1.00	1824			1459	0.006			2	11	0.087	2
B3	2	3.00	B	1	30			2055			11	11	1.00	1957			1566	0.007			3	11	0.077	2
C2	3	3.00	C	1	25		N	2008		213		213	0.00	2005			2005	0.106	0.106		38	38	0.336	29
C2,C3	3	3.00	C	1	25		N	2005		102	104	206	0.50	1946			1946	0.106			38	38	0.334	28
PED	2																			17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 8m

Appendix C

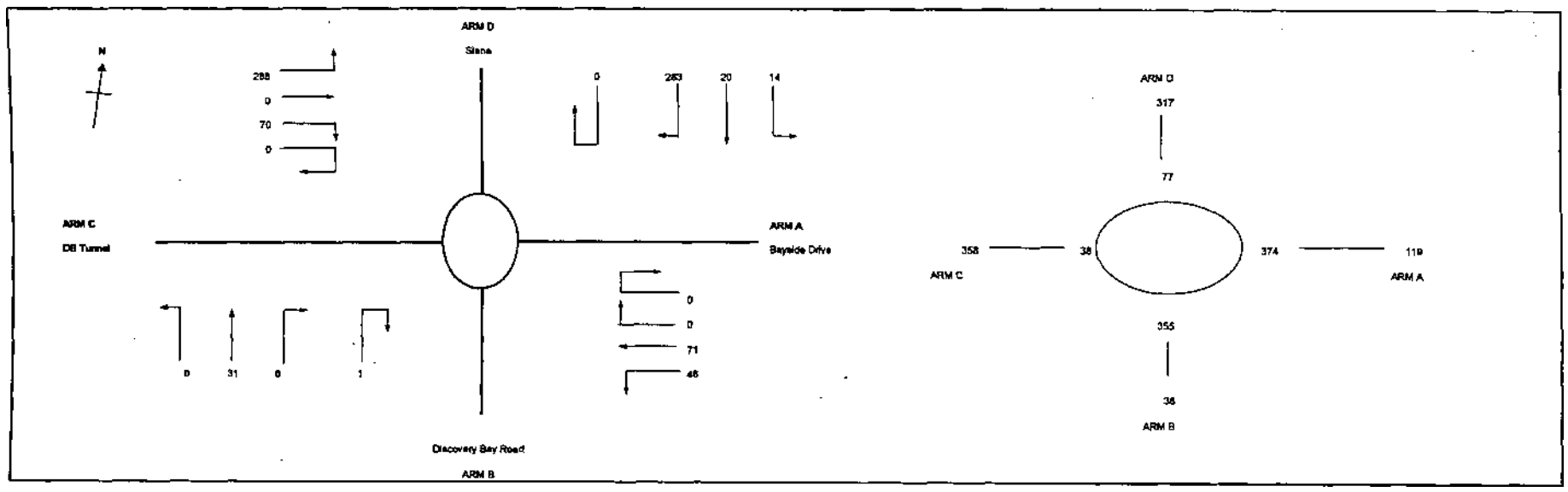
2026 Reference and Design Case Junction Calculation Sheets

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Reference Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME



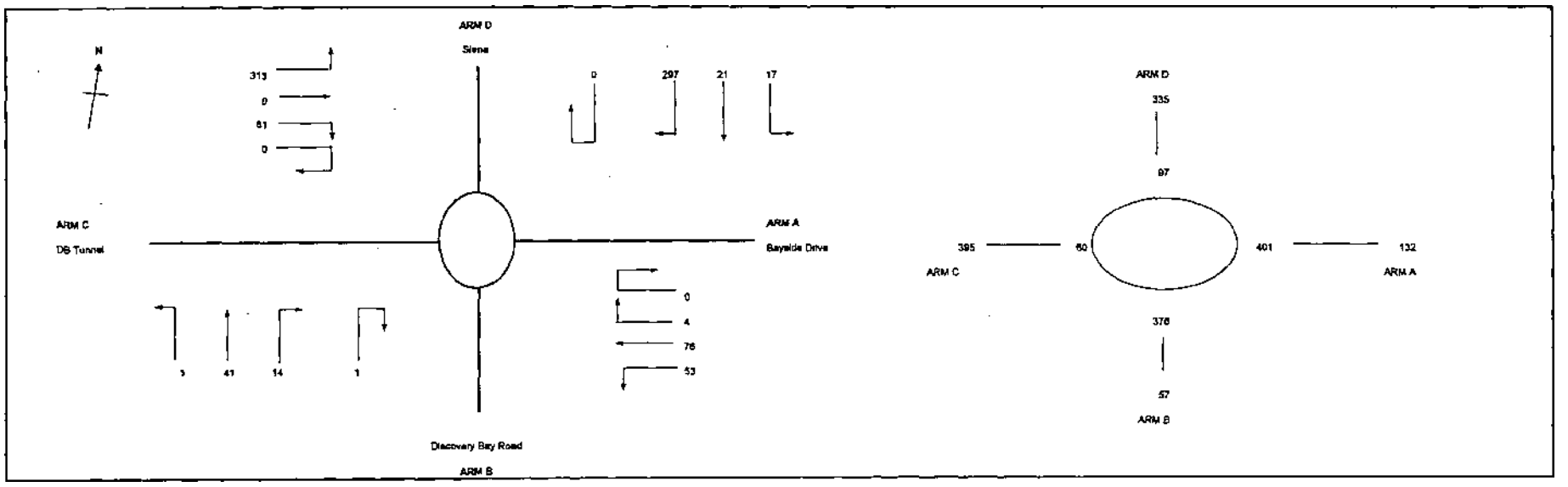
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	132	57	379	330			
Qc	=	Circulating flow across entry (pcu/h)	385	371	80	87			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303*X2	1666	1740	1878	1880			
Tc	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Tc(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1435	1468	1697	1694	Total In Sum =	898	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.09	0.04	0.20	0.17	DFC of Critical Approach =	0.20	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	119	38	358	317			
Qc	=	Circulating flow across entry (pcu/h)	374	355	38	77			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303*X2	1666	1740	1878	1880			
Tc	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Tc(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1442	1495	1902	1901	Total In Sum =	832	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.19	0.17	DFC of Critical Approach =	0.19	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Design Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME

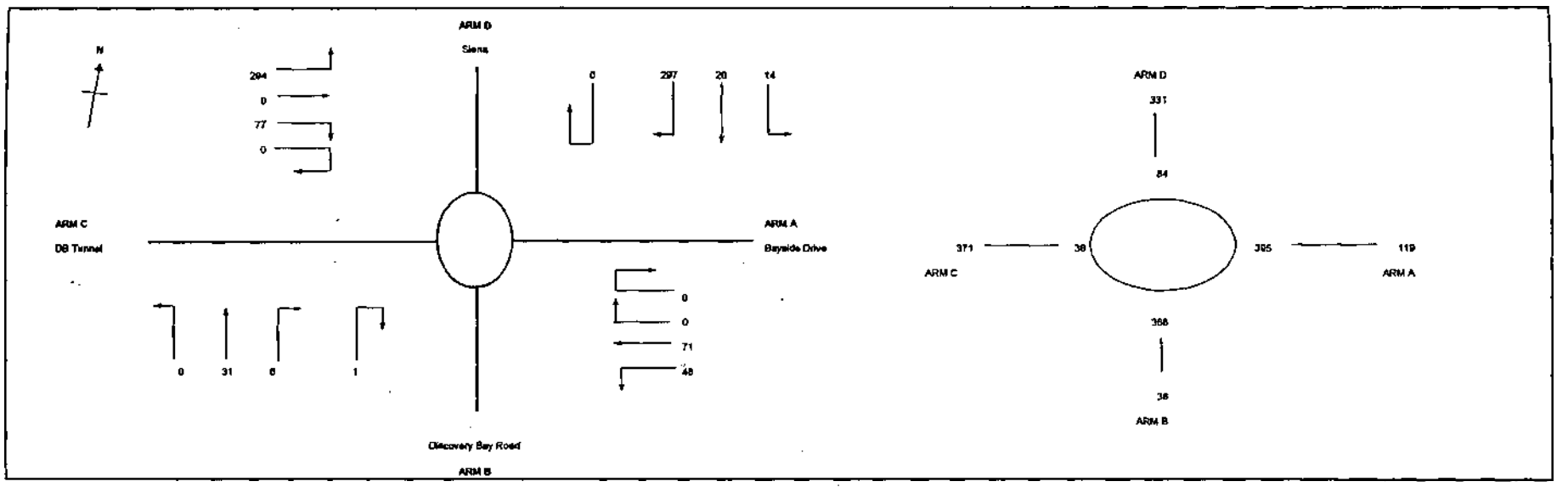


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.50	3.50	3.75	3.50
E	=	Entry width (m)	7.00	7.00	7.30	7.30
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00
R	=	Entry radius (m)	20.00	20.00	25.00	35.00
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00
Q	=	Entry flow (pcu/h)	132	57	395	335
Qc	=	Circulating flow across entry (pcu/h)	401	376	60	97
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.77	0.28	0.23	0.20
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37
F	=	303*X2	1668	1740	1878	1880
Td	=	1-(0.5/(1+M))	1.37	1.37	1.37	1.37
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.82	0.84	0.84
Qe	=	K(F-Fc*Qc)	1428	1462	1857	1857
DFC	=	Design flow/Capacity = Q/Qe	0.09	0.04	0.21	0.18

Total In Sum = 919 PCU

DFC of Critical Approach = 0.21

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Design Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME

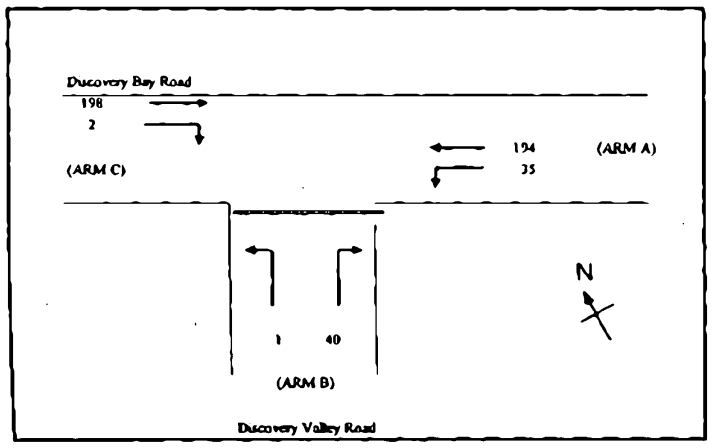


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.50	3.50	3.75	3.50
E	=	Entry width (m)	7.00	7.00	7.30	7.30
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00
R	=	Entry radius (m)	20.00	20.00	25.00	35.00
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00
Q	=	Entry flow (pcu/h)	119	38	371	331
Qc	=	Circulating flow across entry (pcu/h)	395	368	38	84
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37
F	=	303*X2	1668	1740	1878	1880
Td	=	1-(0.5/(1+M))	1.37	1.37	1.37	1.37
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.82	0.84	0.84
Qe	=	K(F-Fc*Qc)	1430	1467	1902	1898
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.19	0.17

Total In Sum = 859 PCU

DFC of Critical Approach = 0.19

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	35	(pcu/hr)
q a-c	=	194	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	197.1	(pcu/hr)
q c-b	=	2.4555	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	40	(pcu/hr)
q b-c	=	1	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	543
Q b-c	=	708
Q c-b	=	685
Q b-ac	=	548.7

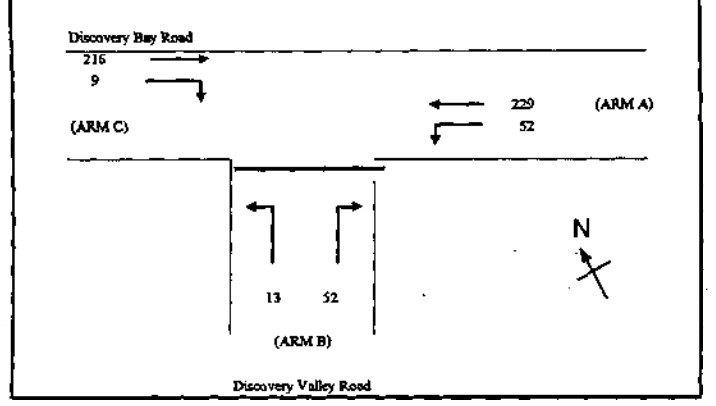
TOTAL FLOW = 470.6696484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0740
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.0758

CRITICAL DFC = 0.076

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	52	(pcu/hr)
q a-c	=	229	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	216.1	(pcu/hr)
q c-b	=	8.851	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	52	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	530
Q b-c	=	689
Q c-b	=	674
Q b-ac	=	556.4

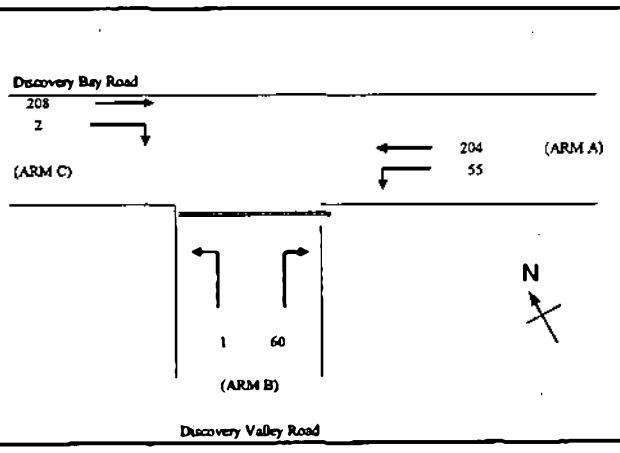
TOTAL FLOW = 589.9835702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0978
DFC b-c	=	0.0181
DFC c-b	=	0.0131
DFC b-ac	=	0.1159

CRITICAL DFC = 0.116

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	55	(pcu/hr)
q a-c	=	204	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	207.7	(pcu/hr)
q c-b	=	2.436	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	60	(pcu/hr)
q b-c	=	1	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	538
Q b-c	=	704
Q c-b	=	678
Q b-ac	=	540.5

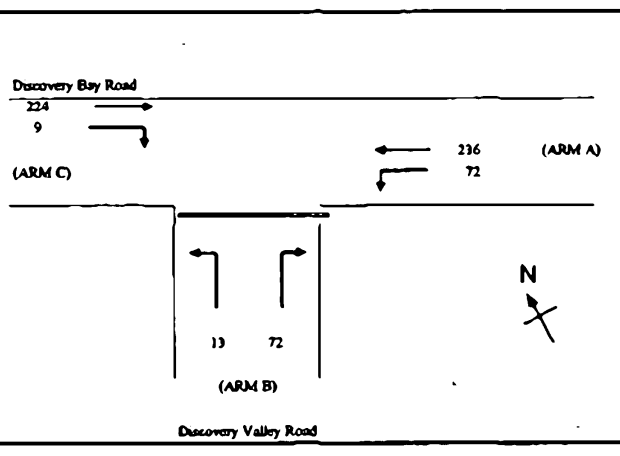
TOTAL FLOW = 530.8666484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1119
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.1136

CRITICAL DFC = 0.114

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2026 Design Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	72	(pcu/hr)
q a-c	=	236	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	223.6	(pcu/hr)
q c-b	=	8.851	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	72	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	526
Q b-c	=	695
Q c-b	=	668
Q b-ac	=	545.9

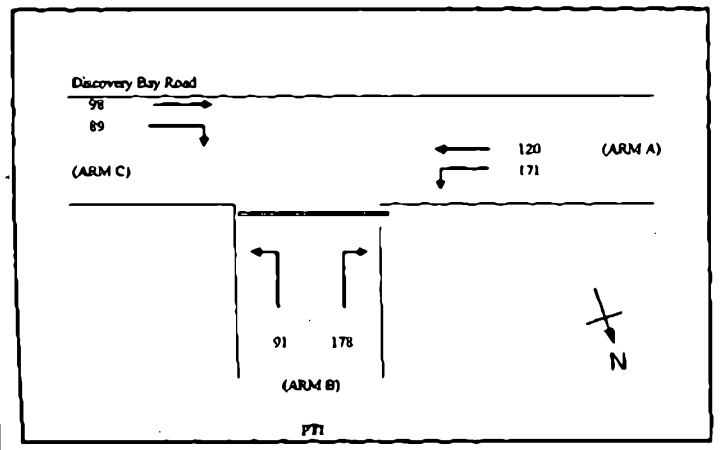
TOTAL FLOW = 624.8935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1368
DFC b-c	=	0.0182
DFC c-b	=	0.0133
DFC b-ac	=	0.1548

CRITICAL DFC = 0.155

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q b-a	=	171	(pcu/hr)
q b-c	=	720	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	178	(pcu/hr)
q c-b	=	91	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	178	(pcu/hr)
q b-c	=	91	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	509
Q b-c	=	680
Q c-b	=	688
Q b-ac	=	556.3

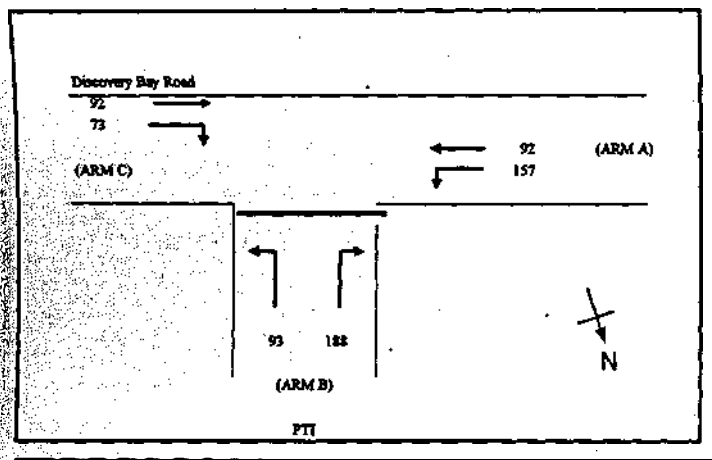
TOTAL FLOW = 747.2000363 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3500
DFC b-c	=	0.1338
DFC c-b	=	0.1289
DFC b-ac	=	0.4838

CRITICAL DFC = 0.484

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	157	(pcu/hr)
q a-c	=	92	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	91.88	(pcu/hr)
q c-b	=	72.85	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	188	(pcu/hr)
q b-c	=	93	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	522
Q b-c	=	688
Q c-b	=	697
Q b-ac	=	567.4

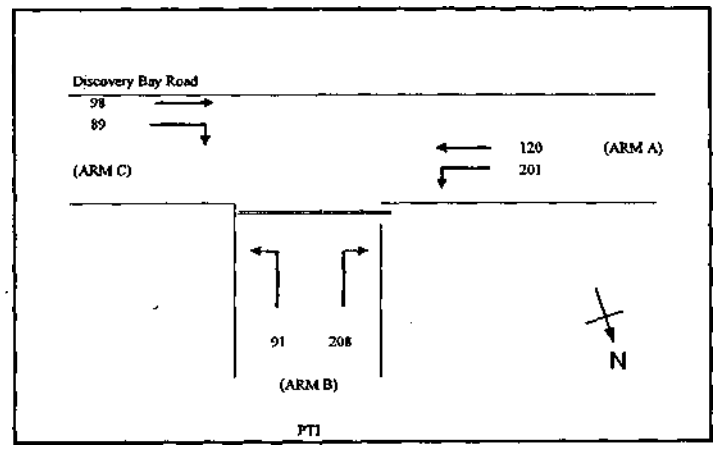
TOTAL FLOW = 694.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3601
DFC b-c	=	0.1356
DFC c-b	=	0.1045
DFC b-ac	=	0.4857

CRITICAL DFC = 0.496

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	201	(pcu/hr)
q a-c	=	120	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	98.13	(pcu/hr)
q c-b	=	88.7	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	208	(pcu/hr)
q b-c	=	91	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	506
Q b-c	=	678
Q c-b	=	681
Q b-ac	=	548.3

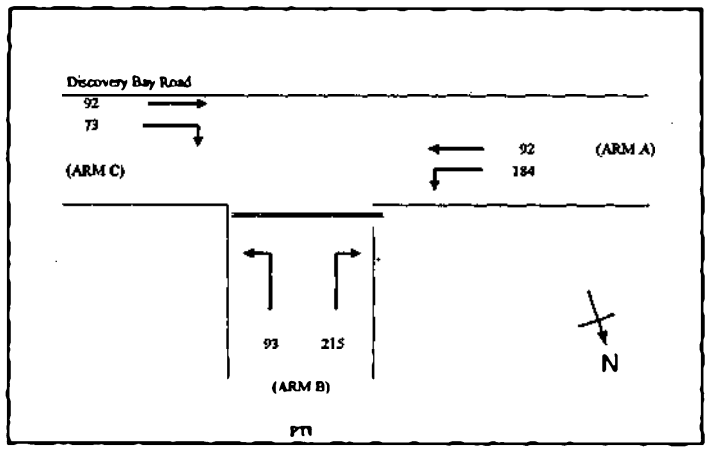
TOTAL FLOW = 807.2003363 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4113
DFC b-c	=	0.1342
DFC c-b	=	0.1303
DFC b-ac	=	0.5455

CRITICAL DFC = 0.546

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2026 Design Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	184	(pcu/hr)
q a-c	=	92	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	91.88	(pcu/hr)
q c-b	=	72.85	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	215	(pcu/hr)
q b-c	=	93	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	520
Q b-c	=	685
Q c-b	=	691
Q b-ac	=	560.8

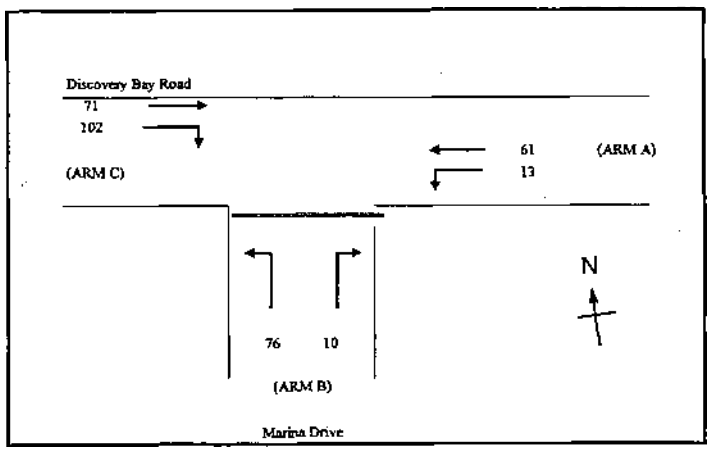
TOTAL FLOW = 749.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4144
DFC b-c	=	0.1362
DFC c-b	=	0.1054
DFC b-ac	=	0.5505

CRITICAL DFC = 0.551

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	61	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	71.27	(pcu/hr)
q c-b	=	101.8	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	10	(pcu/hr)
q b-c	=	76	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	508
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	652.8

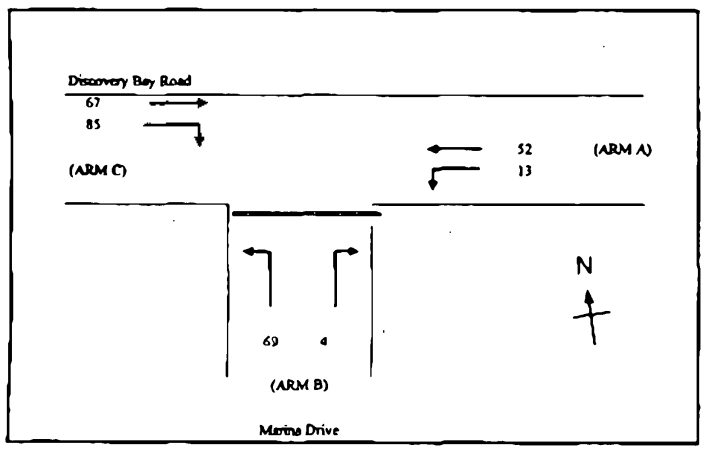
TOTAL FLOW = 332.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0203
DFC b-c	=	0.1112
DFC c-b	=	0.1448
DFC b-ac	=	0.1316

CRITICAL DFC = 0.145

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	52	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	68.85	(pcu/hr)
q c-b	=	85.26	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	4	(pcu/hr)
q b-c	=	69	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	516
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	670

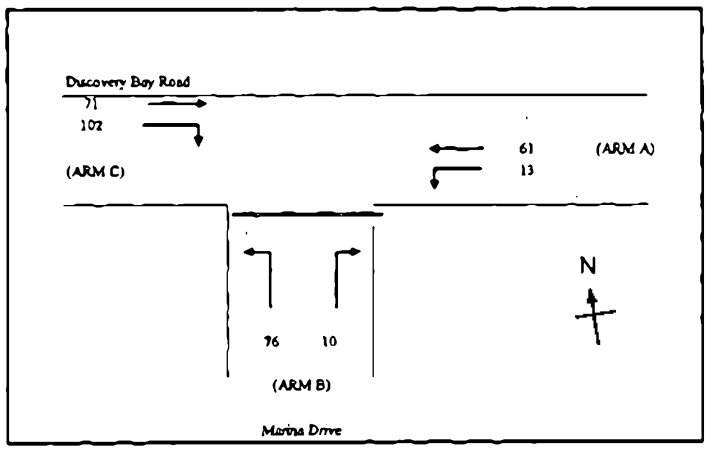
TOTAL FLOW = 290.6005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0072
DFC b-c	=	0.1011
DFC c-b	=	0.1209
DFC b-ac	=	0.1083

CRITICAL DFC = 0.121

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2026 Design Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	61	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	71.27	(pcu/hr)
q c-b	=	101.8	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	10	(pcu/hr)
q b-c	=	78	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	508
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	652.8

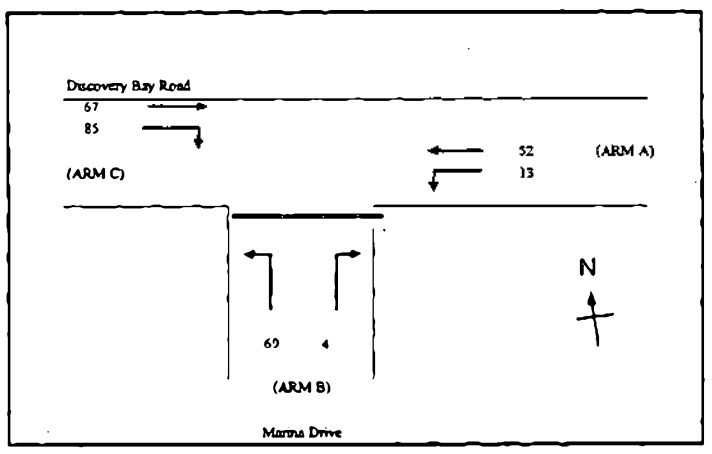
TOTAL FLOW = 332.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0203
DFC b-c	=	0.1112
DFC c-b	=	0.1448
DFC b-ac	=	0.1318

CRITICAL DFC = 0.145

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2026 Design Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	52	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	66.85	(pcu/hr)
q c-b	=	85.26	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	4	(pcu/hr)
q b-c	=	69	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	516
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	670

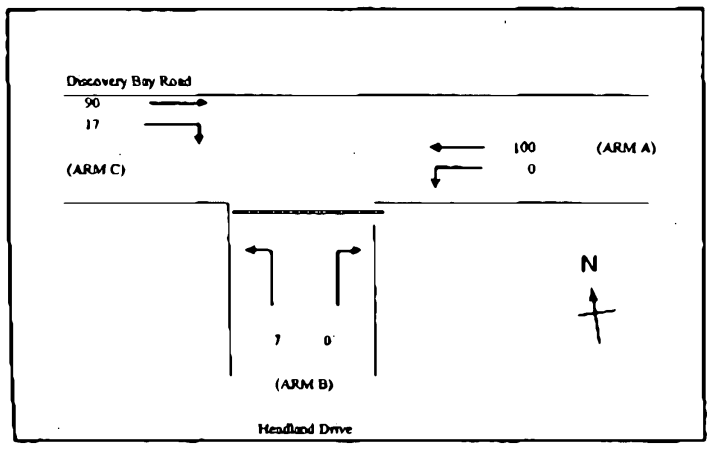
TOTAL FLOW = 290.8005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0072
DFC b-c	=	0.1011
DFC c-b	=	0.1209
DFC b-ac	=	0.1083

CRITICAL DFC = 0.121

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.80	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	90.47	(pcu/hr)
q c-b	=	17.08	(pcu/hr)

MINOR ROAD (ARM B)

Vr b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	458
Q b-c	=	613
Q c-b	=	682
Q b-ac	=	613

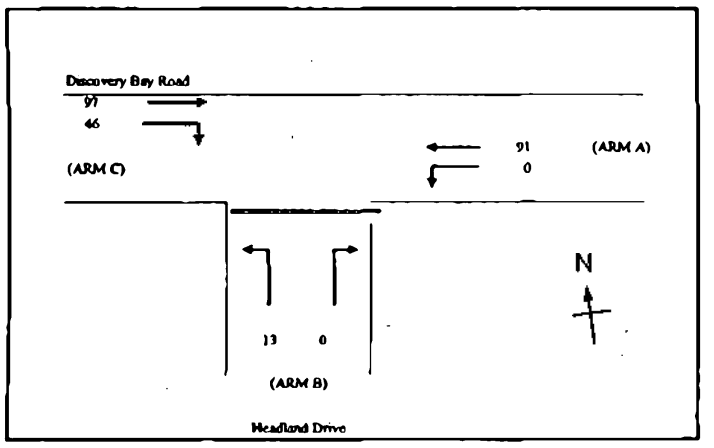
TOTAL FLOW = 215.0415223 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0119
DFC c-b	=	0.0250
DFC b-ac	=	0.0119

CRITICAL DFC = 0.025

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.80	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	81	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	97.22	(pcu/hr)
q c-b	=	45.52	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	451
Q b-c	=	618
Q c-b	=	685
Q b-ac	=	616

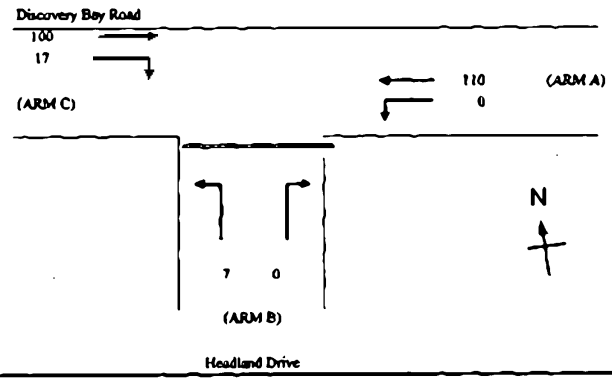
TOTAL FLOW = 246.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0211
DFC c-b	=	0.0665
DFC b-ac	=	0.0211

CRITICAL DFC = 0.066

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2026 Design Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	110	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.60	(metres)
Vr c-b	=	50	(metres)
q c-a	=	100.5	(pcu/hr)
q c-b	=	17.08	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	455
Q b-c	=	611
Q c-b	=	680
Q b-ac	=	611

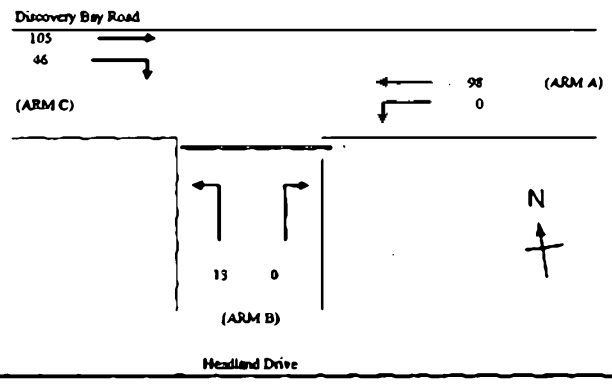
TOTAL FLOW = 235.0415223 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0120
DFC c-b	=	0.0251
DFC b-ac	=	0.0120

CRITICAL DFC = 0.025

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2026 Design Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	98	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.60	(metres)
Vr c-b	=	50	(metres)
q c-a	=	104.7	(pcu/hr)
q c-b	=	45.52	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	448
Q b-c	=	614
Q c-b	=	683
Q b-ac	=	614

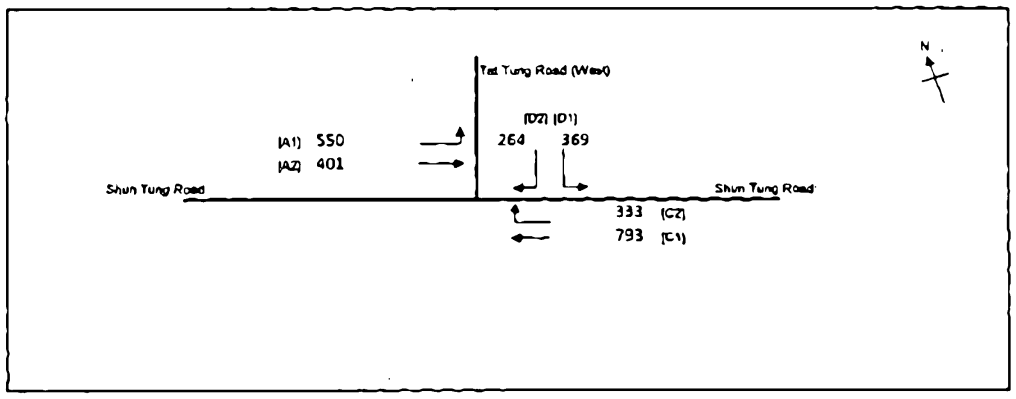
TOTAL FLOW = 261.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

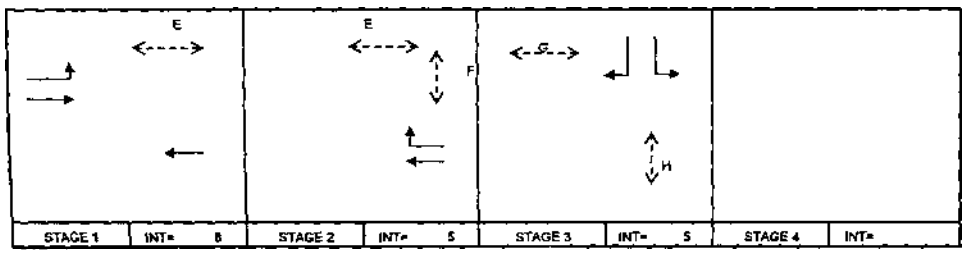
DFC b-a	=	0.0000
DFC b-c	=	0.0212
DFC c-b	=	0.0668
DFC b-ac	=	0.0212

CRITICAL DFC = 0.067

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N = 3
No. of stage using for calculation	N = 3
Cycle time	C = 90 sec
Sum(y)	Y = 0.842
Lost time	L = 15 sec
Total Flow	= 2710.273 pcu
Co = (1.5*L+5)/(1-Y)	= 78.7 sec
Cm = L/(1-Y)	= 41.8 sec
Yult	= 0.788
R.C.ult = (Yult-Y)/Y*100%	= 22.8 %
Cp = 0.9*L/(0.9-Y)	= 52.2 sec
Ymax = 1-L/C	= 0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	= 18.9 %

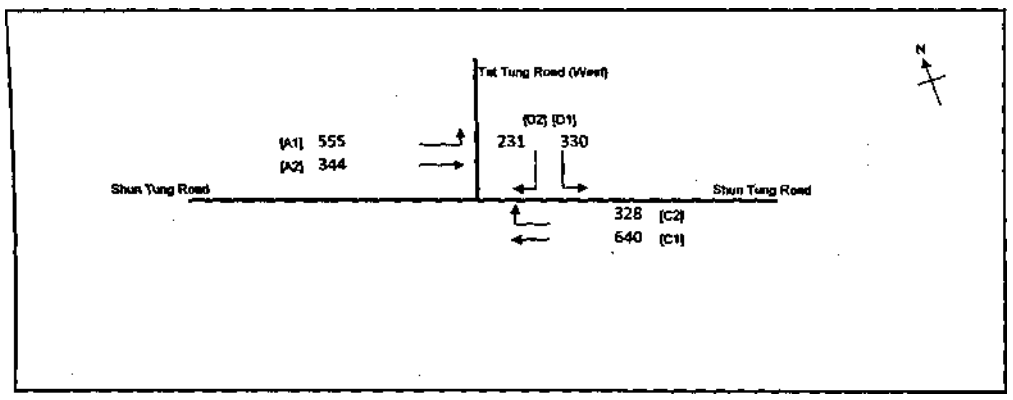


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	58	1	8	OK
F	8	5	1	7	15	1	7	OK
G	8	5	6	7	11	6	7	OK
H	11	5	2	9	13	2	9	OK

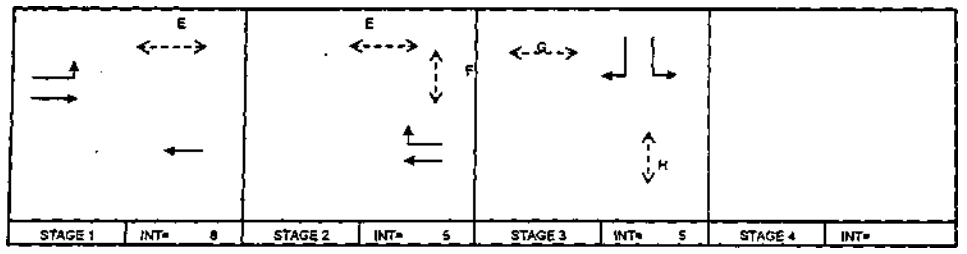
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Up/Hill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec (15)	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
A1	1	3.50	A	1	15		N	1985	550			550	1.00	1788			1788	0.308	0.308		36	36	0.770	50
A2	1	3.50	A	1				2105		401		401	0.00	2105			2105	0.190			22	36	0.476	26
C1	1,2	3.50	B	2			N	4070		793		793	0.00	4070			4070	0.195			23	56	0.300	21
C2	3	3.50	C	1	30			2105			333	333	1.00	2005			2005	0.166	0.166		19	19	0.770	39
D1	3	3.50	D	1	15		N	1985	299			299	1.00	1788			1788	0.167	0.167		20	20	0.770	33
D1,D2	3	3.50	D	1	30			2105	70		264	334	1.00	2005			2005	0.167			19	20	0.768	39

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N = 3
No. of stage using for calculation	N = 3
Cycle time	C = 90 sec
Sum(y)	Y = 0.823
Lost time	L = 15 sec
Total Flow	= 2428.273 pcu
Co = (1.5*L+5)/(1-Y)	= 72.9 sec
Cm = L/(1-Y)	= 38.8 sec
Yult	= 0.788
R.C.ult = (Yult-Y)/Y*100%	= 28.4 %
Cp = 0.9*L/(0.9-Y)	= 46.7 sec
Ymax = 1-L/C	= 0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	= 20.4 %

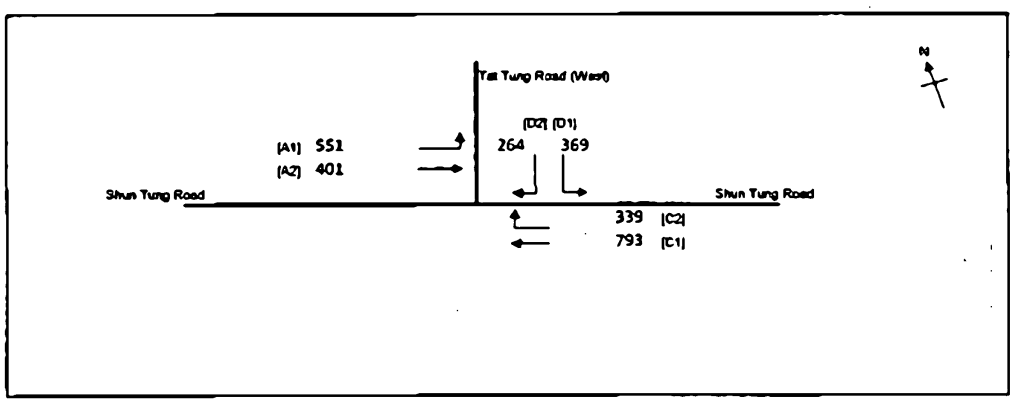


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	58	1	8	OK
F	8	5	1	7	18	1	7	OK
G	8	5	6	7	9	6	7	OK
H	11	5	2	9	11	2	9	OK

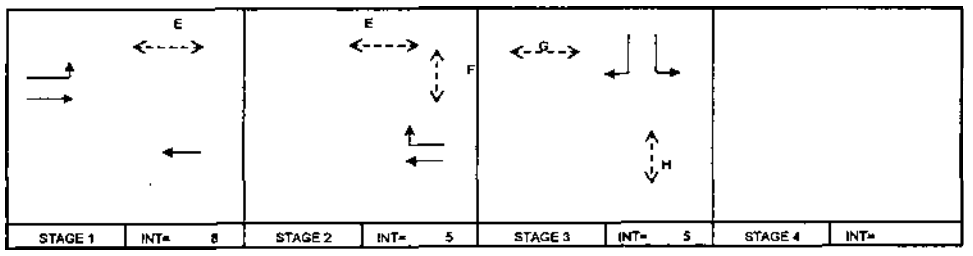
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Up/Hill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec (15)	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
A1	1	3.50	A	1	15		N	1985	555			555	1.00	1788			1788	0.311	0.311		37	37	0.747	46
A2	1	3.50	A	1				2105		344		344	0.00	2105			2105	0.163			20	37	0.393	30
C1	1,2	3.50	B	2			N	4070		640		640	0.00	4070			4070	0.157			18	60	0.235	16
C2	3	3.50	C	1	30			2105			328	328	1.00	2005			2005	0.164	0.164		20	20	0.747	38
D1	3	3.50	D	1	15		N	1985	285			285	1.00	1788			1788	0.148	0.148		18	18	0.747	32
D1,D2	3	3.50	D	1	30			2105	65		231	296	1.00	2005			2005	0.148			18	18	0.744	36

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J8 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	90 sec
Sum(y)	Y =	0.845
Loss time	L =	15 sec
Total Flow	=	2717.082 pcu
Co = (1.5*L+5)/(1-Y)	=	77.4 sec
Cm = L/(1-Y)	=	42.2 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	22.2 %
Cp = 0.9*L/(0.9-Y)	=	52.9 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	18.3 %

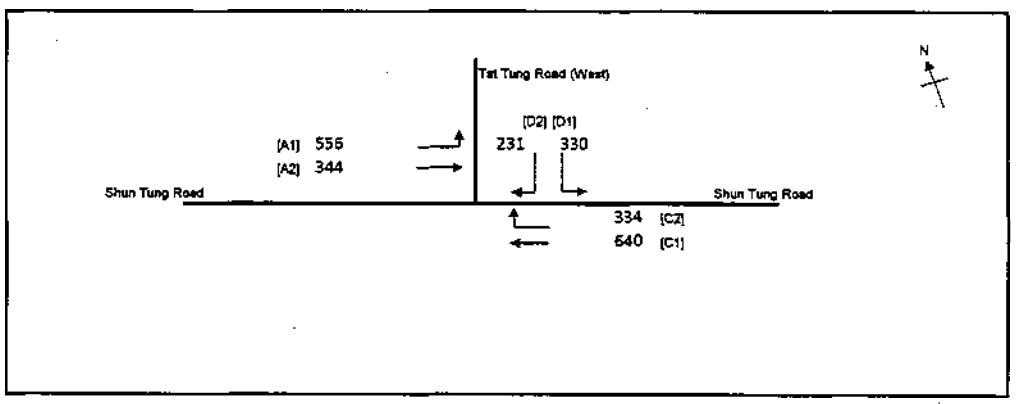


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	58	1	8	OK
F	8	5	1	7	16	1	7	OK
G	8	5	6	7	10	6	7	OK
H	11	5	2	8	12	2	8	OK

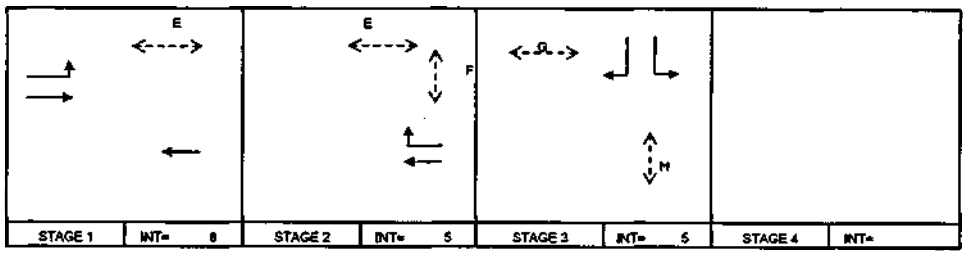
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	551			551	1.00	1788			1788	0.308	0.308		38	38	0.774	50
A2	1	3.50	A	1				2105		401		401	0.00	2105			2105	0.190			22	38	0.478	30
C1	1,2	3.50	B	2			N	4070		793		793	0.00	4070			4070	0.195			23	59	0.299	21
C2	2	3.50	C	1	30			2105			339	339	1.00	2005			2005	0.169	0.169		20	20	0.774	40
D1	3	3.50	D	1	15		N	1965	296			296	1.00	1788			1788	0.167	0.167		19	19	0.772	35
D1,D2	3	3.50	D	1	30			2105	71		264	335	1.00	2005			2005	0.167			19	19	0.774	39

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J8 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Design Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	90 sec
Sum(y)	Y =	0.826
Loss time	L =	15 sec
Total Flow	=	2435.052 pcu
Co = (1.5*L+5)/(1-Y)	=	73.8 sec
Cm = L/(1-Y)	=	40.1 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	25.8 %
Cp = 0.9*L/(0.9-Y)	=	49.3 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	18.8 %

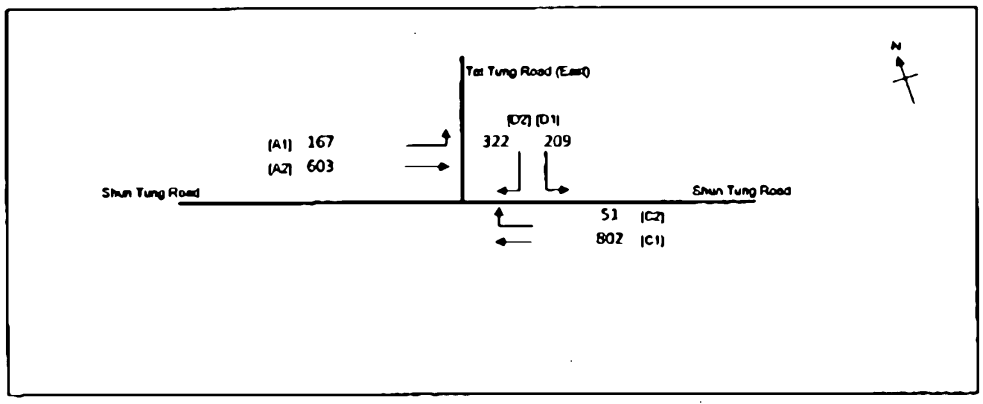


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	58	1	8	OK
F	8	5	1	7	16	1	7	OK
G	8	5	6	7	9	6	7	OK
H	11	5	2	8	11	2	8	OK

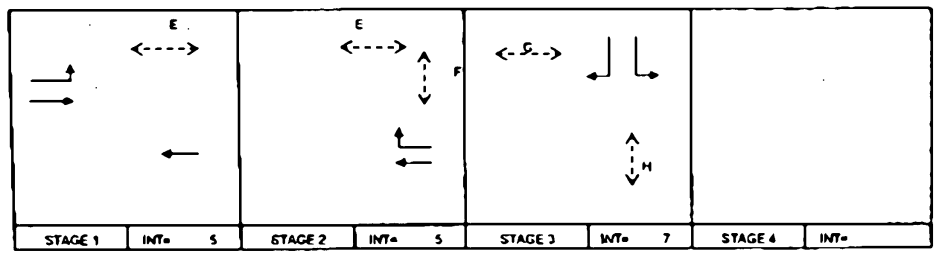
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	556			556	1.00	1788			1788	0.311	0.311		37	37	0.751	49
A2	1	3.50	A	1				2105		344		344	0.00	2105			2105	0.163			20	37	0.395	30
C1	1,2	3.50	B	2			N	4070		840		840	0.00	4070			4070	0.157			19	60	0.295	16
C2	2	3.50	C	1	30			2105			334	334	1.00	2005			2005	0.167	0.167		20	20	0.751	39
D1	3	3.50	D	1	15		N	1965	283			283	1.00	1788			1788	0.148	0.148		18	18	0.751	32
D1,D2	3	3.50	D	1	30			2105	65		231	296	1.00	2005			2005	0.148			18	18	0.748	36

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 238078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.387
Loss time		L =	28 sec
Total Flow		=	2154.848 pcu
Co	= (1.5*L+5)/(1-Y)	=	71.8 sec
Cm	= L/(1-Y)	=	42.4 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	82.0 %
Cp	= 0.9*L/(0.9-Y)	=	45.8 sec
Ymax	= 1-L/C	=	0.711
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	85.3 %

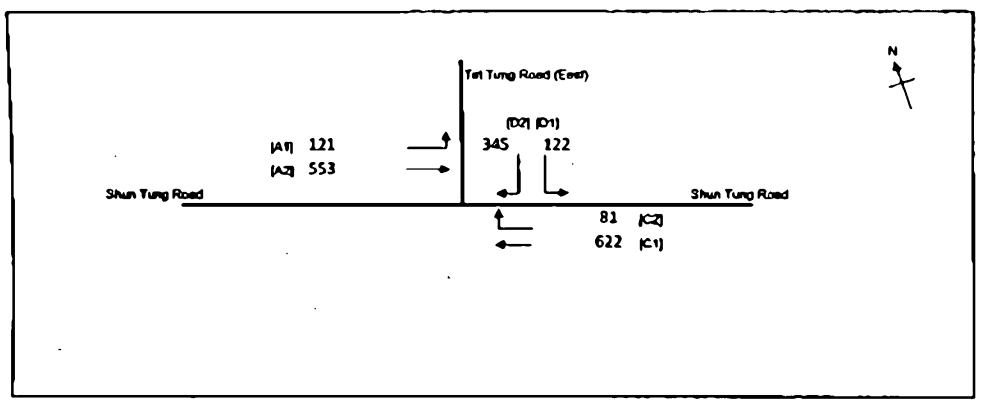


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	47	1	8	OK
F	8	5	7	7	8	7	7	OK
G	8	5	7	7	20	7	7	OK
H	10	5	2	8	24	2	8	OK

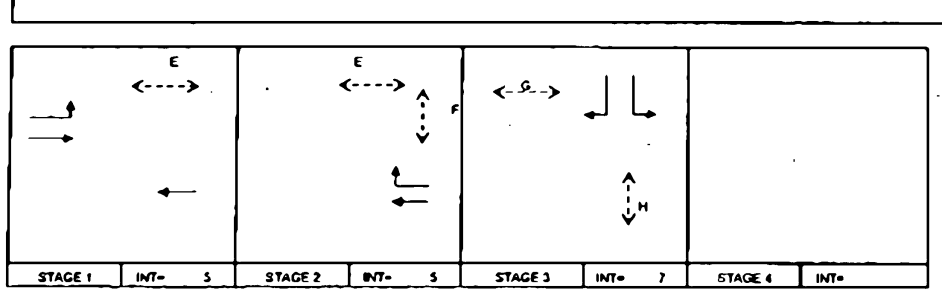
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1985	167	196		363	0.46	1879			1879	0.193	0.193		32	32	0.544	35
A2	1	3.50	A	1				2105		407		407	0.00	2105			2105	0.193			32	32	0.545	38
C1	1,2	3.50	B	2			N	4070		802		802	0.00	4070			4070	0.197			33	51	0.547	26
C2	2	3.50	C	1	30			2105			51	51	1.00	2005			2005	0.025	0.025	12	4	16	0.149	6
D1	3	3.50	D	1	15		N	1985	209			209	1.00	1788			1788	0.117	0.168		19	28	0.378	22
D1,D2	3	3.50	D	1	15			2105	0		322	322	1.00	1914			1914	0.168			28	28	0.545	33

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 238078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.390
Loss time		L =	28 sec
Total Flow		=	1844.849 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.1 sec
Cm	= L/(1-Y)	=	42.8 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	81.0 %
Cp	= 0.9*L/(0.9-Y)	=	45.8 sec
Ymax	= 1-L/C	=	0.711
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	84.3 %

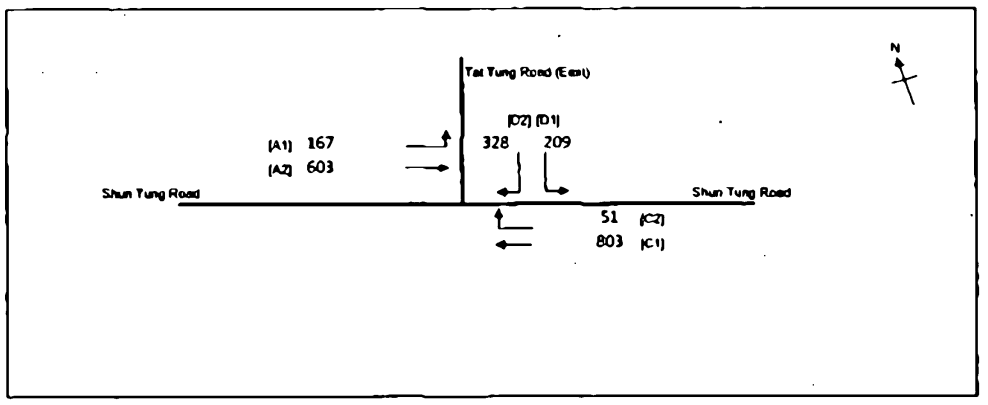


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	48	1	8	OK
F	8	5	7	7	9	7	7	OK
G	8	5	7	7	22	7	7	OK
H	10	5	2	8	26	2	8	OK

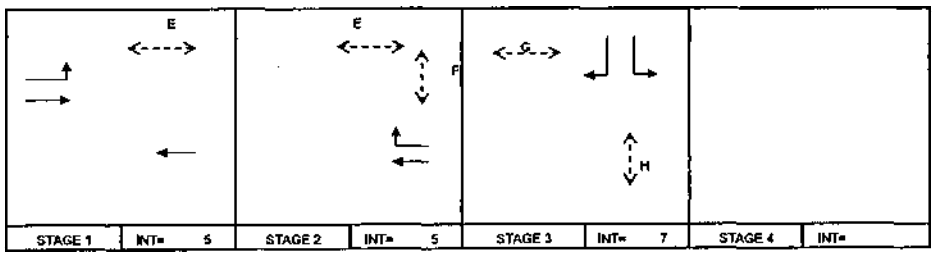
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1985	121	198		319	0.36	1883			1883	0.169	0.169		28	28	0.547	33
A2	1	3.50	A	1				2105		355		355	0.00	2105			2105	0.169			28	28	0.548	37
C1	1,2	3.50	B	2			N	4070		822		822	0.00	4070			4070	0.153			25	49	0.279	21
C2	2	3.50	C	1	30			2105			81	81	1.00	2005			2005	0.040	0.040	12	7	19	0.195	10
D1	3	3.50	D	1	15		N	1985	122			122	1.00	1788			1788	0.068	0.181		11	30	0.207	12
D1,D2	3	3.50	D	1	15			2105	0		345	345	1.00	1914			1914	0.181			30	30	0.548	35

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	3	
Cycle time	C =	80	sec
Sum(y)	Y =	0.391	
Loss time	L =	28	sec
Total Flow	=	2161.055	pcu
Co = (1.5*L+5)/(1-Y)	=	72.2	sec
Cm = L/(1-Y)	=	42.7	sec
Yult	=	0.705	
R.C.ult = (Yult-Y)/Y*100%	=	80.5	%
Cp = 0.9*L/(0.9-Y)	=	45.9	sec
Ymax = 1-L/C	=	0.711	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	63.8	%

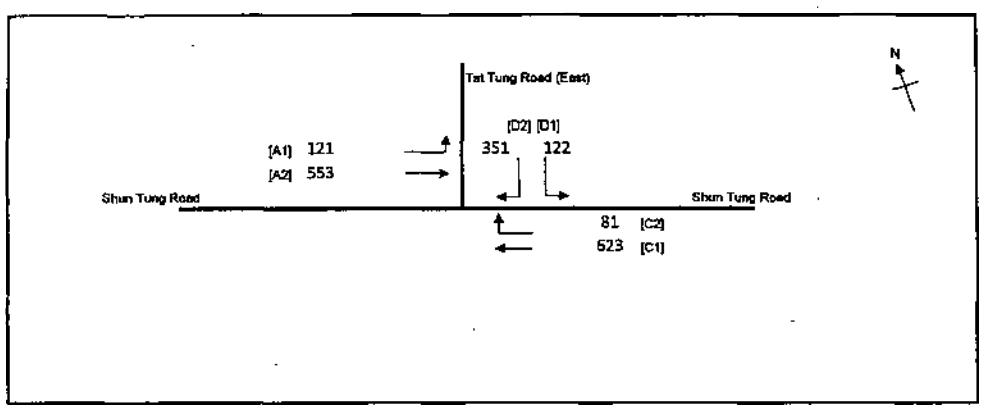


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	47	1	8	OK
F	8	5	7	7	8	7	7	OK
G	8	5	7	7	20	7	7	OK
H	10	5	2	8	24	2	8	OK

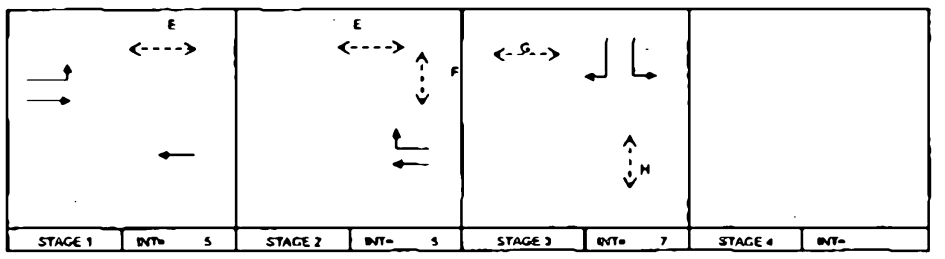
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1965	167	195		362	0.46	1878			1878	0.193	0.184		32	32	0.548	35
A2	1	3.50	A	1				2105		406		406	0.00	2105			2105	0.194			32	32	0.549	40
C1	1,2	3.50	B	2			N	4070		803		803	0.00	4070			4070	0.197			32	51	0.349	28
C2	2	3.50	C	1	30			2105			51	51	1.00	2005			2005	0.025	0.025	12	4	10	0.142	6
D1	3	3.80	D	1	15		N	1965	209			209	1.00	1766			1766	0.117	0.171		10	28	0.375	22
D1,D2	3	3.50	D	1	15			2105	0		328	328	1.00	1914			1914	0.171			28	28	0.548	34

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Design Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	3	
Cycle time	C =	90	sec
Sum(y)	Y =	0.393	
Loss time	L =	28	sec
Total Flow	=	1851.055	pcu
Co = (1.5*L+5)/(1-Y)	=	72.5	sec
Cm = L/(1-Y)	=	42.8	sec
Yult	=	0.705	
R.C.ult = (Yult-Y)/Y*100%	=	79.5	%
Cp = 0.9*L/(0.9-Y)	=	46.1	sec
Ymax = 1-L/C	=	0.711	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	62.9	%

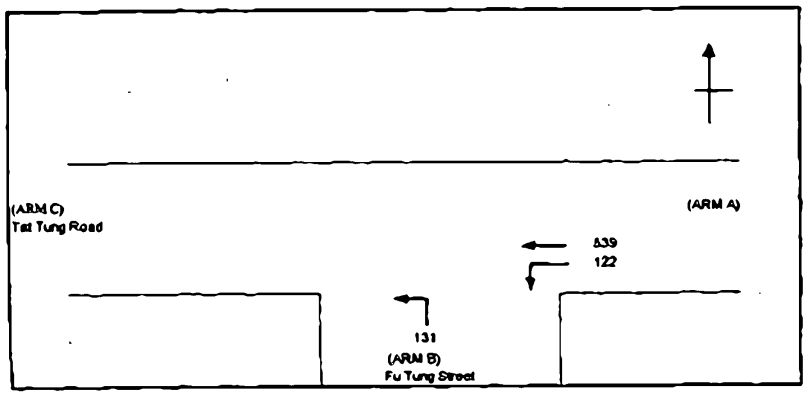


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	45	1	8	OK
F	8	5	7	7	9	7	7	OK
G	8	5	7	7	22	7	7	OK
H	10	5	2	8	26	2	8	OK

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1965	121	199		320	0.38	1883			1883	0.169	0.169		28	28	0.552	33
A2	1	3.50	A	1				2105		354		354	0.00	2105			2105	0.168			27	28	0.550	37
C1	1,2	3.50	B	2			N	4070		823		823	0.00	4070			4070	0.153			25	40	0.280	21
C2	2	3.50	C	1	30			2105			61	61	1.00	2005			2005	0.040	0.040	12	7	10	0.196	10
D1	3	3.50	D	1	15		N	1965	122			122	1.00	1766			1766	0.088	0.183		11	30	0.208	12
D1,D2	3	3.50	D	1	15			2105	0		351	351	1.00	1914			1914	0.183			30	30	0.552	35

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2026 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	122	(pcu/hr)
q a-c	=	539	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	131	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	357
Q b-c	=	378
Q c-b	=	332
Qb-ac	=	378

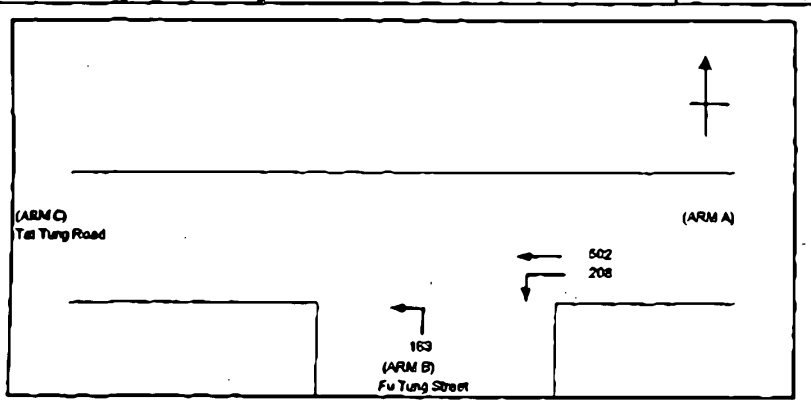
TOTAL FLOW = 793 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3473
DFC c-b	=	0.0000
DFC b-ac	=	0.3473

CRITICAL DFC = 0.35

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2026 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	208	(pcu/hr)
q a-c	=	502	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	163	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	358
Q b-c	=	379
Q c-b	=	324
Qb-ac	=	379

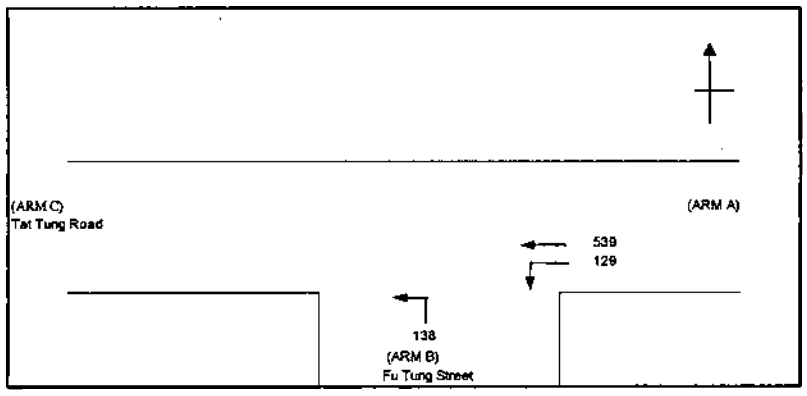
TOTAL FLOW = 874 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4308
DFC c-b	=	0.0000
DFC b-ac	=	0.4308

CRITICAL DFC = 0.43

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2026 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	129	(pcu/hr)
q a-c	=	539	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	138	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	357
Q b-c	=	378
Q c-b	=	331
Qb-ac	=	378

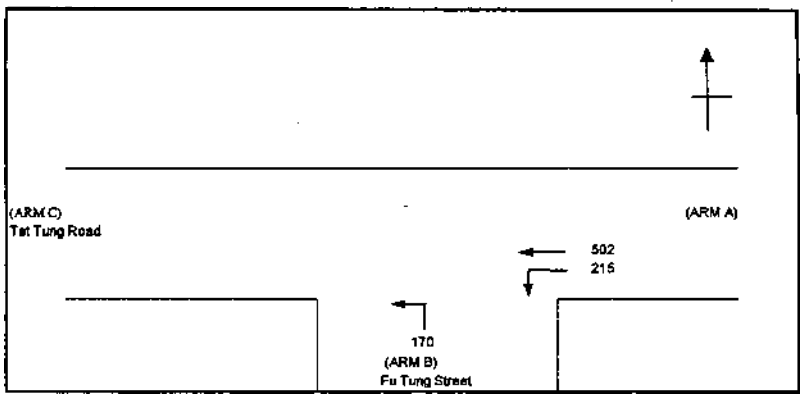
TOTAL FLOW = 608 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3653
DFC c-b	=	0.0000
DFC b-ac	=	0.3653

CRITICAL DFC = 0.37

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2026 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	215	(pcu/hr)
q a-c	=	502	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	170	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	357
Q b-c	=	378
Q c-b	=	323
Qb-ac	=	378

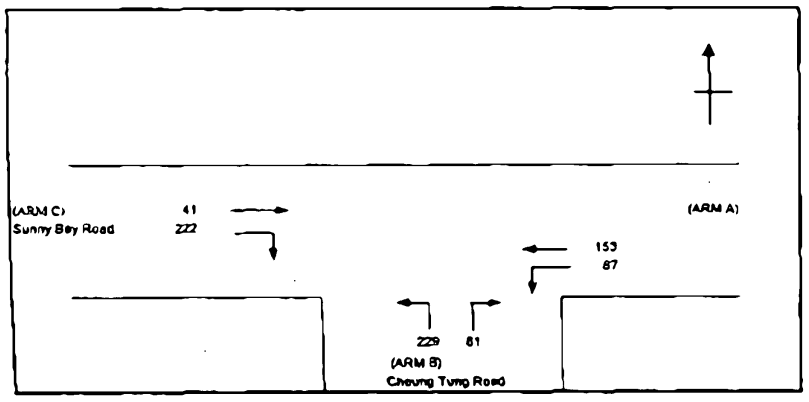
TOTAL FLOW = 887 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4500
DFC c-b	=	0.0000
DFC b-ac	=	0.4500

CRITICAL DFC = 0.45

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2026 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q b-b	=	87	(pcu/hr)
q b-c	=	153	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	41	(pcu/hr)
q c-b	=	222	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	81	(pcu/hr)
q b-c	=	229	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7287

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	864
Q c-b	=	680
Qb-ac	=	617

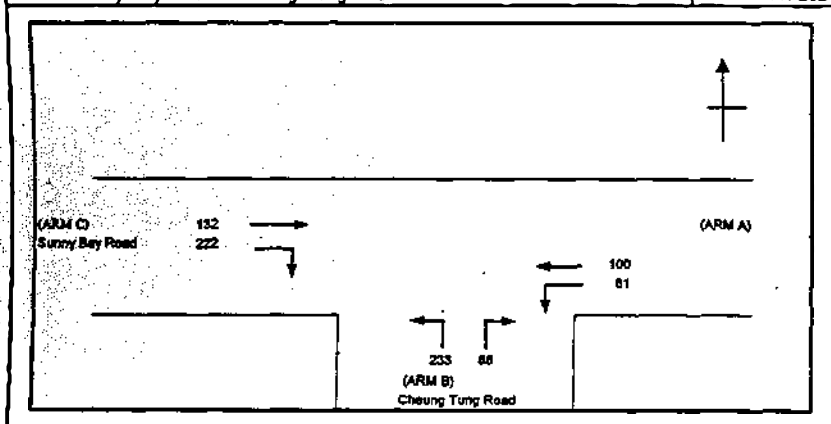
TOTAL FLOW = 813 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1576
DFC b-c	=	0.3449
DFC c-b	=	0.3265
DFC b-ac	=	0.5015

CRITICAL DFC = 0.50

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2028 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q b-b	=	81	(pcu/hr)
q b-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	132	(pcu/hr)
q c-b	=	222	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	88	(pcu/hr)
q b-c	=	233	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7259

THE CAPACITY OF MOVEMENT :

Q b-a	=	515
Q b-c	=	874
Q c-b	=	694
Qb-ac	=	821

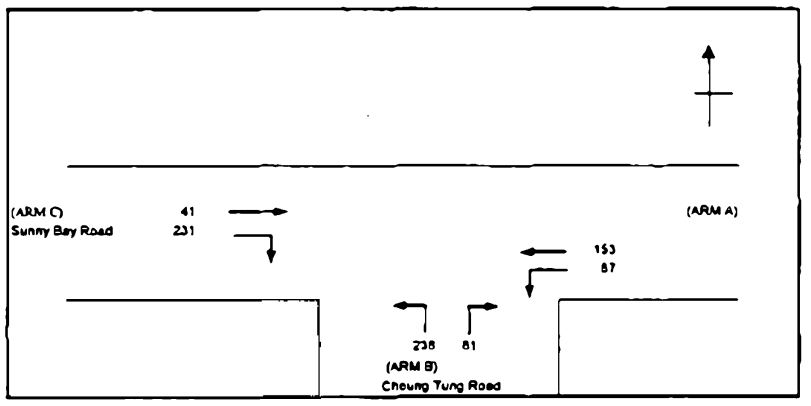
TOTAL FLOW = 836 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1709
DFC b-c	=	0.3458
DFC c-b	=	0.3200
DFC b-ac	=	0.5166

CRITICAL DFC = 0.52

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2026 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	87	(pcu/hr)
q a-c	=	153	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	41	(pcu/hr)
q c-b	=	231	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	81	(pcu/hr)
q b-c	=	238	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.7458

THE CAPACITY OF MOVEMENT :

Q b-a	=	512
Q b-c	=	884
Q c-b	=	660
Qb-ac	=	817

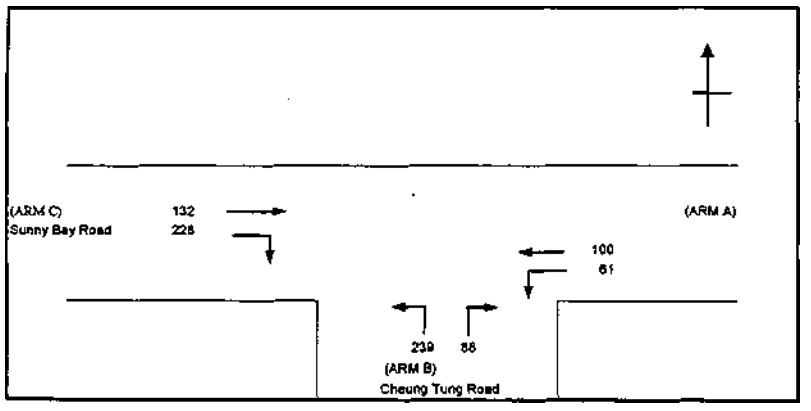
TOTAL FLOW = 830 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1582
DFC b-c	=	0.3379
DFC c-b	=	0.3392
DFC b-ac	=	0.5161

CRITICAL DFC = 0.52

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2026 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	81	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	132	(pcu/hr)
q c-b	=	228	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	88	(pcu/hr)
q b-c	=	239	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.7310

THE CAPACITY OF MOVEMENT :

Q b-a	=	513
Q b-c	=	674
Q c-b	=	694
Qb-ac	=	622

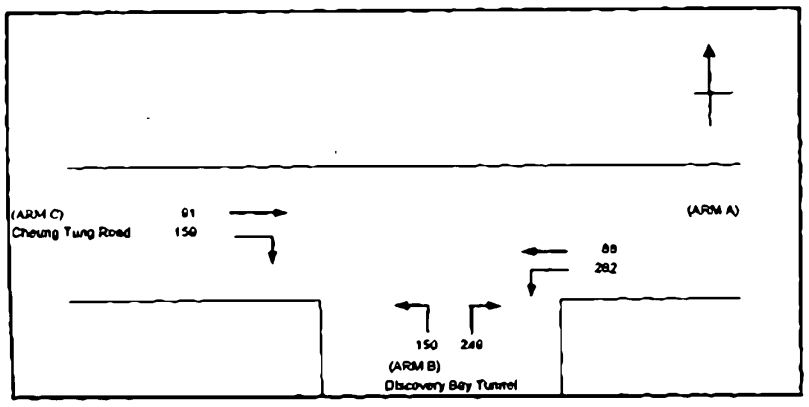
TOTAL FLOW = 848 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1715
DFC b-c	=	0.3548
DFC c-b	=	0.3288
DFC b-ac	=	0.5263

CRITICAL DFC = 0.53

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2026 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.033*W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	282	(pcu/hr)
q a-c	=	88	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	91	(pcu/hr)
q c-b	=	159	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	240	(pcu/hr)
q b-c	=	150	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.8406
Y	=	0.7309
P	=	0.3783

THE CAPACITY OF MOVEMENT :

Q b-a	=	485
Q b-c	=	726
Q c-b	=	613
Qb-ac	=	554

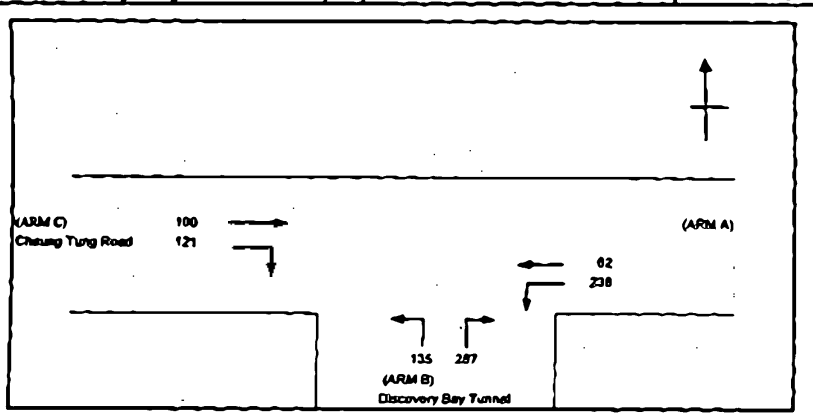
TOTAL FLOW = 1000 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5135
DFC b-c	=	0.2078
DFC c-b	=	0.2598
DFC b-ac	=	0.7205

CRITICAL DFC = 0.72

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2026 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.033*W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	238	(pcu/hr)
q a-c	=	62	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	100	(pcu/hr)
q c-b	=	121	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	287	(pcu/hr)
q b-c	=	135	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.8406
Y	=	0.7309
P	=	0.3203

THE CAPACITY OF MOVEMENT :

Q b-a	=	507
Q b-c	=	736
Q c-b	=	626
Qb-ac	=	563

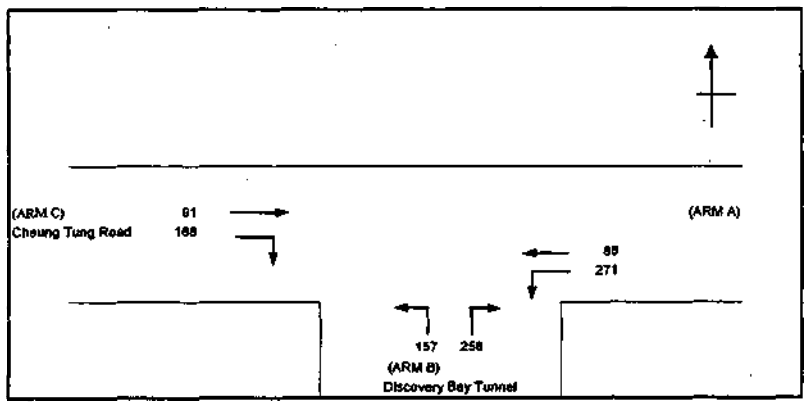
TOTAL FLOW = 844 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5662
DFC b-c	=	0.1838
DFC c-b	=	0.1937
DFC b-ac	=	0.7500

CRITICAL DFC = 0.75

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2026 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	271	(pcu/hr)
q a-c	=	88	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	81	(pcu/hr)
q c-b	=	168	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
W b-c	=	40	(metres)
q b-a	=	258	(pcu/hr)
q b-c	=	157	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3787

THE CAPACITY OF MOVEMENT :

Q b-a	=	462
Q b-c	=	725
Q c-b	=	611
Qb-ac	=	552

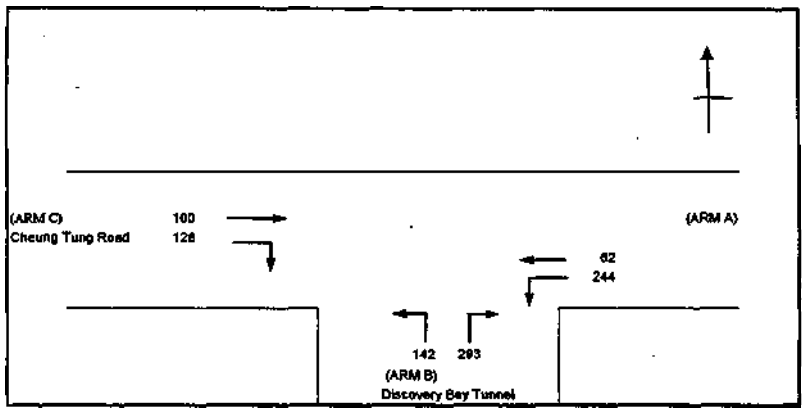
TOTAL FLOW = 1830 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5346
DFC b-c	=	0.3167
DFC c-b	=	0.2718
DFC b-ac	=	0.7512

CRITICAL DFC = 0.75

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2026 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	244	(pcu/hr)
q a-c	=	62	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	100	(pcu/hr)
q c-b	=	128	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vl b-c	=	40	(metres)
q b-a	=	293	(pcu/hr)
q b-c	=	142	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3284

THE CAPACITY OF MOVEMENT :

Q b-a	=	504
Q b-c	=	735
Q c-b	=	624
Qb-ac	=	562

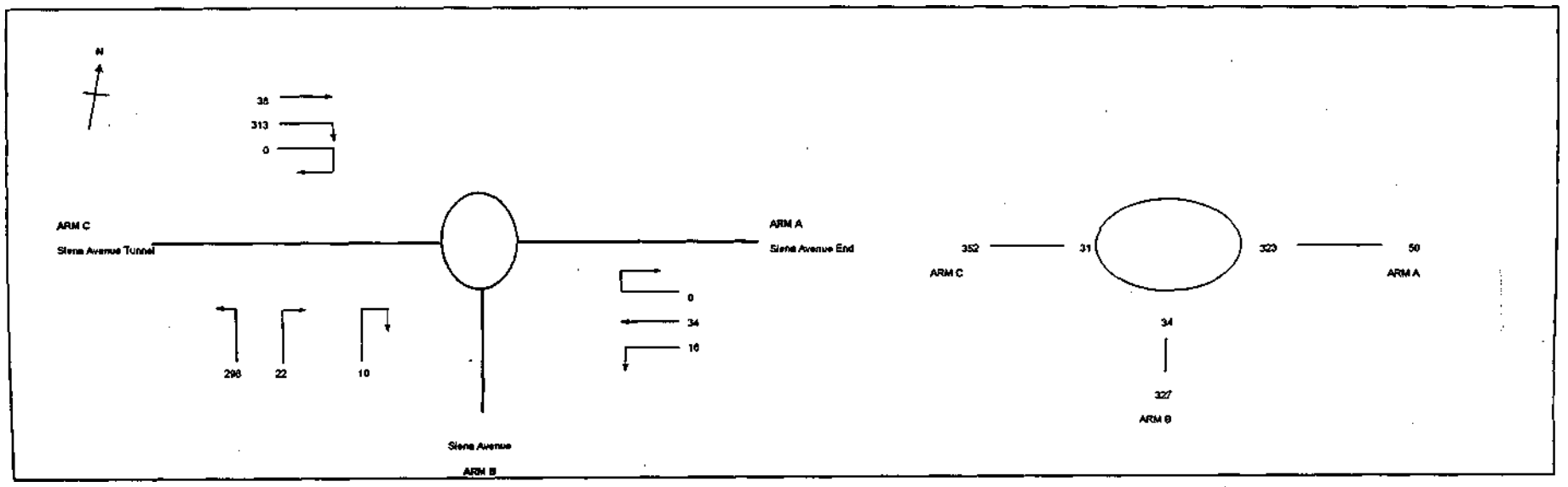
TOTAL FLOW = 969 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5817
DFC b-c	=	0.1953
DFC c-b	=	0.2053
DFC b-ac	=	0.7750

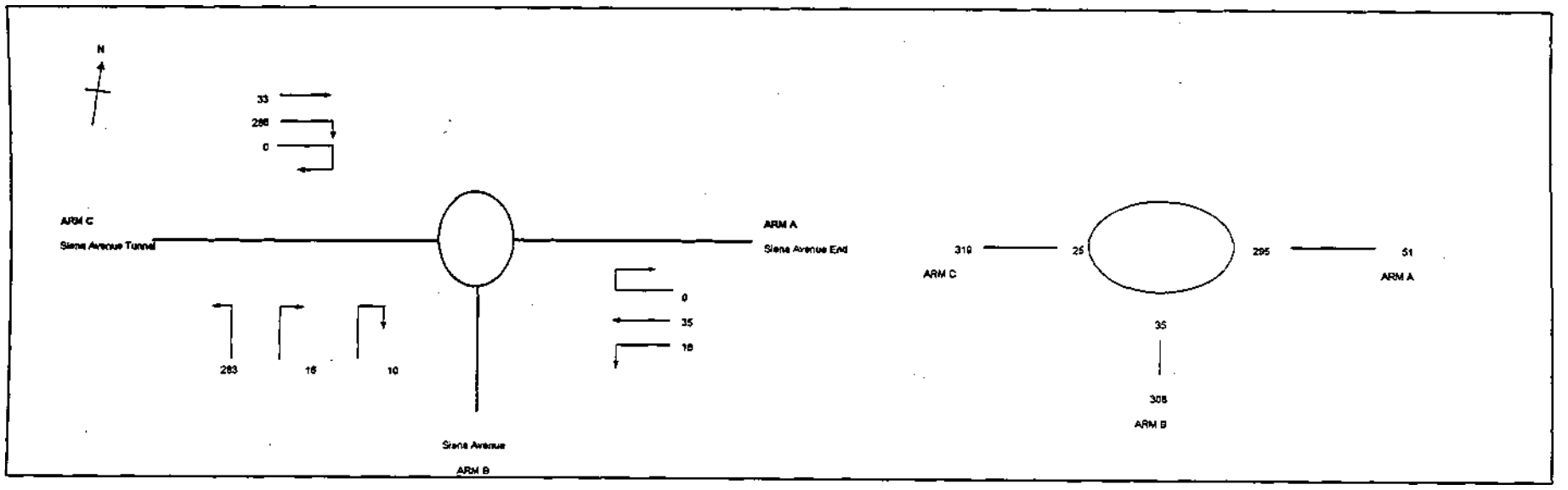
CRITICAL DFC = 0.77

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



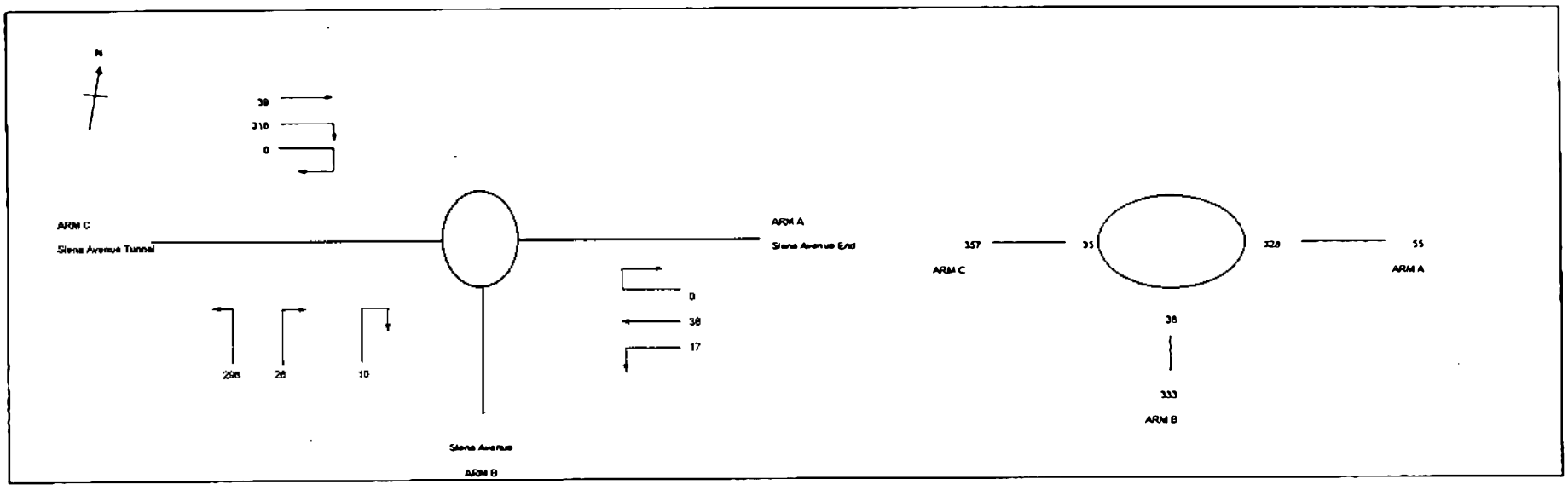
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	50	327	352			
Qc	=	Circulating flow across entry (pcu/h)	323	34	31			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1476			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.84	0.81			
Qe	=	K(F-Fc*Qc)	885	1488	1274	Total In Sum =	729	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.22	0.28	DFC of Critical Approach =	0.28	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



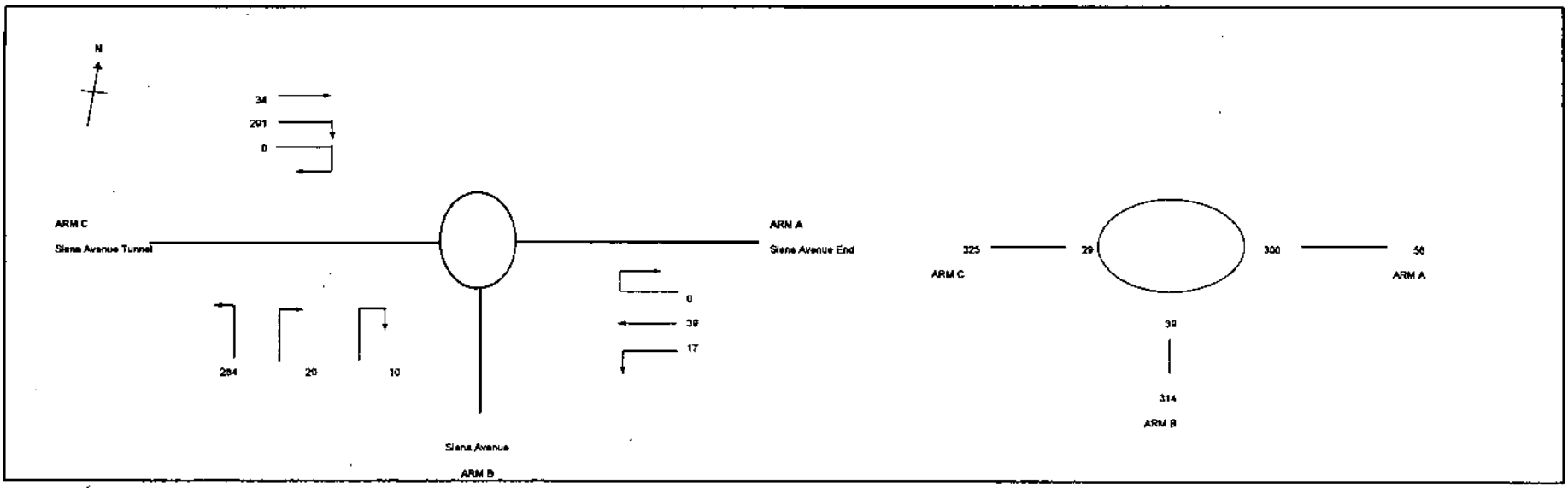
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	51	308	319			
Qc	=	Circulating flow across entry (pcu/h)	295	35	25			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1476			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.84	0.81			
Qe	=	K(F-Fc*Qc)	898	1467	1278	Total In Sum =	679	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.21	0.25	DFC of Critical Approach =	0.26	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



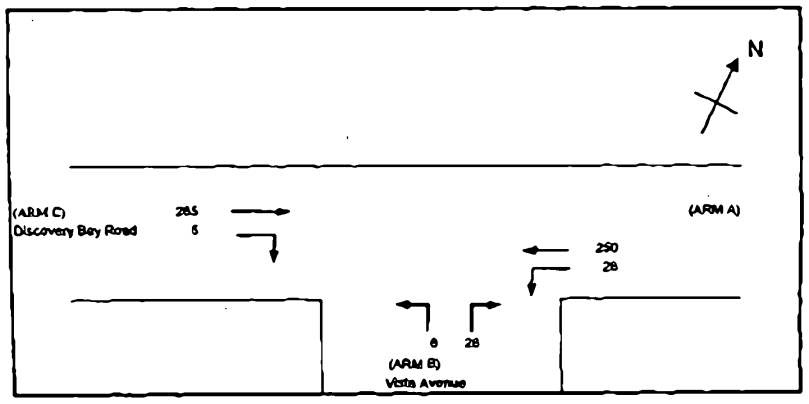
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.60	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	55	333	357			
Qc	=	Circulating flow across entry (pcu/h)	328	38	35			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.97			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1476			
Tc	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Tc(1+0.2*X2)	0.55	0.64	0.61			
Qe	=	K(F-Fc*Qc)	652	1465	1272	Total In Sum =	745	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.22	0.28	DFC of Critical Approach =	0.28	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



ARM			A	B	C			
INPUT PARAMETERS								
V	=	Approach half width (m)	3.65	4.60	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	56	314	325			
Qc	=	Circulating flow across entry (pcu/h)	300	39	29			
OUTPUT PARAMETERS								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.97			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1476			
Tc	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Tc(1+0.2*X2)	0.55	0.64	0.61			
Qe	=	K(F-Fc*Qc)	698	1485	1275	Total In Sum =	694	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.21	0.25	DFC of Critical Approach =	0.25	

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2026 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	28	(pcu/hr)
q a-c	=	250	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	285	(pcu/hr)
q c-b	=	5	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	3.0	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	28	(pcu/hr)
q b-c	=	0	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.8205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	502
Q b-c	=	671
Q c-b	=	758
Qb-ac	=	527

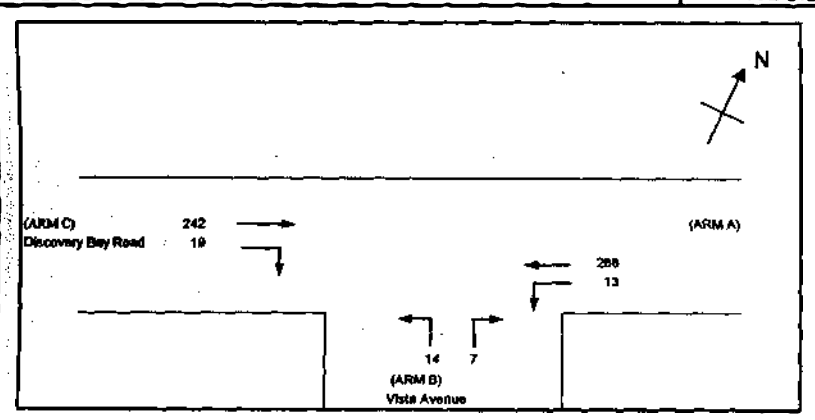
TOTAL FLOW = 578 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0326
DFC b-c	=	0.0089
DFC c-b	=	0.0063
DFC b-ac	=	0.0616

CRITICAL DFC = 0.06

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2026 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	268	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	242	(pcu/hr)
q c-b	=	19	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	3.0	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	7	(pcu/hr)
q b-c	=	14	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.8205
P	=	0.8731

THE CAPACITY OF MOVEMENT :

Q b-a	=	498
Q b-c	=	668
Q c-b	=	757
Qb-ac	=	601

TOTAL FLOW = 582 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0141
DFC b-c	=	0.0216
DFC c-b	=	0.0254
DFC b-ac	=	0.0356

CRITICAL DFC = 0.04

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

Discovery Bay

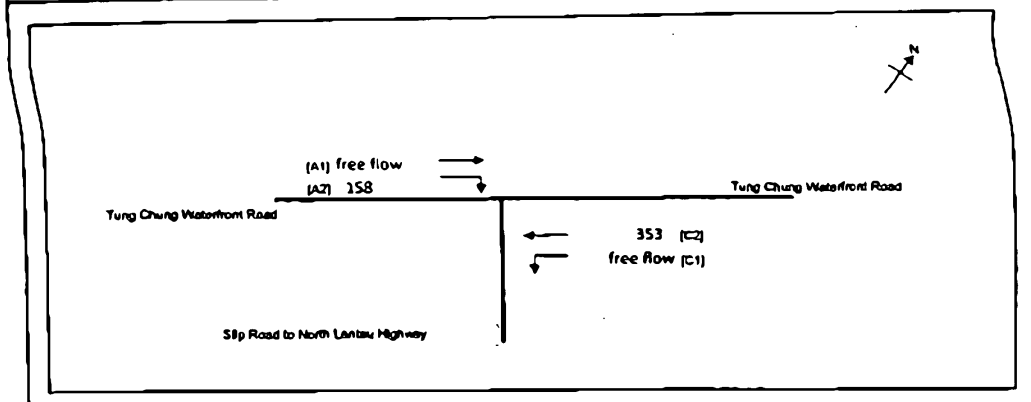
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway

Year 2026 Reference Traffic Flows (AM Peak)

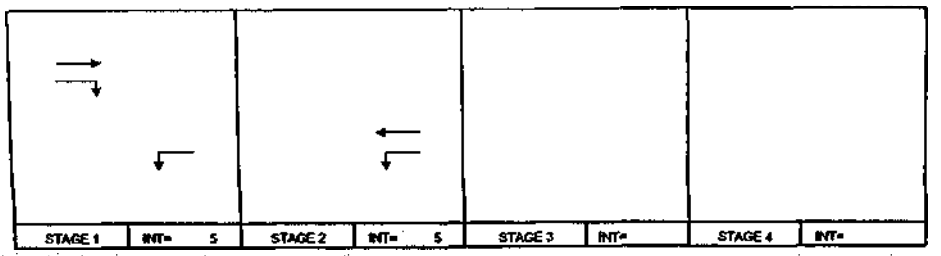
PROJECT NO: 236078

DATE : 30-Nov-15

FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	60	sec
Sum(y)	Y =	0.166	
Lost time	L =	8	sec
Total Flow	=	511	pcu
Co = (1.5*L+5)/(1-Y)	=	20.4	sec
Cm = L/(1-Y)	=	9.6	sec
Yult	=	0.640	
R.C.ult = (Yult-Y)/Y*100%	=	404.8	%
Cp = 0.9*L/(0.9-Y)	=	9.6	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	368.7	%



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			258	258	1.00	1914			1914	0.135	0.135		20	20	0.182	9
C2	2	3.50	B	2				4210		353		353	0.00	4210			4210	0.084	0.084		20	20	0.182	10

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUELING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

Discovery Bay

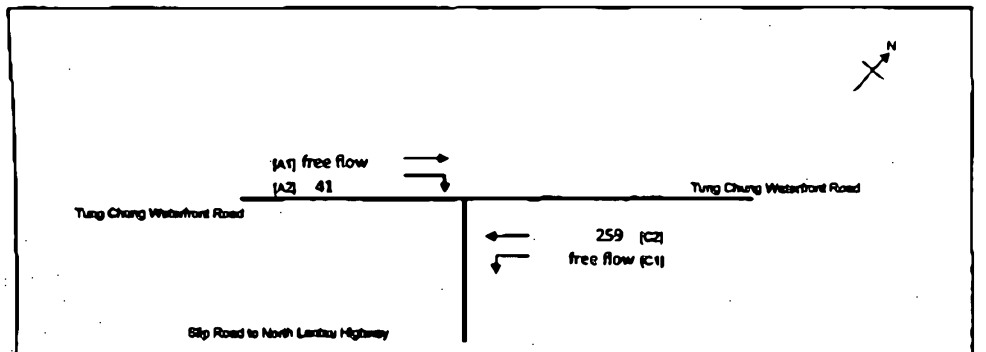
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway

Year 2026 Reference Traffic Flows (PM Peak)

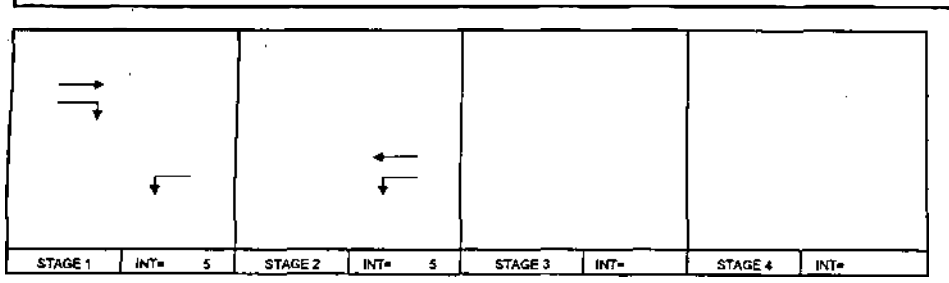
PROJECT NO: 236078

DATE : 30-Nov-15

FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	60	sec
Sum(y)	Y =	0.083	
Lost time	L =	8	sec
Total Flow	=	300	pcu
Co = (1.5*L+5)/(1-Y)	=	18.5	sec
Cm = L/(1-Y)	=	8.7	sec
Yult	=	0.640	
R.C.ult = (Yult-Y)/Y*100%	=	912.7	%
Cp = 0.9*L/(0.9-Y)	=	8.8	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	940.4	%

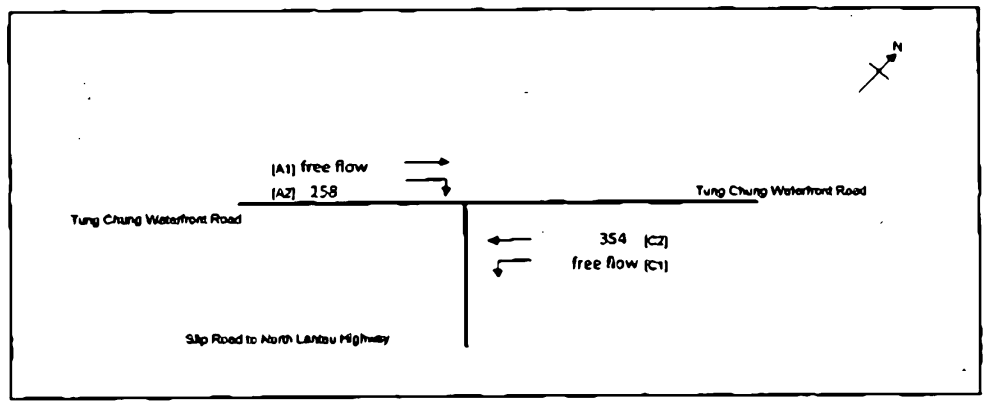


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

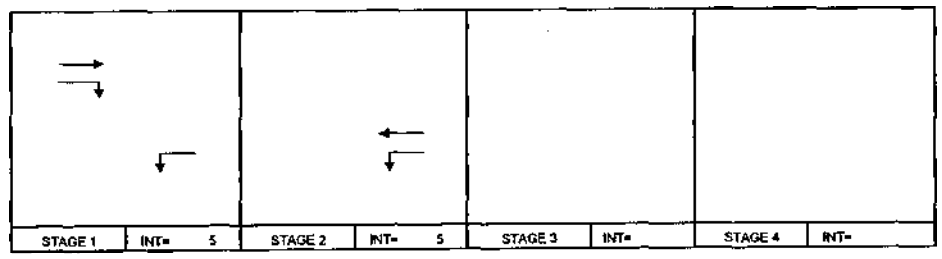
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			41	41	1.00	1914			1914	0.021	0.021		13	13	0.096	3
C2	2	3.50	B	2				4210		259		259	0.00	4210			4210	0.062	0.062		39	39	0.096	5

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUELING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236076
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	60	sec
Sum(y)	Y =	0.167	
Loss time	L =	8	sec
Total Flow	=	512	pcu
Co = (1.5*L+5)/(1-Y)	=	20.4	sec
Cm = L/(1-Y)	=	9.8	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	404.0	%
Cp = 0.9*L/(0.9-Y)	=	9.8	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	368.0	%

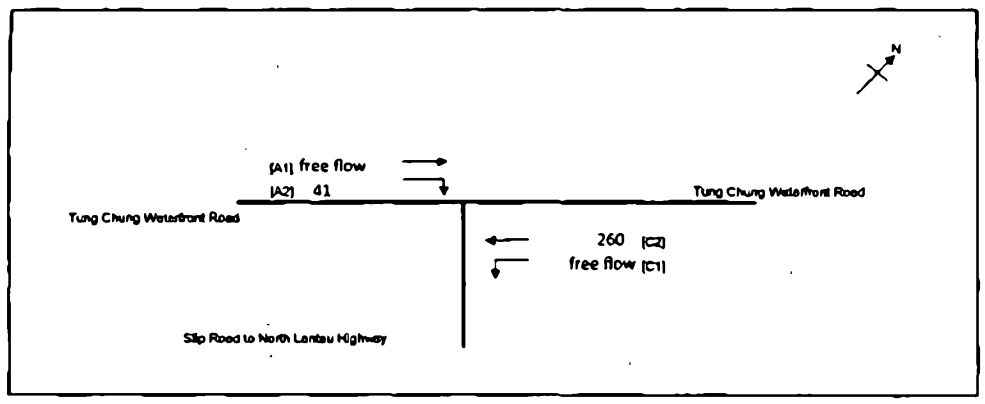


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

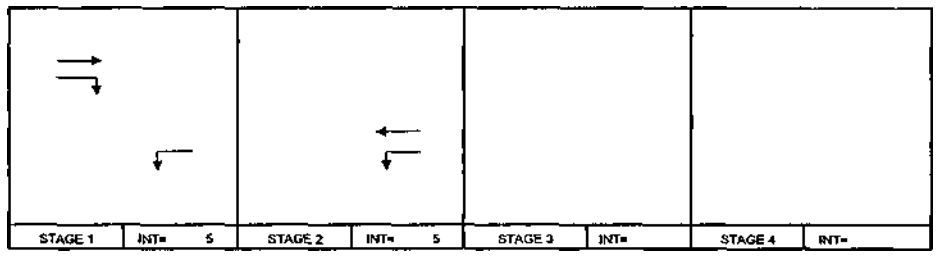
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Up/Dn Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			158	158	1.00	1914			1914	0.083	0.083		28	28	0.192	9
C2	2	3.50	B	2				4210		354		354	0.00	4210			4210	0.084	0.084		28	28	0.192	10

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236076
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2026 Design Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	60	sec
Sum(y)	Y =	0.083	
Loss time	L =	8	sec
Total Flow	=	301	pcu
Co = (1.5*L+5)/(1-Y)	=	18.5	sec
Cm = L/(1-Y)	=	8.7	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	909.8	%
Cp = 0.9*L/(0.9-Y)	=	8.8	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	837.7	%

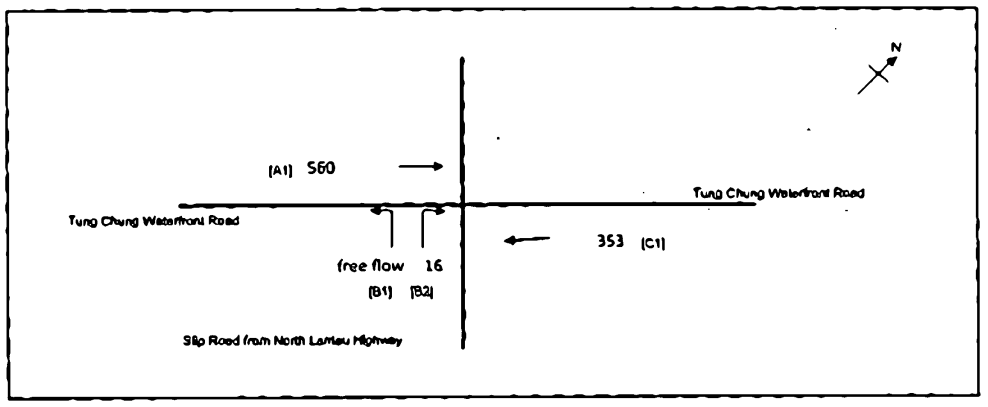


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

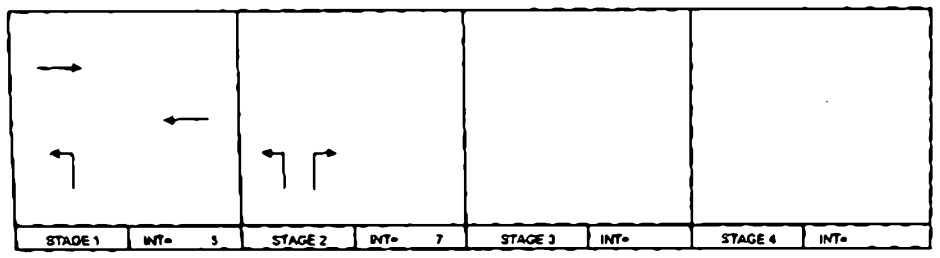
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Up/Dn Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			41	41	1.00	1914			1914	0.021	0.021		13	13	0.098	3
C2	2	3.50	B	2				4210		260		260	0.00	4210			4210	0.062	0.062		39	39	0.098	6

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.141
Lose time	L =	10 sec
Total Flow	=	929 pcu
Co = (1.5*L+5)/(1-Y)	=	22.3 sec
Cm = L/(1-Y)	=	11.8 sec
Yult	=	0.625
R.C.ult = (Yult-Y)/Y*100%	=	463.5 %
Cp = 0.9*L/(0.9-Y)	=	11.9 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	430.5 %

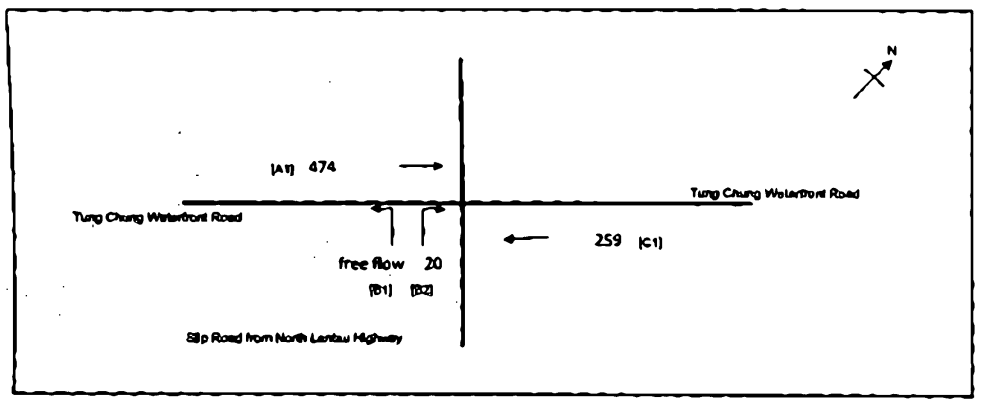


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

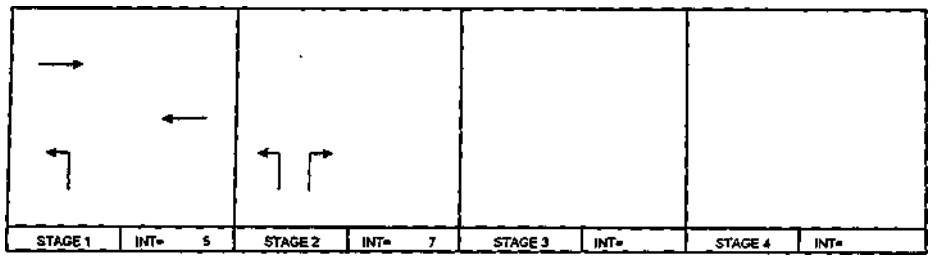
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		560		560	0.00	4210			4210	0.133	0.133		47	47	0.170	6
B2	2	3.50	B	1	15			2105			16	16	1.00	1914			1914	0.008	0.008		3	3	0.170	2
C1	1	3.50	A	2				4210		353		353	0.00	4210			4210	0.084			30	47	0.107	4

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.123
Lose time	L =	10 sec
Total Flow	=	753 pcu
Co = (1.5*L+5)/(1-Y)	=	22.8 sec
Cm = L/(1-Y)	=	11.4 sec
Yult	=	0.825
R.C.ult = (Yult-Y)/Y*100%	=	570.5 %
Cp = 0.9*L/(0.9-Y)	=	11.6 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	509.8 %

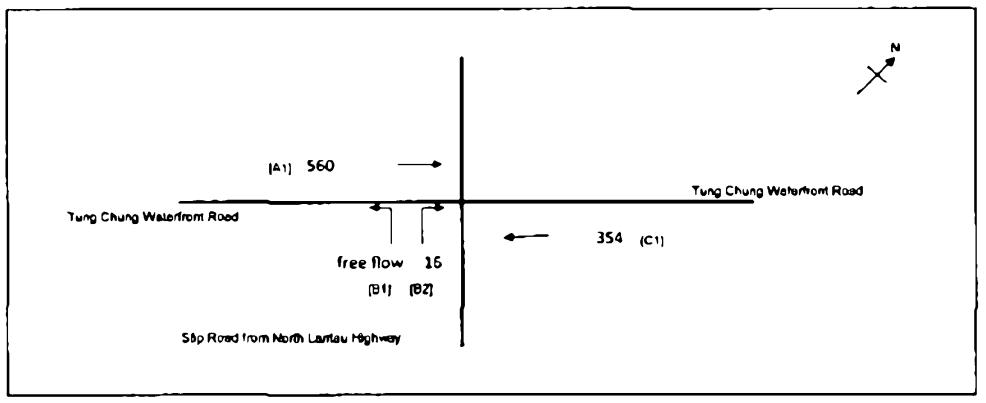


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

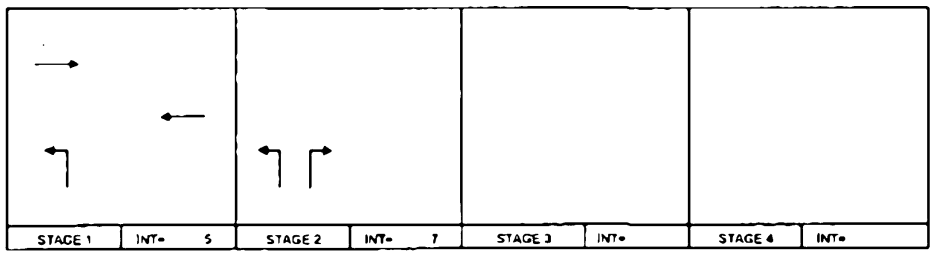
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		474		474	0.00	4210			4210	0.113	0.113		46	46	0.148	6
B2	2	3.50	B	1	15			2105			20	20	1.00	1914			1914	0.010	0.010		4	4	0.148	2
C1	1	3.50	A	2				4210		259		259	0.00	4210			4210	0.062			25	46	0.081	3

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Design Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.141
Lost time	L =	10 sec
Total Flow	=	930 pcu
Co = (1.5*L+5)/(1-Y)	=	23.3 sec
Cm = L/(1-Y)	=	11.6 sec
Yult	=	0.825
R.C.ult = (Yult-Y)/Y*100%	=	483.5 %
Cp = 0.9*L/(0.9-Y)	=	11.9 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	430.5 %

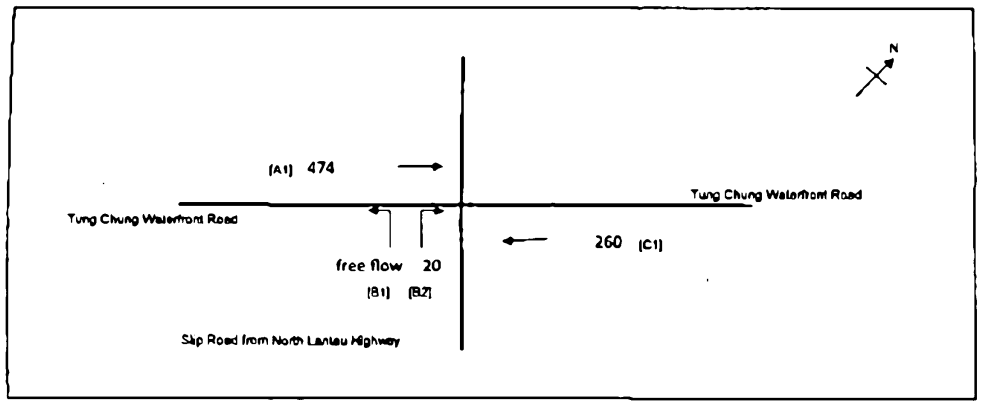


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

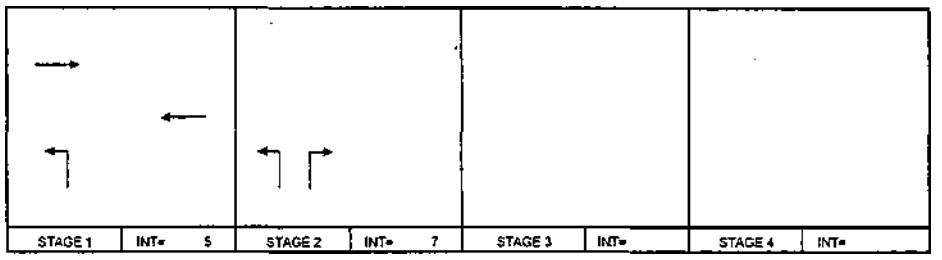
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		560		560	0.00	4210			4210	0.133	0.133		47	47	0.170	6
B2	2	3.50	B	1	15			2105			18	18	1.00	1914			1914	0.009	0.009		3	3	0.170	2
C1	1	3.50	A	2				4210		354		354	0.00	4210			4210	0.084			30	47	0.107	4

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Design Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.123
Lost time	L =	10 sec
Total Flow	=	754 pcu
Co = (1.5*L+5)/(1-Y)	=	22.8 sec
Cm = L/(1-Y)	=	11.4 sec
Yult	=	0.825
R.C.ult = (Yult-Y)/Y*100%	=	570.5 %
Cp = 0.9*L/(0.9-Y)	=	11.8 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	509.6 %

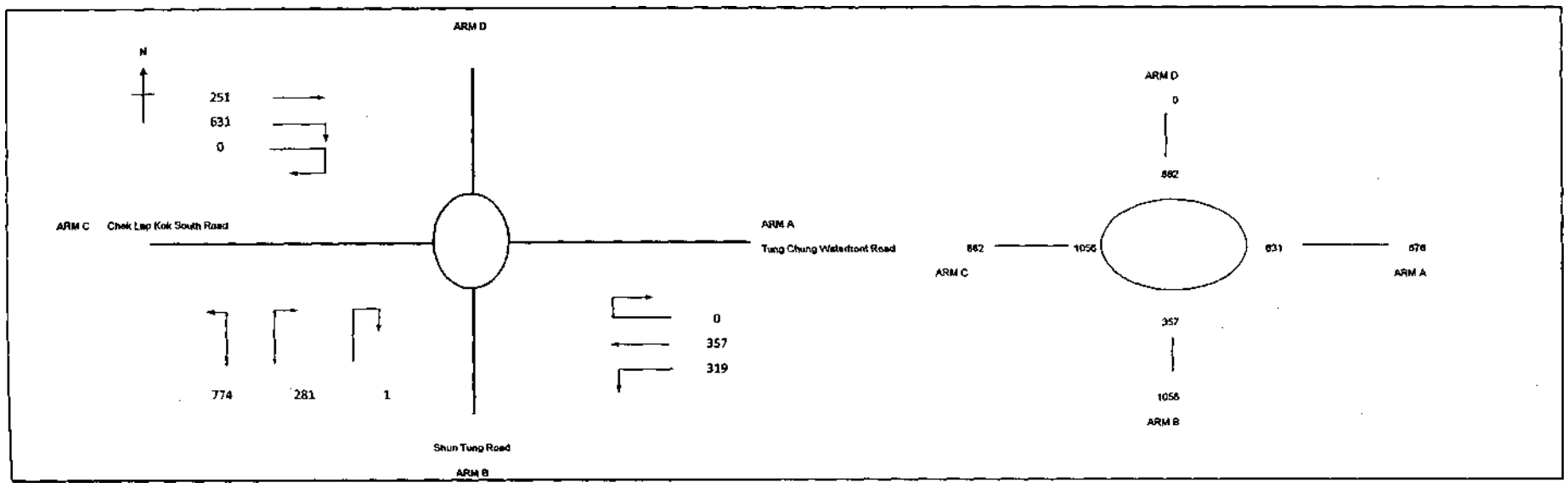


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		474		474	0.00	4210			4210	0.113	0.113		46	46	0.148	6
B2	2	3.50	B	1	15			2105			20	20	1.00	1914			1914	0.010	0.010		4	4	0.148	2
C1	1	3.50	A	2				4210		260		260	0.00	4210			4210	0.062			25	46	0.081	3

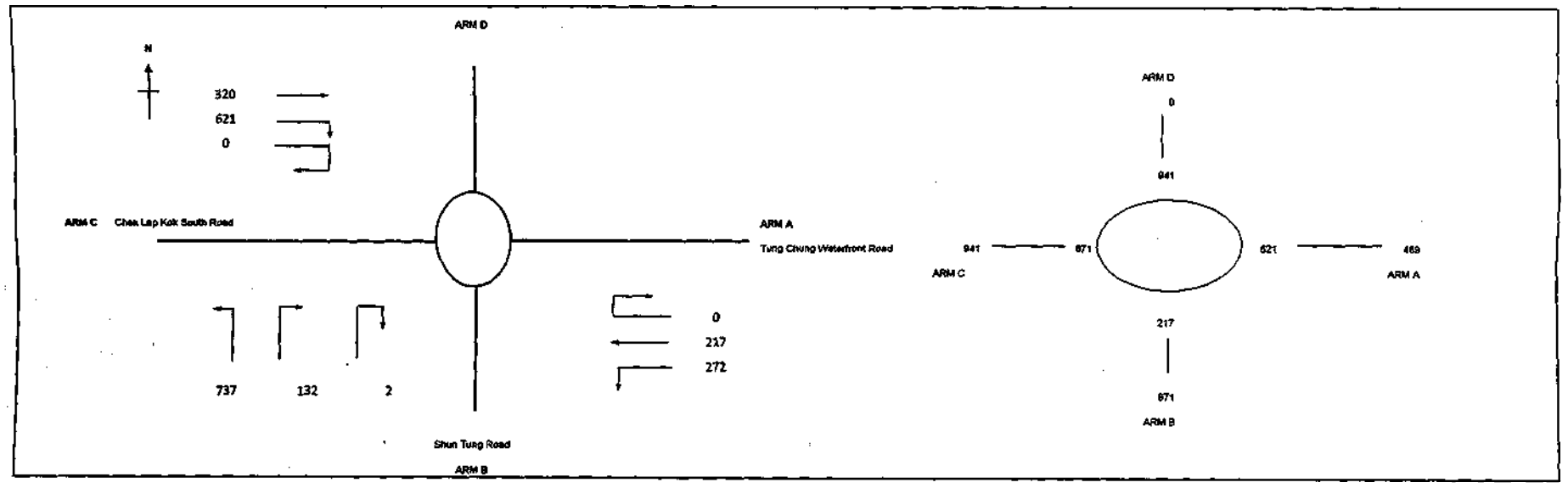
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



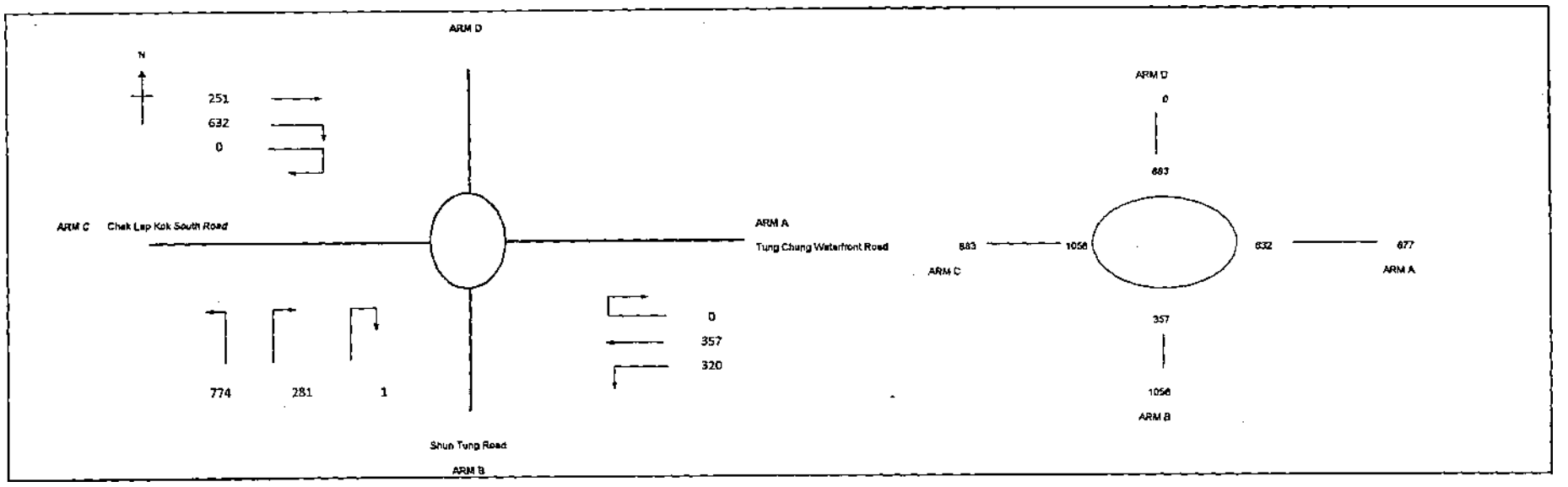
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	20.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	576	1056	882			
Qc	=	Circulating flow across entry (pcu/h)	631	357	1056			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.25	0.98	0.98			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.68	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2089	2103	1590	Total In Sum =	2614	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.50	0.52	DFC of Critical Approach =	0.52	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



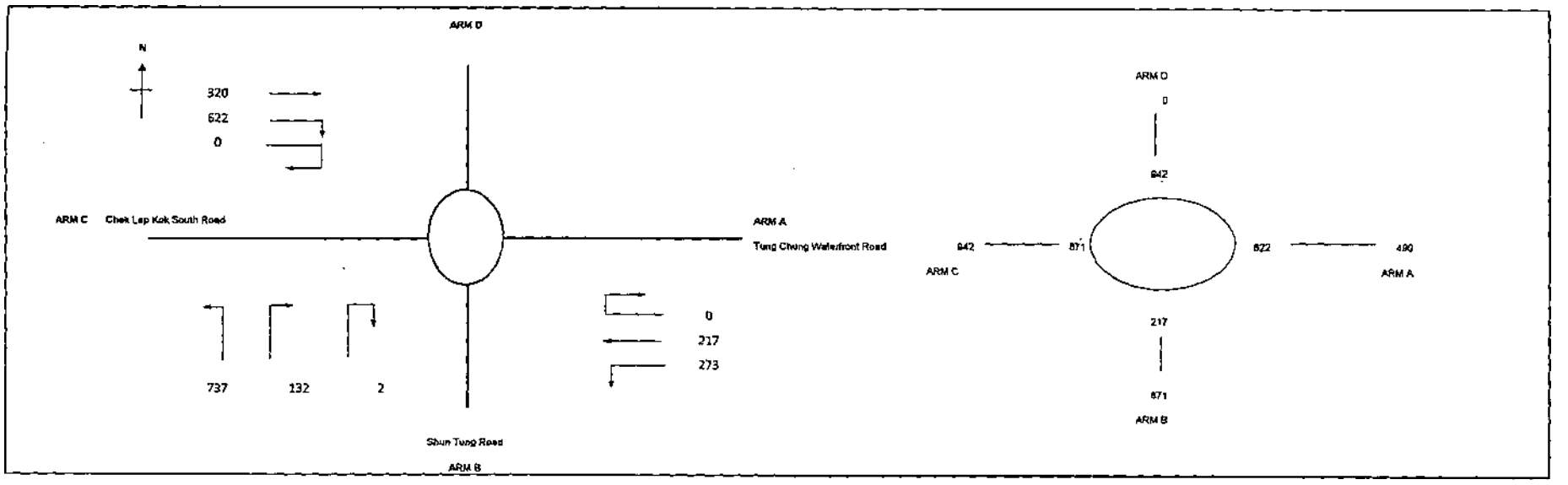
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	20.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	469	871	941			
Qc	=	Circulating flow across entry (pcu/h)	621	217	871			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.80	0.80			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2078	2195	1815	Total In Sum =	2301	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.24	0.40	0.52	DFC of Critical Approach =	0.52	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



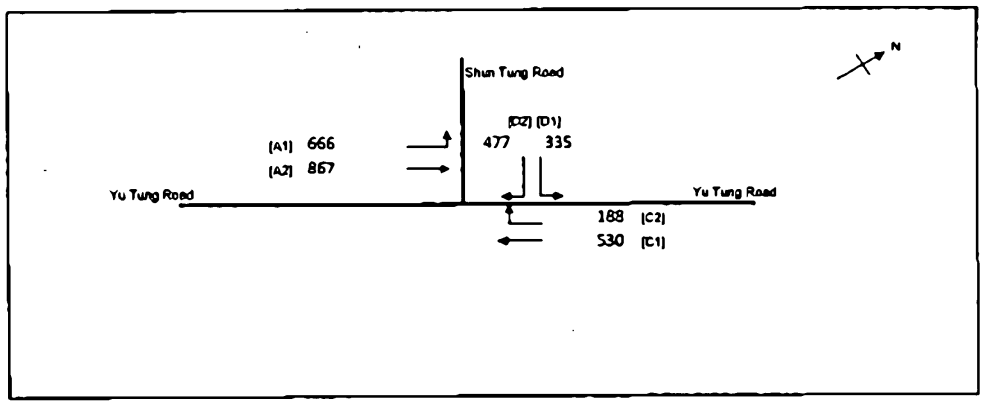
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	677	1056	883			
Qc	=	Circulating flow across entry (pcu/h)	632	357	1056			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.96	0.96			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Tc	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Tc(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2088	2103	1690	Total In Sum =	2616	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.50	0.52	DFC of Critical Approach =	0.62	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

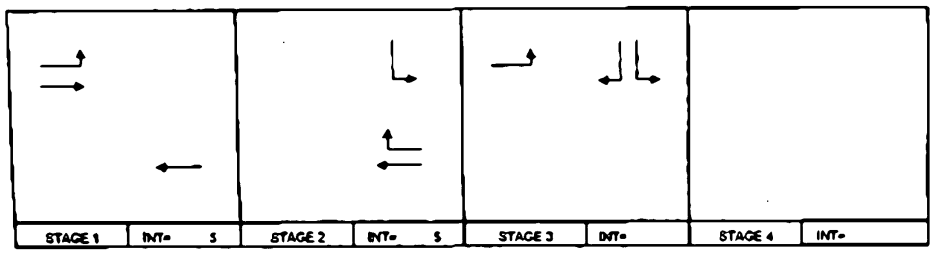


ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	490	871	842			
Qc	=	Circulating flow across entry (pcu/h)	822	217	871			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.96	0.96			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Tc	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Tc(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2078	2185	1815	Total In Sum =	2303	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.24	0.40	0.52	DFC of Critical Approach =	0.52	

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	70 sec
Sum(y)		Y =	0.467
Lose time		L =	8 sec
Total Flow		=	3063 pcu
Co	= (1.5*L+5)/(1-Y)	=	31.9 sec
Cm	= L/(1-Y)	=	15.0 sec
Yult		=	0.840
R.C.ult	= (Yult-Y)/Y*100%	=	80.0 %
Cp	= 0.9*L/(0.9-Y)	=	16.8 sec
Ymax	= 1-L/C	=	0.886
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	70.8 %

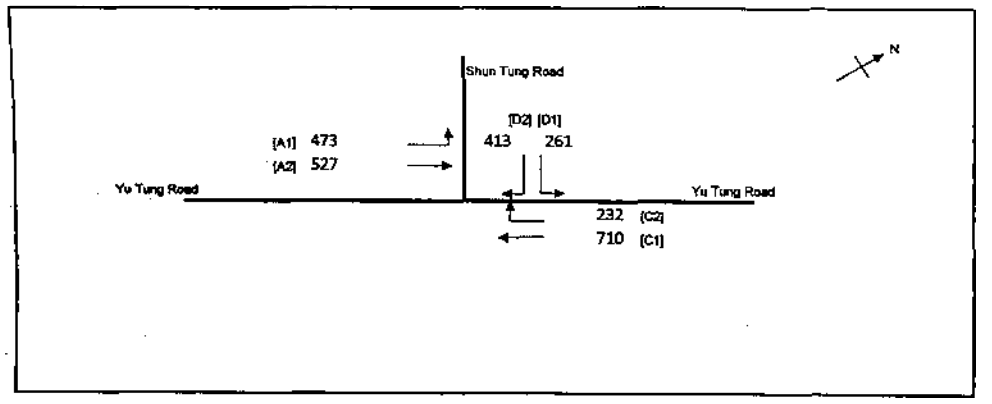


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

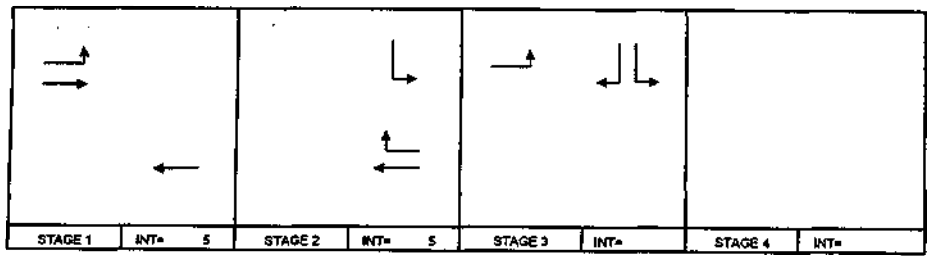
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A1	1,3	3.50	B	1	15		N	1905	666			666	1.00	1786			1786	0.373	0.373		50	50	0.527	23
A2	1	3.50	A	2				4210		857		857	0.00	4210			4210	0.206			27	27	0.527	31
C1	2,4	3.50	F	2				4070			530	530	0.00	4070			4070	0.130			17	45	0.203	31
C2	2	3.50	E	1	30			2105			188	188	1.00	2005			2005	0.094	0.094		12	12	0.527	18
D1	2,3	3.50	D	1	15		N	1905	477			477	1.00	1786			1786	0.267			25	30	0.349	19
D2	3	3.50	C	2	30			4210			477	477	1.00	4010			4010	0.119			16	16	0.458	21

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	70 sec
Sum(y)		Y =	0.361
Lose time		L =	8 sec
Total Flow		=	2616 pcu
Co	= (1.5*L+5)/(1-Y)	=	27.4 sec
Cm	= L/(1-Y)	=	12.8 sec
Yult		=	0.840
R.C.ult	= (Yult-Y)/Y*100%	=	120.8 %
Cp	= 0.9*L/(0.9-Y)	=	13.9 sec
Ymax	= 1-L/C	=	0.886
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	109.5 %

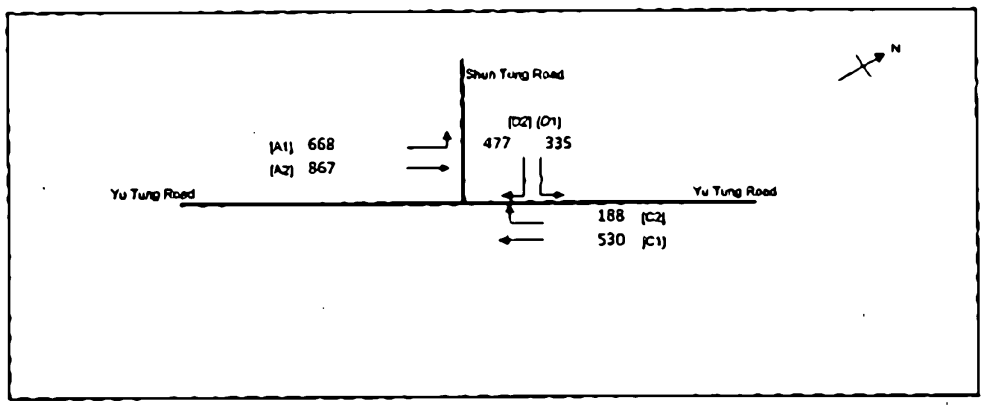


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

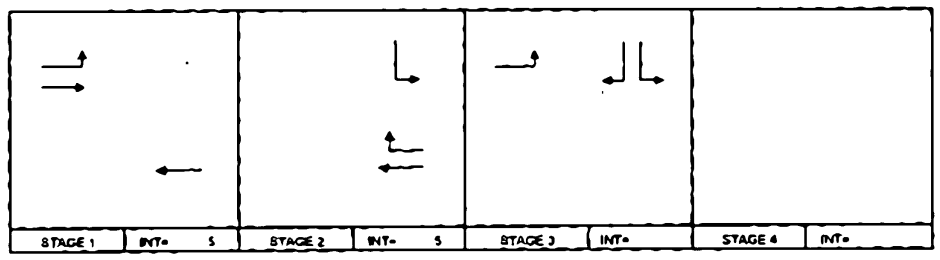
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A1	1,3	3.50	B	1	15		N	1905	473			473	1.00	1786			1786	0.265	0.265		43	43	0.430	21
A2	1	3.50	A	2				4210		527		527	0.00	4210			4210	0.125			20	20	0.430	22
C1	2,4	3.50	F	2				4070			710	710	0.00	4070			4070	0.174			25	44	0.276	15
C2	2	3.50	E	1	30			2105			232	232	1.00	2005			2005	0.116	0.116		18	18	0.430	20
D1	2,3	3.50	D	1	15		N	1905	261			261	1.00	1786			1786	0.146			24	43	0.249	12
D2	3	3.50	C	2	30			4210			413	413	1.00	4010			4010	0.103			17	18	0.368	18

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	2
Cycle time	C =	70 sec
Sum(y)	Y =	0.488
Loss time	L =	8 sec
Total Flow	=	3065 pcu
Co = (1.5*L+5)/(1-Y)	=	31.9 sec
Cm = L/(1-Y)	=	15.0 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	79.6 %
Cp = 0.9*L/(0.9-Y)	=	18.7 sec
Ymax = 1-L/C	=	0.886
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	70.4 %

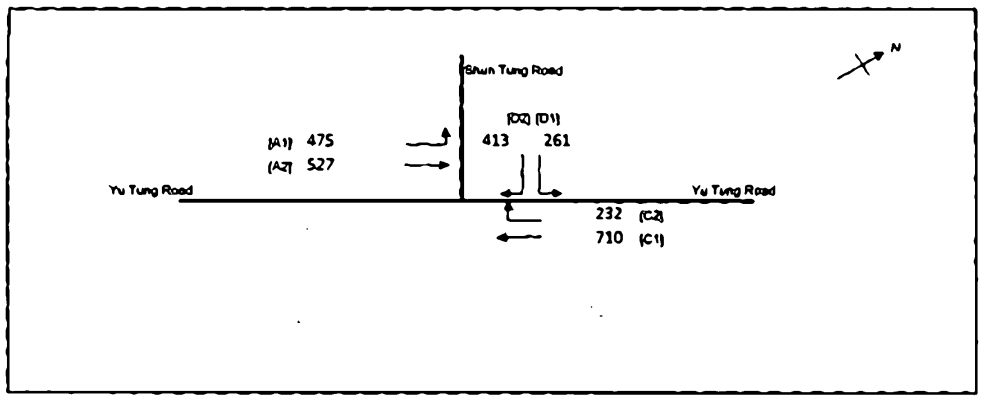


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

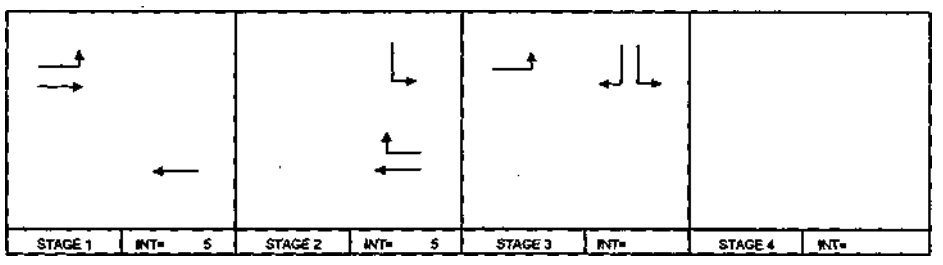
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A1	1,3	3.50	B	1	15		N	1985	668			668	1.00	1786			1786	0.374	0.374		50	50	0.528	23
A2	1	3.50	A	2				4210		867		867	0.00	4210			4210	0.206			27	27	0.528	31
C1	1,2	3.50	F	2			N	4070		530		530	0.00	4070			4070	0.130			17	45	0.204	11
C2	2	3.50	E	1	30			2105			188	188	1.00	2005			2005	0.094	0.094		12	12	0.528	18
O1	2,3	3.50	D	1	15		N	1985	530			530	1.00	1786			1786	0.186			25	25	0.368	19
D2	3	3.50	C	2	30			4210			477	477	1.00	4010			4010	0.119			16	16	0.456	21

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	2
Cycle time	C =	70 sec
Sum(y)	Y =	0.382
Loss time	L =	8 sec
Total Flow	=	2618 pcu
Co = (1.5*L+5)/(1-Y)	=	27.5 sec
Cm = L/(1-Y)	=	12.9 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	120.1 %
Cp = 0.9*L/(0.9-Y)	=	13.9 sec
Ymax = 1-L/C	=	0.886
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	108.9 %

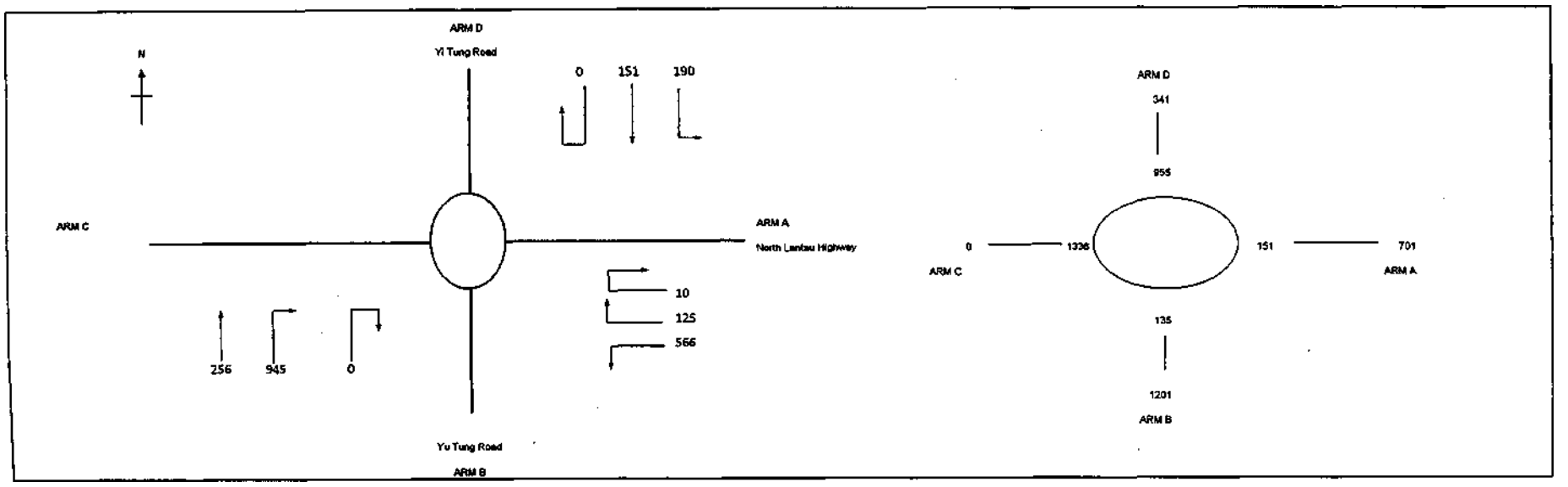


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A1	1,3	3.50	B	1	15		N	1985	475			475	1.00	1786			1786	0.266	0.266		43	43	0.431	21
A2	1	3.50	A	2				4210		527		527	0.00	4210			4210	0.125			20	20	0.431	22
C1	1,2	3.50	F	2			N	4070		710		710	0.00	4070			4070	0.174			25	44	0.277	15
C2	2	3.50	E	1	30			2105			232	232	1.00	2005			2005	0.116	0.116		19	19	0.431	20
O1	2,3	3.50	D	1	15		N	1985	261			261	1.00	1786			1786	0.146			20	43	0.240	12
D2	3	3.50	C	2	30			4210			413	413	1.00	4010			4010	0.103			17	19	0.382	18

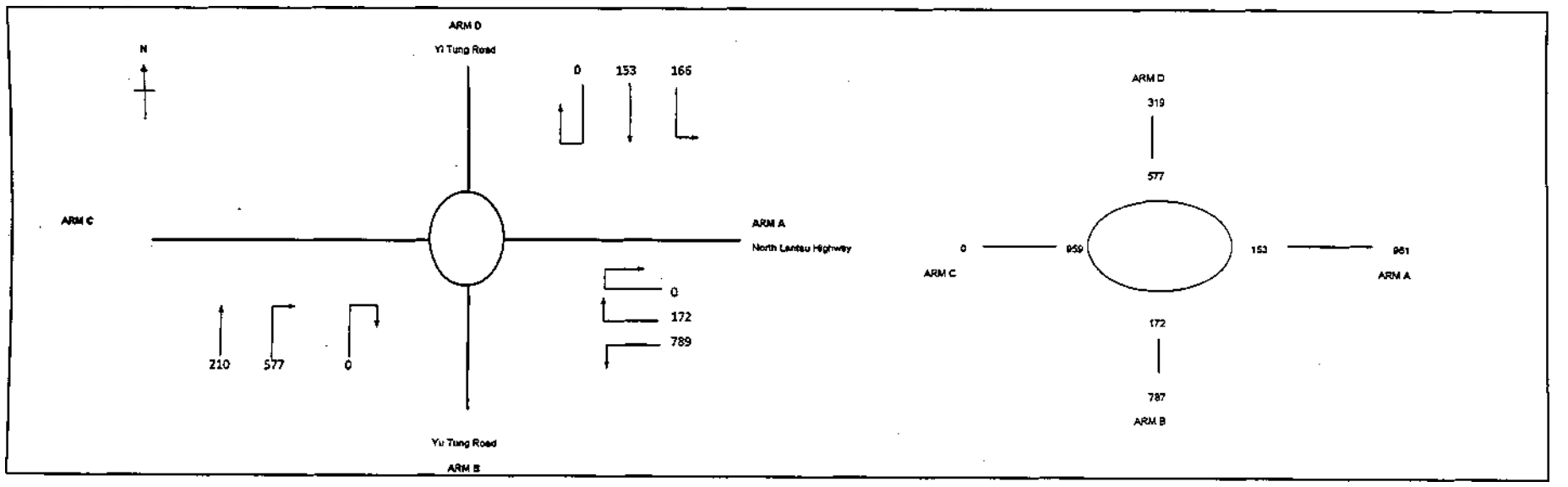
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J18 - Tung Chung Eastern interchange	Year 2026 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



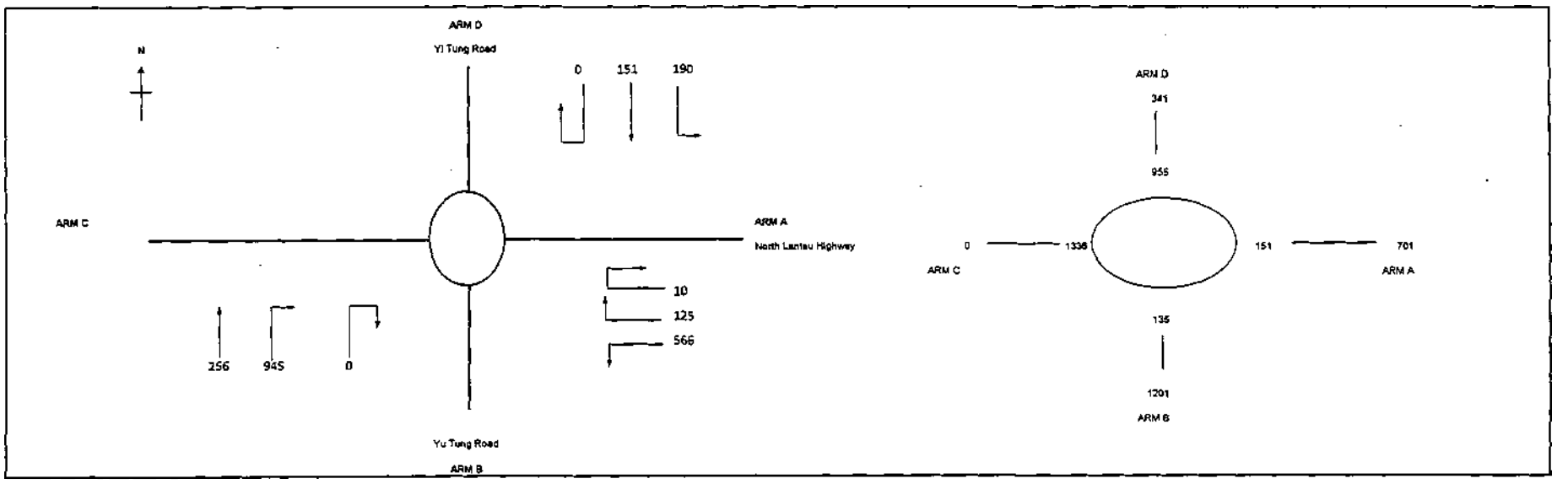
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	60.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	701	1201	341			
Qc	=	Circulating flow across entry (pcu/h)	151	135	955			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3896	3335			
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3441	3755	2732	Total in Sum =	2243	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.20	0.32	0.12	DFC of Critical Approach =	0.32	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J18 - Tung Chung Eastern interchange	Year 2026 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENPME



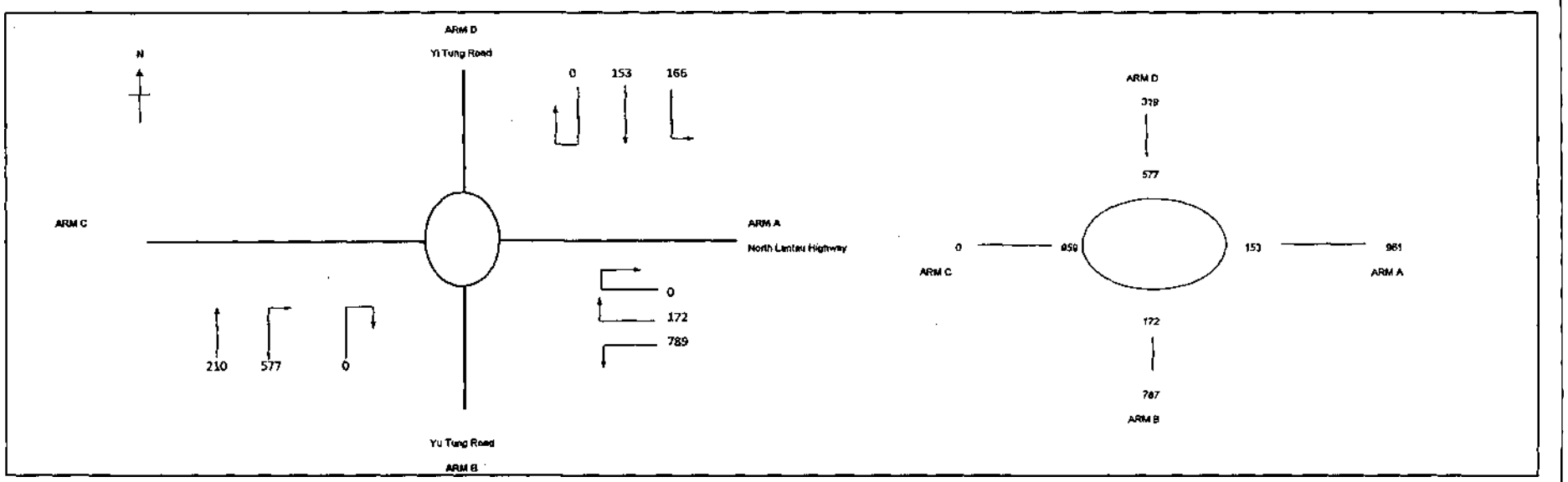
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	60.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	961	787	319			
Qc	=	Circulating flow across entry (pcu/h)	153	172	577			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3896	3335			
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3440	3728	2991	Total in Sum =	2067	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.28	0.21	0.11	DFC of Critical Approach =	0.28	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern interchange	Year 2026 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



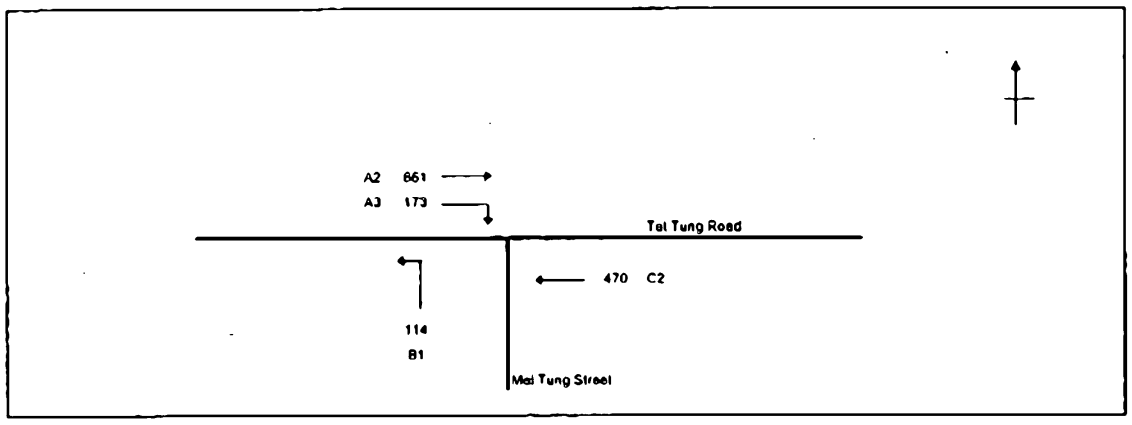
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	701	1201	341			
Qc	=	Circulating flow across entry (pcu/h)	151	135	955			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.48	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3898	3335			
Tc	=	1-(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Tc(1+0.2*X2)	0.89	0.75	0.87			
Qe	=	K(F-Fc*Qc)	3441	3755	2732	Total In Sum =	2243	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.20	0.32	0.12	DFC of Critical Approach =	0.32	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2026 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENPME

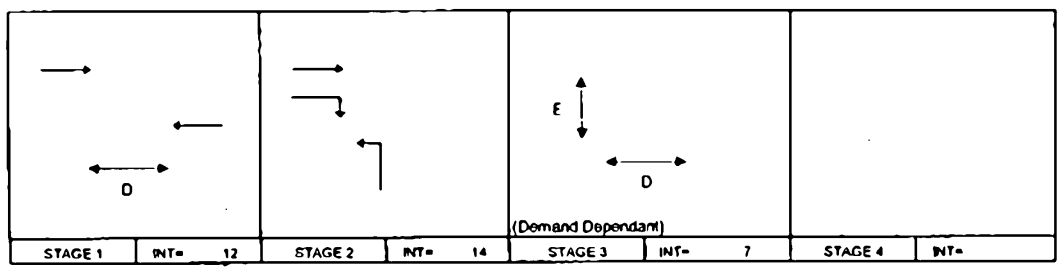


ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	981	787	318			
Qc	=	Circulating flow across entry (pcu/h)	153	172	577			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.48	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3898	3335			
Tc	=	1-(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Tc(1+0.2*X2)	0.89	0.75	0.87			
Qe	=	K(F-Fc*Qc)	3440	3729	2991	Total In Sum =	2067	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.28	0.21	0.11	DFC of Critical Approach =	0.28	

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.334	
Loss time	L =	51	sec
Total Flow	=	770	pcu
Co = (1.5*L+5)/(1-Y)	=	122.3	sec
Cm = L/(1-Y)	=	76.5	sec
Yult	=	0.518	
R.C.ult = (Yult-Y)/Y*100%	=	55.0	%
Cp = 0.9*U/(0.9-Y)	=	81.1	sec
Ymax = 1-L/C	=	0.575	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	55.0	% (Optimized)



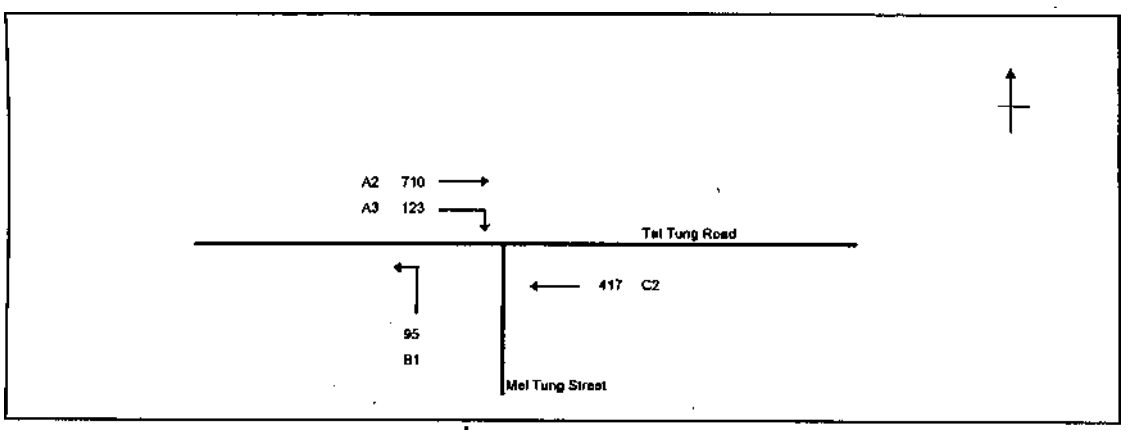
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

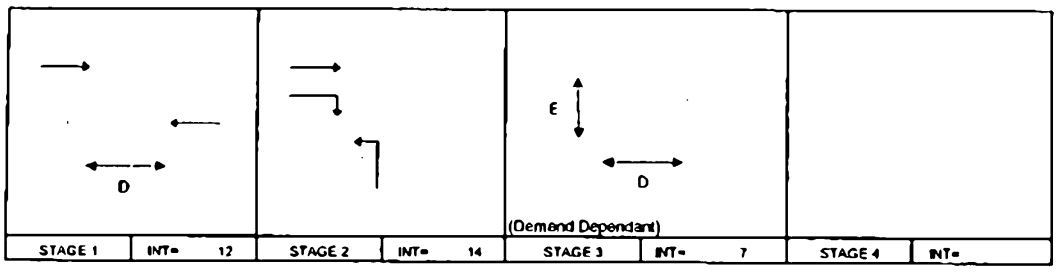
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				31				
A2	1,2	3.30	A	1			N	1945		648		648	0.00	1946			1945	0.333			69	69	0.580	0
A2,A3	2	3.30	A	1	30			2085		13	173	186	0.93	1992			1992	0.093	0.093		19	69	0.163	18
B1	2	3.20	B	2	15		N	4010	114			114	1.00	3645			2916	0.039			8	8	0.580	11
C2	1	3.40	C	1			N	1955		470		470	0.00	1955			1955	0.240	0.240		50	50	0.580	55
PED	3																			20				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.319	
Loss time	L =	51	sec
Total Flow	=	726	pcu
Co = (1.5*L+5)/(1-Y)	=	119.7	sec
Cm = L/(1-Y)	=	74.9	sec
Yult	=	0.518	
R.C.ult = (Yult-Y)/Y*100%	=	62.3	%
Cp = 0.9*U/(0.9-Y)	=	79.0	sec
Ymax = 1-L/C	=	0.575	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	62.3	% (Optimized)



STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				31				
A2	1,2	3.30	A	1			N	1945		619		619	0.00	1948			1945	0.318			69	69	0.555	0
A2,A3	2	3.30	A	1	30			2065		91	123	214	0.57	2027			2027	0.106	0.106		23	69	0.184	18
B1	2	3.20	B	2	15		N	4010	95			95	1.00	3645			2916	0.033			7	7	0.555	9
C2	1	3.40	C	1			N	1955		417		417	0.00	1955			1955	0.213	0.213		48	48	0.555	51
PED	3																			20				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

Discovery Bay

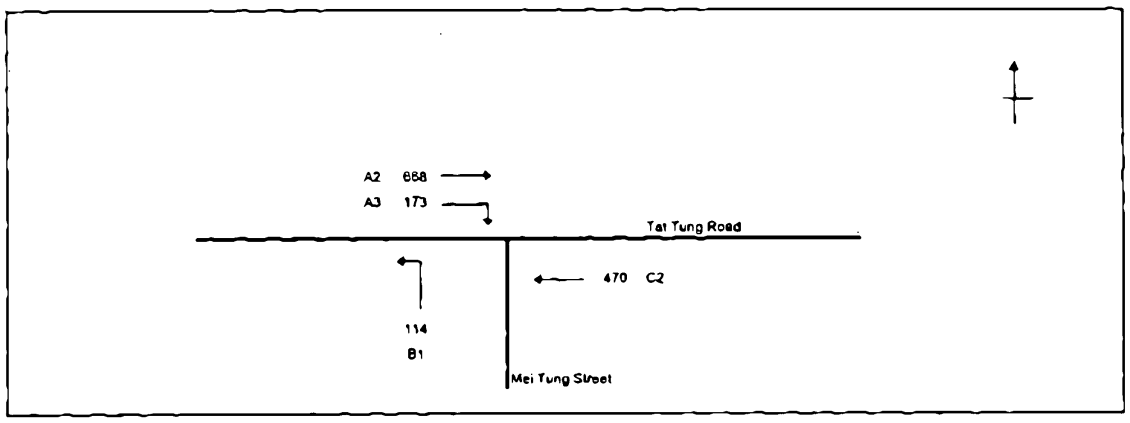
PROJECT NO: 236078

J17 - Tat Tung Road / Mei Tung Street

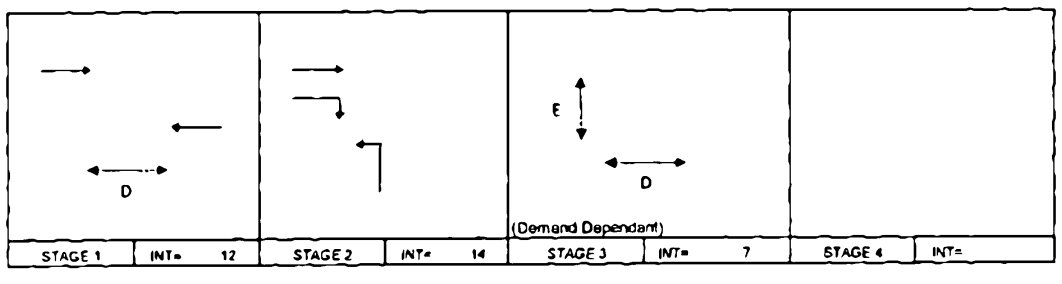
Year 2026 Design Traffic Flows (AM Peak)

DATE : 30-Nov-15

FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.335	
Loss time	L =	51	sec
Total Flow	=	773	pcu
Co = (1.5*L+5)/(1-Y)	=	122.6	sec
Cm = L/(1-Y)	=	76.7	sec
Yult	=	0.518	
R.C.ult = (Yult-Y)/Y*100%	=	54.4	%
Cp = 0.9*L/(0.9-Y)	=	81.3	sec
Ymax = 1-L/C	=	0.575	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	54.4	% (Optimized)



STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				31				
A2	1,2	3.30	A	1			N	1945		652		652	0.00	1948			1945	0.335			69	69	0.583	0
A2,A3	2	3.30	A	1	30			2085		16	173	189	0.92	1994			1994	0.095	0.095		20	69	0.185	16
B1	2	3.20	B	2	15		N	4010	114			114	1.00	3845			2916	0.039			8	8	0.583	11
C2	1	3.40	C	1			N	1955		470		470	0.00	1955			1955	0.240	0.240		49	49	0.583	55
PED	3																			20				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

Discovery Bay

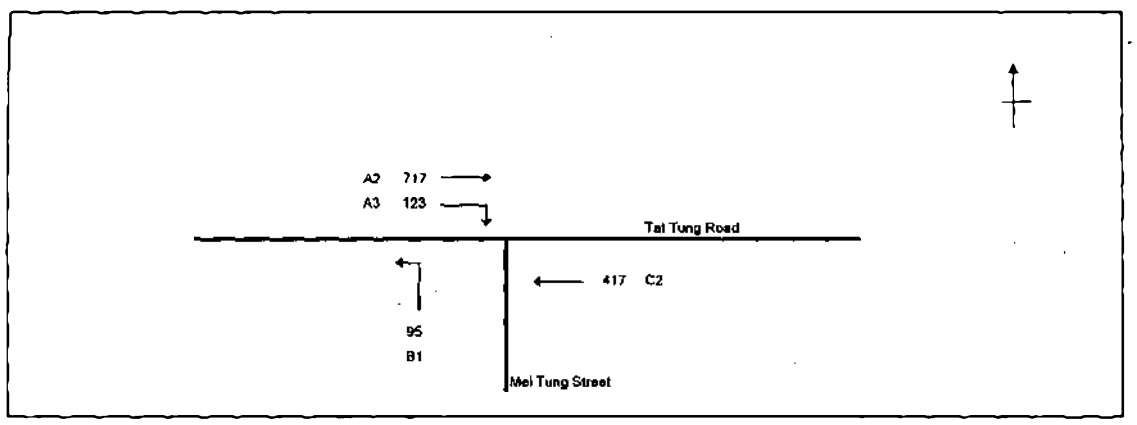
PROJECT NO: 236078

J17 - Tat Tung Road / Mei Tung Street

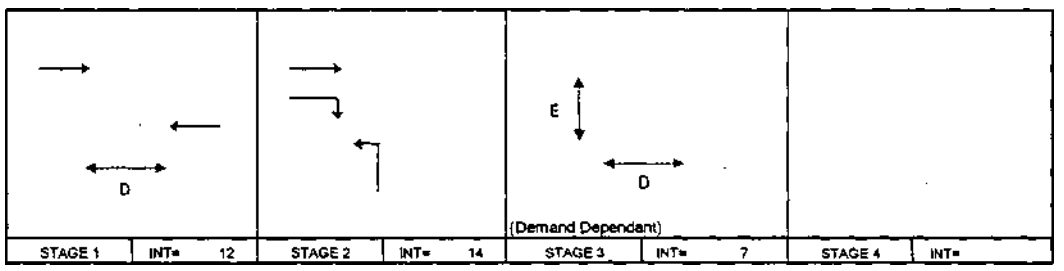
Year 2026 Design Traffic Flows (PM Peak)

DATE : 30-Nov-15

FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.320	
Loss time	L =	51	sec
Total Flow	=	728	pcu
Co = (1.5*L+5)/(1-Y)	=	119.8	sec
Cm = L/(1-Y)	=	75.0	sec
Yult	=	0.518	
R.C.ult = (Yult-Y)/Y*100%	=	61.8	%
Cp = 0.9*L/(0.9-Y)	=	79.1	sec
Ymax = 1-L/C	=	0.575	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	61.8	% (Optimized)



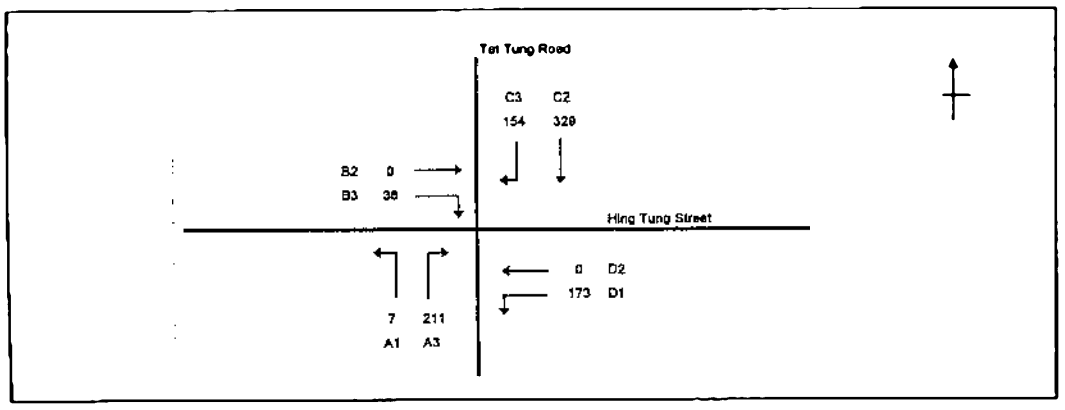
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

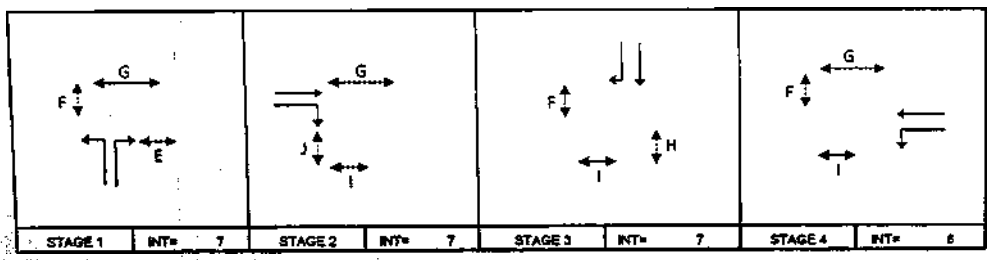
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				31				
A2	1,2	3.30	A	1			N	1945		624		624	0.00	1948			1945	0.321			69	69	0.556	0
A2,A3	2	3.30	A	1	30			2085		93	123	216	0.57	2027			2027	0.107	0.107		23	69	0.185	16
B1	2	3.20	B	2	15		N	4010	95			95	1.00	3845			2916	0.033			7	7	0.556	8
C2	1	3.40	C	1			N	1955		417		417	0.00	1955			1955	0.213	0.213		48	48	0.556	51
PED	3																			20				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J18 - Tat Tung Road / Hing Tung Street	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	4
No. of stage using for calculation	N =	2
Cycle time	C =	120 sec
Sum(y)	Y =	0.194
Loss time	L =	50 sec
Total Flow	=	904 pcu
Co = (1.5*L+5)/(1-Y)	=	115.9 sec
Cm = L/(1-Y)	=	73.2 sec
Yult	=	0.458
R.C.ult = (Yult-Y)/Y*100%	=	136.4 %
Cp = 0.9*L/(0.9-Y)	=	75.2 sec
Ymax = 1-L/C	=	0.508
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	136.4 % (Optimized)

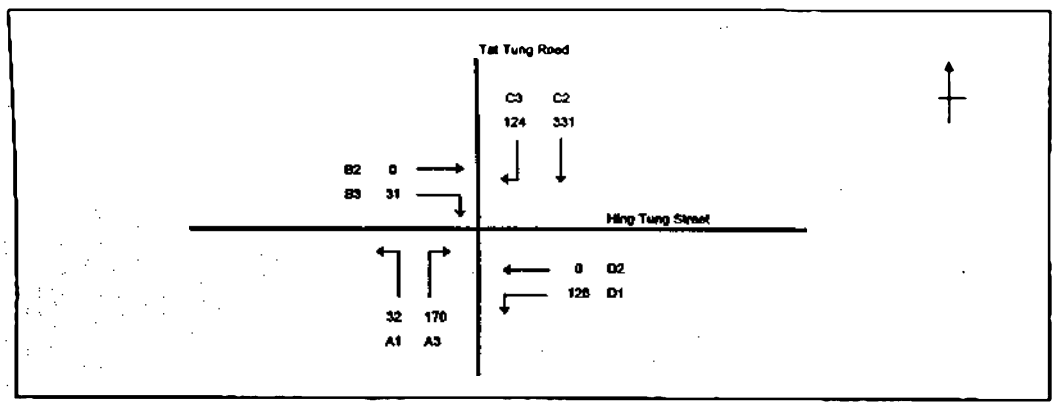


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	26	7	6	OK
F	6.3	5	2	5	82	2	5	OK
G	6.1	5	2	5	82	2	5	OK
H	6.3	5	7	5	5	7	5	OK
I	7.4	5	2	6	58	2	6	OK
J	6.6	5	6	6	5	6	6	OK

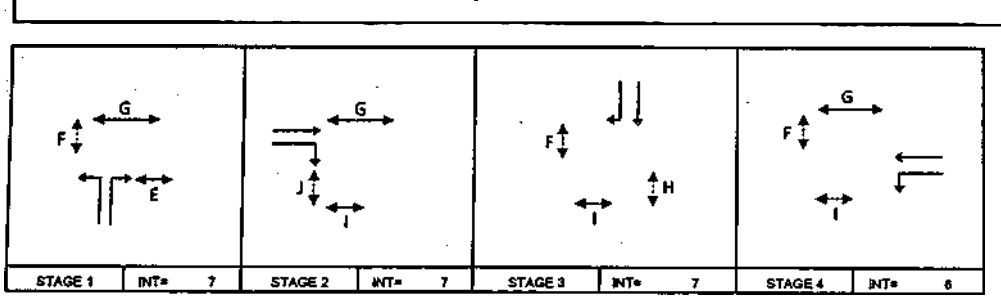
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
[redacted]																								
[redacted]																								
[redacted]																								
[redacted]																								
PED	3																			17				
PED	2																			17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J18 - Tat Tung Road / Hing Tung Street	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	4
No. of stage using for calculation	N =	2
Cycle time	C =	120 sec
Sum(y)	Y =	0.149
Loss time	L =	50 sec
Total Flow	=	783 pcu
Co = (1.5*L+5)/(1-Y)	=	109.9 sec
Cm = L/(1-Y)	=	69.3 sec
Yult	=	0.458
R.C.ult = (Yult-Y)/Y*100%	=	207.1 %
Cp = 0.9*L/(0.9-Y)	=	70.7 sec
Ymax = 1-L/C	=	0.508
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	207.1 % (Optimized)

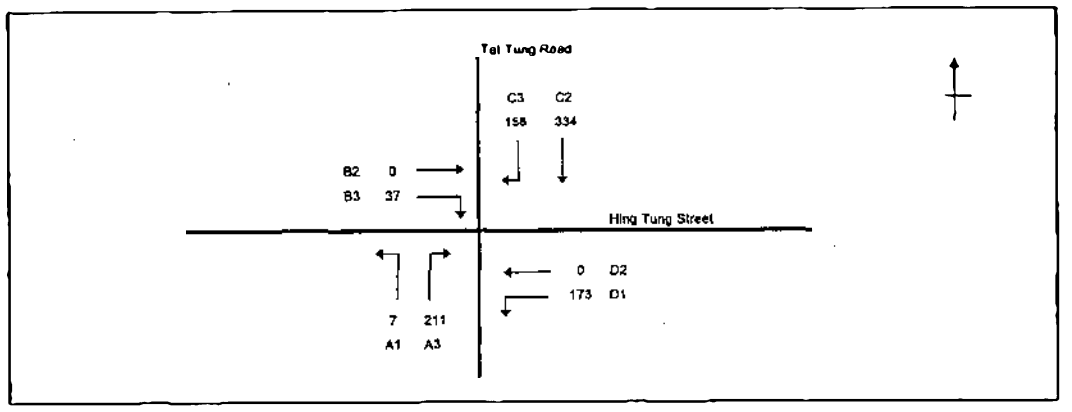


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	27	7	6	OK
F	6.3	5	2	5	82	2	5	OK
G	6.1	5	2	5	82	2	5	OK
H	6.3	5	7	5	5	7	5	OK
I	7.4	5	2	6	58	2	6	OK
J	6.6	5	6	6	5	6	6	OK

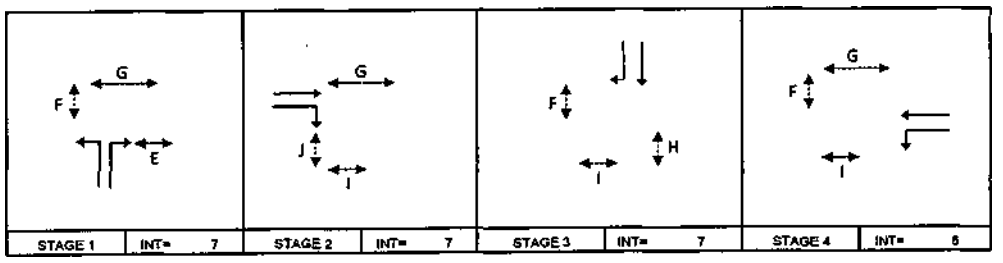
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1985	32			32	1.00	1786			1786	0.018	0.084		7	34	0.063	0
A1,A3	1	3.50	A	1	40			2105	0		170	170	1.00	2029			2029	0.084			34	34	0.293	24
B2,B3	2	3.00	B	1	30		N	1915		0	15	15	1.00	1824			1459	0.010			4	11	0.112	3
B3	2	3.00	B	1	30			2055			16	16	1.00	1957			1566	0.010			4	11	0.114	3
C2	3	3.90	C	1	25		N	2005		231		231	0.00	2005			2005	0.115			47	11	1.257	42
C2,C3	3	3.90	C	1	25		N	2005		100	124	224	0.55	1940			1940	0.116			47	11	1.261	41
[redacted]																								
PED	3																			17				
PED	2																			17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J16 - Tai Tung Road / Hing Tung Street	Year 2026 Design Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	2
Cycle time		C =	120 sec
Sum(y)		Y =	0.184
Loss time		L =	59 sec
Total Flow		=	911 pcu
Co	= (1.5*L+5)/(1-Y)	=	115.8 sec
Cm	= L/(1-Y)	=	73.2 sec
Yult		=	0.458
R.C ult	= (Yult-Y)/Y*100%	=	136.4 %
Cp	= 0.9*L/(0.9-Y)	=	75.2 sec
Ymax	= 1-L/C	=	0.508
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	136.4 % (Optimized)



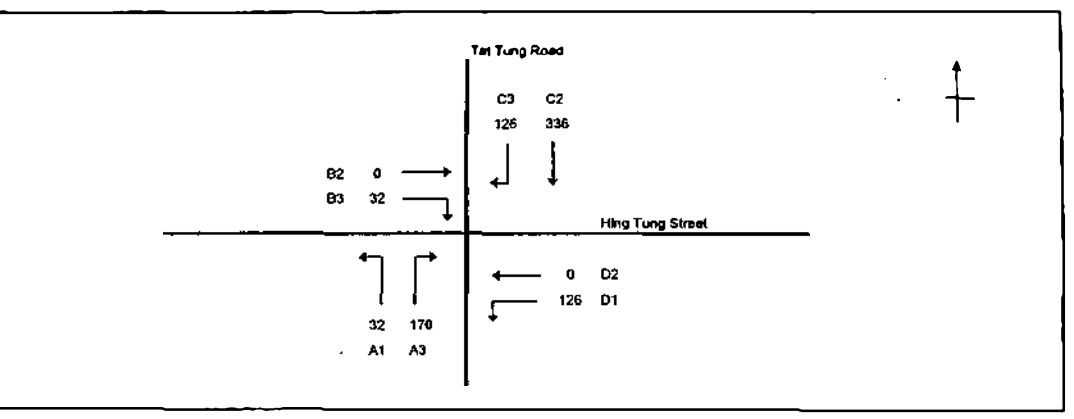
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	26	7	6	OK
F	6.3	5	2	5	82	2	5	OK
G	6.1	5	2	5	82	2	5	OK
H	6.3	5	7	5	5	7	5	OK
I	7.4	5	2	6	58	2	6	OK
J	6.6	5	6	6	5	6	6	OK

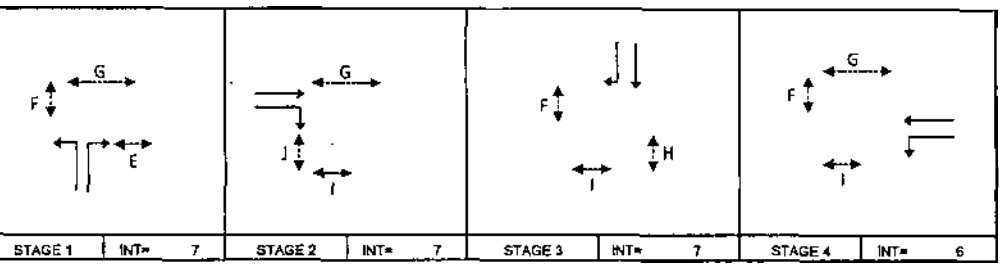
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1865	7			7	1.00	1786			1786	0.004	0.104		1	33	0.014	0
A1,A3	1	3.50	A	1	40			2105	0		211	211	1.00	2029			2029	0.104			33	33	0.381	31
B2,B3	2	3.00	B	1	30		N	1915		0	18	18	1.00	1824			1459	0.012			4	11	0.135	3
B3	2	3.00	B	1	30			2055			18	18	1.00	1957			1566	0.012			4	11	0.133	3
C2	3	3.90	C	1	25		N	2005		250		250	0.00	2005			2005	0.125			39	11	1.360	45
C2,C3	3	3.90	C	1	25		N	2005		84	156	240	0.65	1930			1930	0.124			39	11	1.357	44
D1	3	3.90	D	1	25		N	2005		0	173	173	0.00	2005			1853	0.093			29	11	1.018	34
PED	3																			17				
PED	2																			17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J16 - Tai Tung Road / Hing Tung Street	Year 2026 Design Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.267
Loss time		L =	41 sec
Total Flow		=	790 pcu
Co	= (1.5*L+5)/(1-Y)	=	90.7 sec
Cm	= L/(1-Y)	=	55.9 sec
Yult		=	0.593
R.C.ult	= (Yult-Y)/Y*100%	=	122.2 %
Cp	= 0.9*L/(0.9-Y)	=	58.3 sec
Ymax	= 1-L/C	=	0.658
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	122.2 % (Optimized)



STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

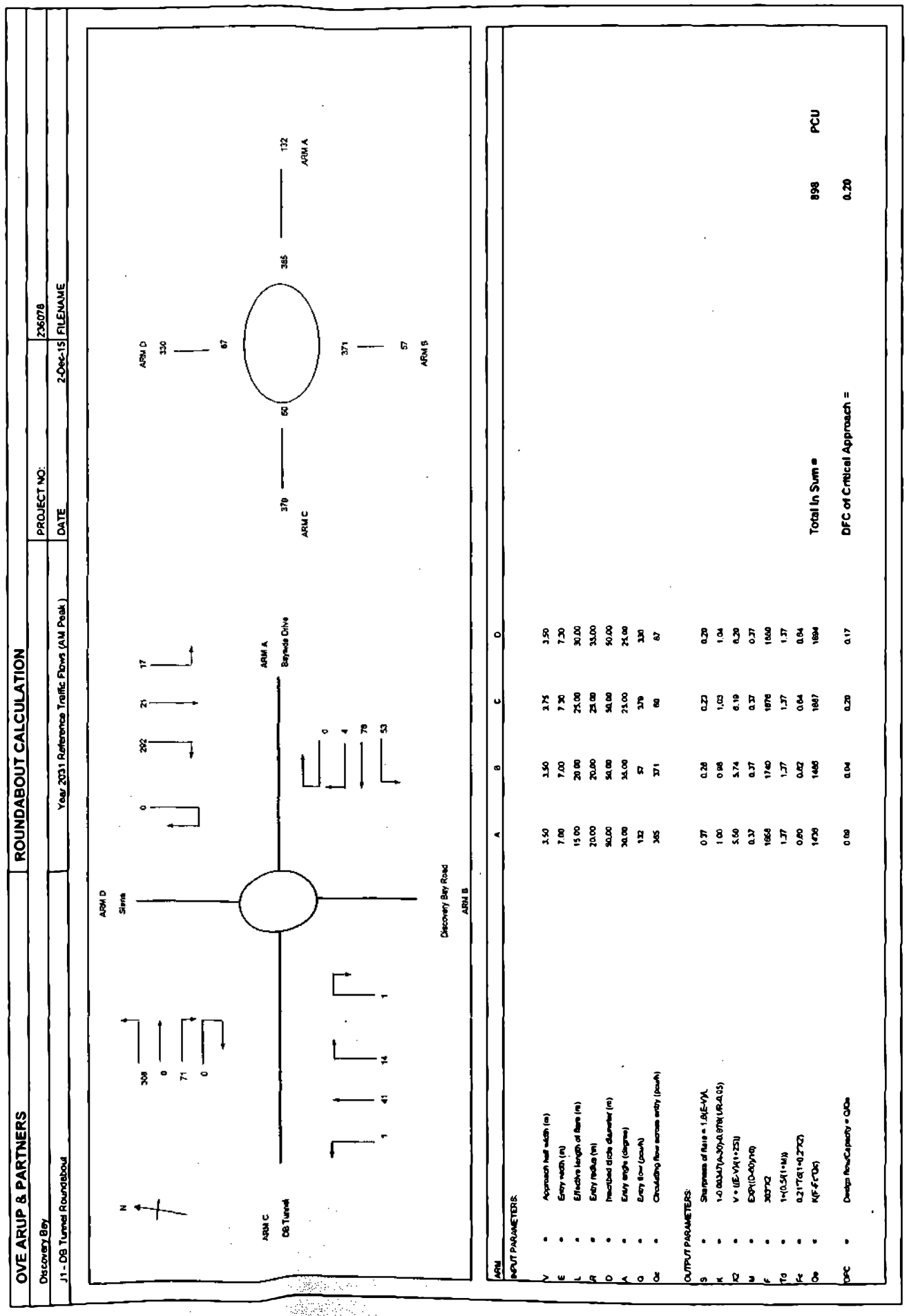
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	18	7	6	OK
F	6.3	5	2	5	69	2	5	OK
G	6.1	5	2	5	65	2	5	OK
H	6.3	5	7	5	29	7	5	OK
I	7.4	5	2	6	74	2	6	OK
J	6.6	5	6	6	5	6	6	OK

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				24				
A1	1	3.50	A	1	15		N	1865	32			32	1.00	1786			1786	0.018	0.084		5	25	0.067	0
A1,A3	1	3.50	A	1	40			2105	0		170	170	1.00	2029			2029	0.084			25	25	0.405	27
B2,B3	2	3.00	B	1	30		N	1915		0	18	18	1.00	1824			1459	0.011			3	11	0.120	3
B3	2	3.00	B	1	30			2055			18	18	1.00	1957			1566	0.010			3	11	0.112	3
C2	3	3.90	C	1	25		N	2005		236		236	0.00	2005			2005	0.118	0.118		35	35	0.405	33
C2,C3	3	3.90	C	1	25		N	2005		100	128	228	0.56	1940			1940	0.117			33	35	0.401	32
D1,2	3	3.90	D	1	25		N	2005		0	170	170	0.00	2005			1853	0.092			26	35	0.958	27
PED	2																			17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

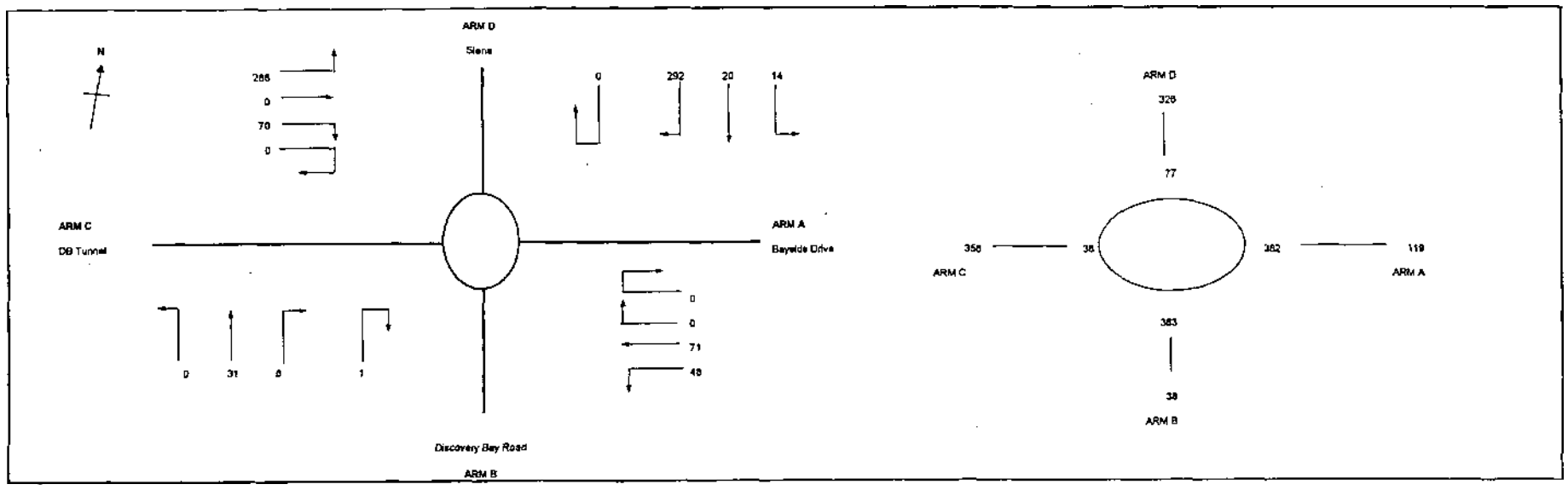
Appendix D

2031 Reference and Design Case Junction Calculation Sheets



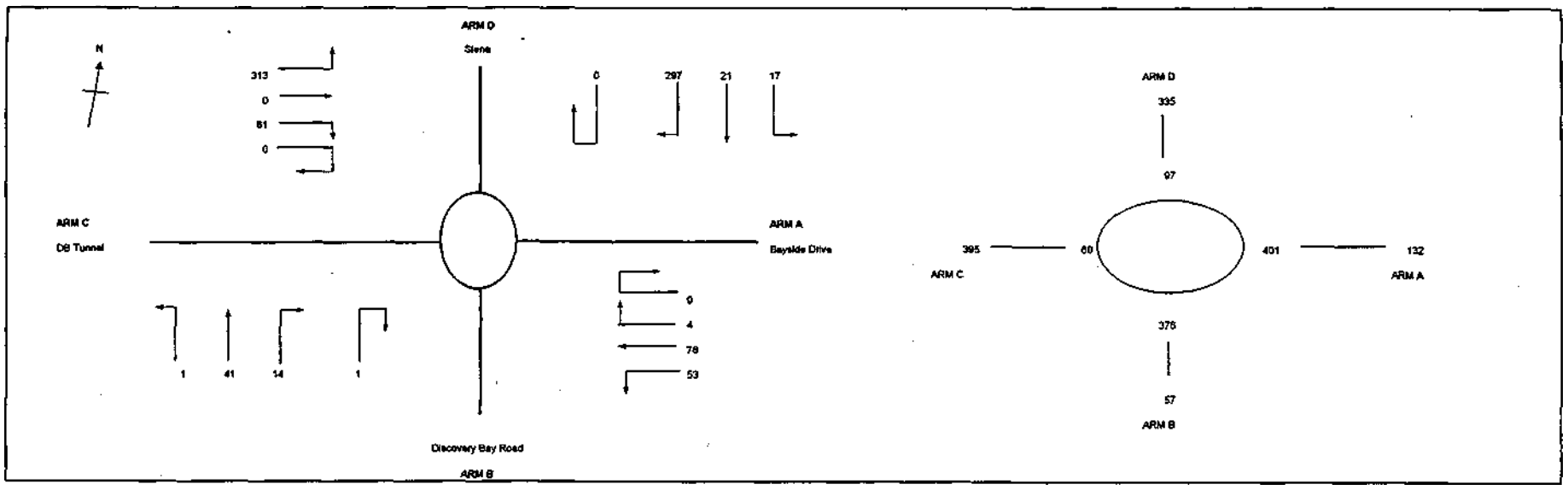
ARM		A	B	C	D
INPUT PARAMETERS:					
V	= Approach half width (m)	3.50	3.50	3.75	3.50
E	= Entry width (m)	7.00	7.00	7.30	7.30
L	= Effective length of flare (m)	15.00	20.00	25.00	30.00
R	= Entry radius (m)	20.00	20.00	25.00	33.00
D	= Inscribed circle diameter (m)	50.00	54.00	54.00	50.00
A	= Entry angle (degree)	30.00	34.00	23.00	24.00
Q	= Entry flow (pcu/h)	132	57	379	330
Qc	= Circulating flow across entry (pcu/h)	385	371	60	67
OUTPUT PARAMETERS:					
S	= Sharpness of flare = 1.6(E-V)/L	0.77	0.28	0.23	0.20
K	= 1-0.00347(A-30)-0.978((1/R)-0.05)	1.00	0.98	1.03	1.04
K2	= V + ((E-V)(1+2S))	5.00	5.74	6.19	6.30
M	= EXP((10-45)/9)	0.37	0.37	0.37	0.37
F	= 303*K2	1865	1740	1878	1868
Tc	= 1+(0.5/(1+M))	1.37	1.37	1.37	1.37
Fc	= 0.21*Tc(1+0.2*X2)	0.60	0.62	0.64	0.64
Qe	= K(F-Fc*Qc)	1125	1466	1667	1694
DFC	= Design Flow/Capacity = Q/Qe	0.12	0.04	0.20	0.17

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2031 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



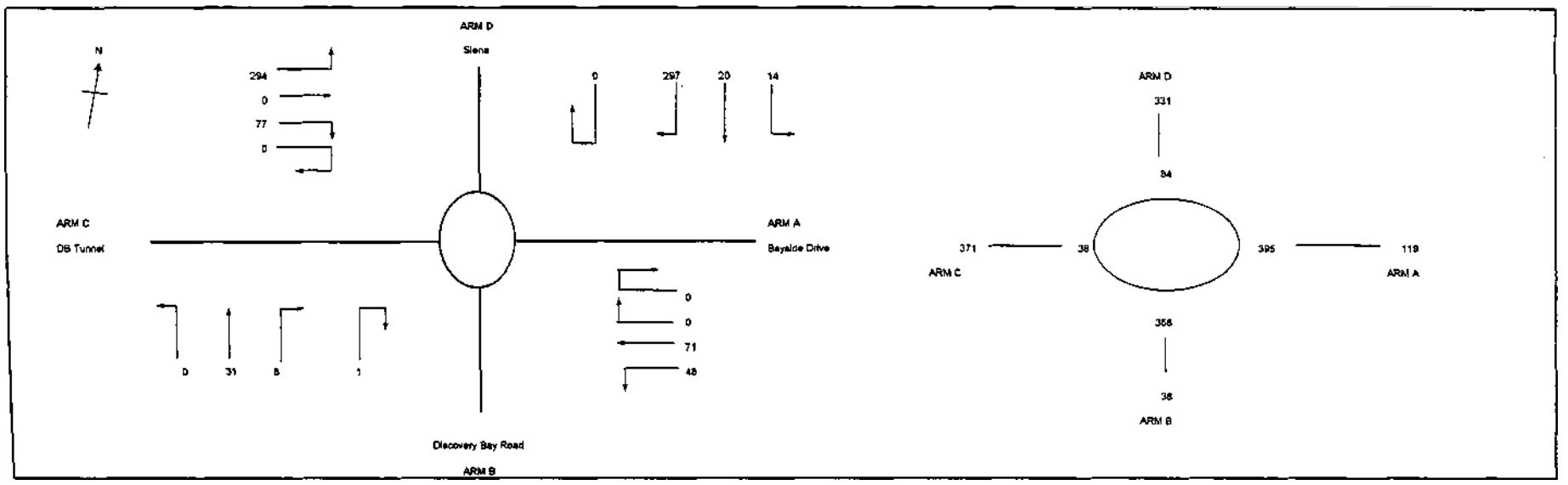
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	119	38	358	326			
Qc	=	Circulating flow across entry (pcu/h)	382	383	38	77			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303-7Q	1668	1740	1876	1880			
Td	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1437	1490	1902	1901	Total In Sum =	841	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.19	0.17	DFC of Critical Approach =	0.19	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2031 Design Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME



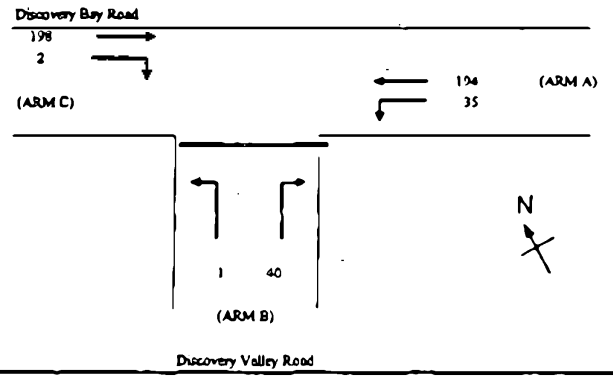
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	132	57	395	335			
Qc	=	Circulating flow across entry (pcu/h)	401	376	60	97			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.28	0.23	0.20			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303-7Q	1808	1740	1876	1880			
Td	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1428	1482	1887	1887	Total In Sum =	919	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.09	0.04	0.21	0.18	DFC of Critical Approach =	0.21	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2031 Design Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	25.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	119	38	371	331			
Qc	=	Circulating flow across entry (pcu/h)	395	358	38	84			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.37	0.29	0.23	0.20			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.98	1.03	1.04			
X2	=	V + ((E-V)/(1+2S))	5.50	5.74	6.19	6.20			
M	=	EXP((D-60)/10)	0.37	0.37	0.37	0.37			
F	=	303*X2	1668	1740	1876	1880			
Tc	=	1+(0.5/(1+M))	1.37	1.37	1.37	1.37			
Fc	=	0.21*Tc(1+0.2*X2)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1430	1467	1902	1898	Total In Sum =	859	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.19	0.17	DFC of Critical Approach =	0.19	

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

- W = MAJOR ROAD WIDTH (5-20m) (minor road turn left only, 2W)
- W cr = CENTRAL RESERVE WIDTH (0m, 1.2-9m)
- W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
- W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
- W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
- Vl b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
- Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
- Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
- Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
- D = STREAM-SPECIFIC B-A
- E = STREAM-SPECIFIC B-C
- F = STREAM-SPECIFIC C-B
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q b-D	=	35	(pcu/hr)
q b-c	=	194	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	197.7	(pcu/hr)
q c-b	=	2.436	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	40	(pcu/hr)
q b-c	=	1	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.803

THE CAPACITY OF MOVEMENT :

Q b-a	=	543
Q b-c	=	708
Q c-b	=	685
Q b-ac	=	546.7

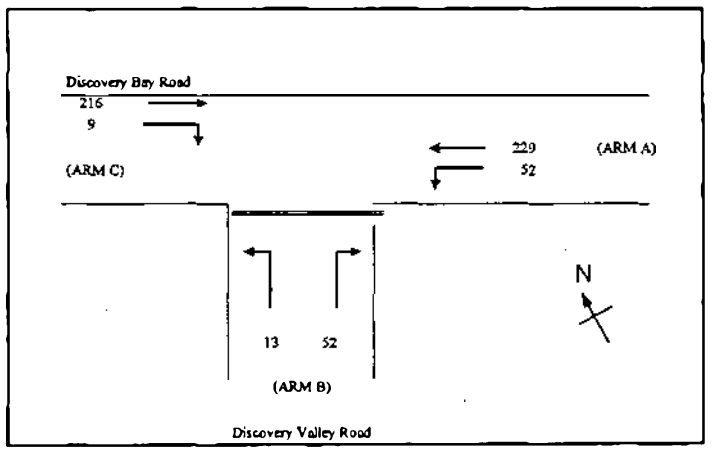
TOTAL FLOW = 470.8668484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0740
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.0758

CRITICAL DFC = 0.076

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	52	(pcu/hr)
q a-c	=	229	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	216.1	(pcu/hr)
q c-b	=	8.851	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	52	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	530
Q b-c	=	698
Q c-b	=	674
Q b-ac	=	556.4

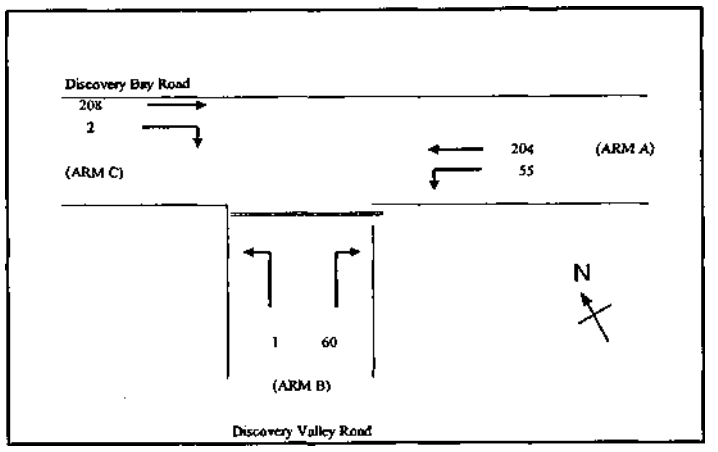
TOTAL FLOW = 569.9835702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0978
DFC b-c	=	0.0181
DFC c-b	=	0.0131
DFC b-ac	=	0.1159

CRITICAL DFC = 0.116

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2031 Design Traffic Flows (AM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	55	(pcu/hr)
q a-c	=	204	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	207.7	(pcu/hr)
q c-b	=	2.438	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	60	(pcu/hr)
q b-c	=	1	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	538
Q b-c	=	704
Q c-b	=	678
Q b-ac	=	540.5

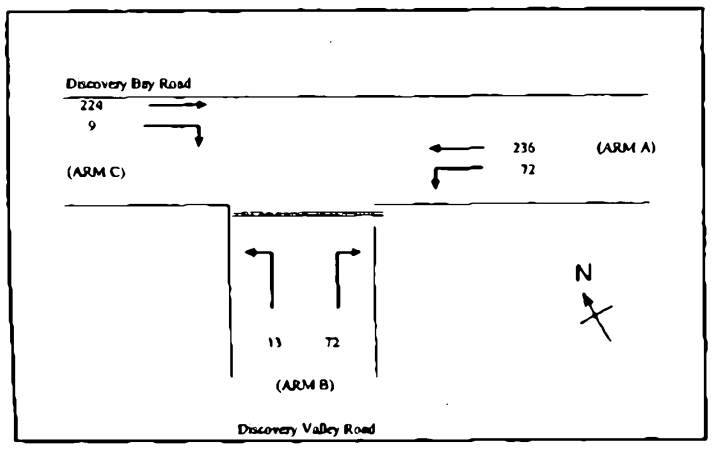
TOTAL FLOW = 530.8666484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1119
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.1136

CRITICAL DFC = 0.114

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J2 - DB Road / Discovery Valley Road	Year 2031 Design Traffic Flows (PM Peak)	DATE : 30/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.50	(metres)
W cr	=	0	(metres)
q a-b	=	72	(pcu/hr)
q a-c	=	238	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	223.8	(pcu/hr)
q c-b	=	8.851	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	150	(metres)
Vr b-c	=	150	(metres)
q b-a	=	72	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.982
E	=	1.013
F	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	526
Q b-c	=	695
Q c-b	=	668
Q b-ac	=	545.9

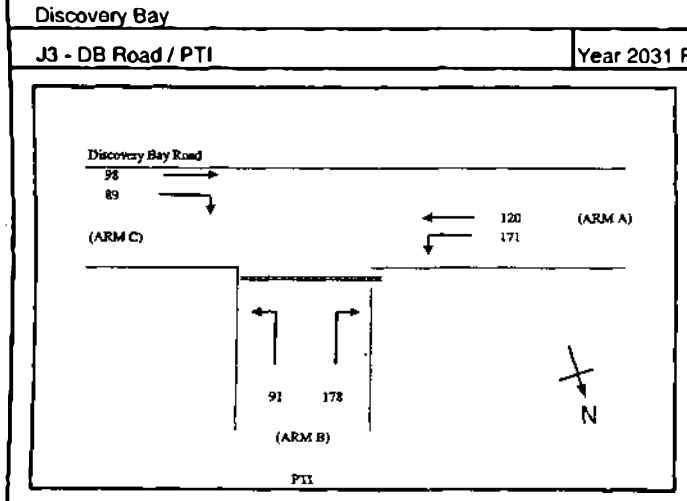
TOTAL FLOW = 624.9935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1368
DFC b-c	=	0.0182
DFC c-b	=	0.0133
DFC b-ac	=	0.1548

CRITICAL DFC = 0.155

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 02/12/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	-	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	-	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	-	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	-	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	-	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	-	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	-	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	-	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	-	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	-	STREAM-SPECIFIC B-A
E	-	STREAM-SPECIFIC B-C
F	-	STREAM-SPECIFIC C-B
Y	-	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	-	11.00	(metres)
W cr	-	0	(metres)
q a-b	-	171	(pcu/hr)
q a-c	-	120	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	-	3.50	(metres)
Vr c-b	-	150	(metres)
q c-a	-	98.13	(pcu/hr)
q c-b	-	88.7	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	-	3.50	(metres)
W b-c	-	3.50	(metres)
Vl b-a	-	100	(metres)
Vr b-a	-	100	(metres)
Vr b-c	-	100	(metres)
q b-a	-	178	(pcu/hr)
q b-c	-	91	(pcu/hr)

GEOMETRIC FACTORS :

D	-	0.939
E	-	0.968
F	-	1.013
Y	-	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	-	509
Q b-c	-	680
Q c-b	-	688
Q b-ac	-	556.3

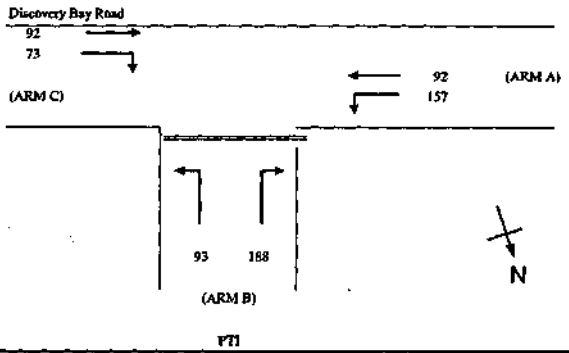
TOTAL FLOW - 747.2003363 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	-	0.3500
DFC b-c	-	0.1338
DFC c-b	-	0.1289
DFC b-ac	-	0.4838

CRITICAL DFC = 0.484

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 02/12/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	157	(pcu/hr)
q a-c	=	92	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	91.88	(pcu/hr)
q c-b	=	72.85	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	188	(pcu/hr)
q b-c	=	93	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	522
Q b-c	=	688
Q c-b	=	697
Q b-ac	=	567.4

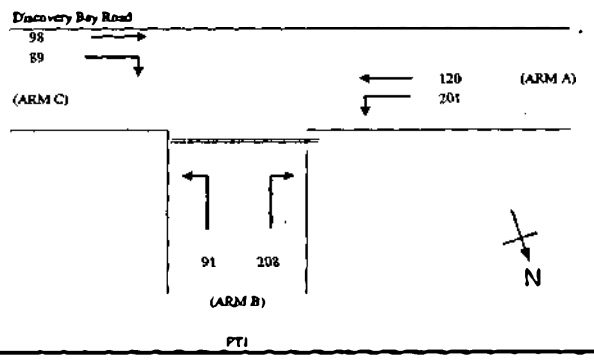
TOTAL FLOW = 694.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3601
DFC b-c	=	0.1356
DFC c-b	=	0.1045
DFC b-ac	=	0.4957

CRITICAL DFC = 0.496

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 2E+05	DESIGNED BY:
J3 - DB Road / PTI	Year 2031 Design Traffic Flows (AM Peak)	DATE : 02/12/15	FILENAME



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	201	(pcu/hr)
q a-c	=	120	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	98.13	(pcu/hr)
q c-b	=	88.7	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	208	(pcu/hr)
q b-c	=	91	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	506
Q b-c	=	678
Q c-b	=	691
Q b-ac	=	548.3

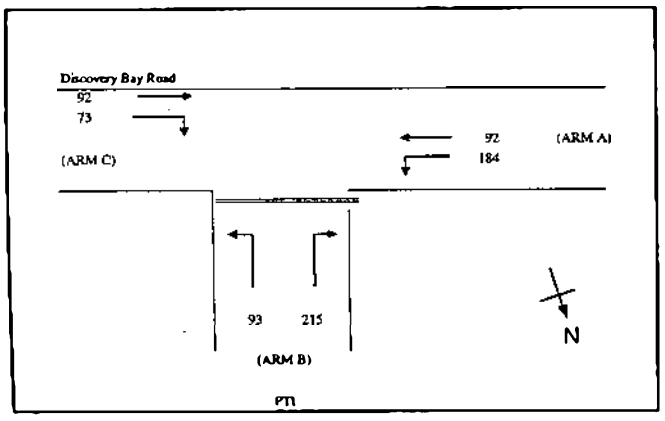
TOTAL FLOW = 807.2003383 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4113
DFC b-c	=	0.1342
DFC c-b	=	0.1303
DFC b-ac	=	0.5455

CRITICAL DFC = 0.546

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J3 - DB Road / PTI	Year 2031 Design Traffic Flows (PM Peak)	DATE : 02/12/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.00	(metres)
W cr	=	0	(metres)
q a-b	=	184	(pcu/hr)
q a-c	=	92	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	150	(metres)
q c-a	=	91.88	(pcu/hr)
q c-b	=	72.85	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	215	(pcu/hr)
q b-c	=	93	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.939
E	=	0.968
F	=	1.013
Y	=	0.821

THE CAPACITY OF MOVEMENT :

Q b-a	=	520
Q b-c	=	685
Q c-b	=	691
Q b-ac	=	560.8

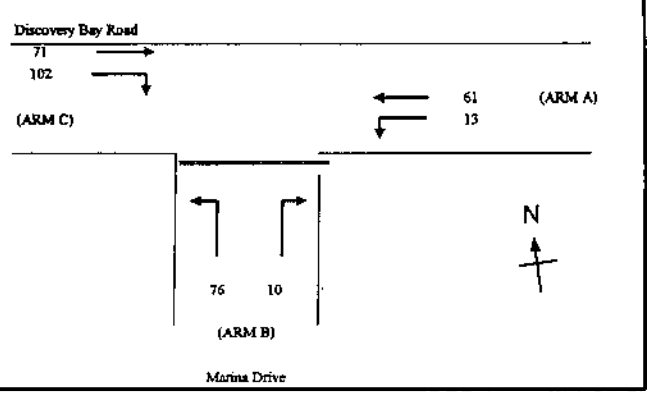
TOTAL FLOW = 749.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4144
DFC b-c	=	0.1362
DFC c-b	=	0.1054
DFC b-ac	=	0.5505

CRITICAL DFC = 0.551

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	61	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	71.27	(pcu/hr)
q c-b	=	101.8	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	10	(pcu/hr)
q b-c	=	76	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	508
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	652.6

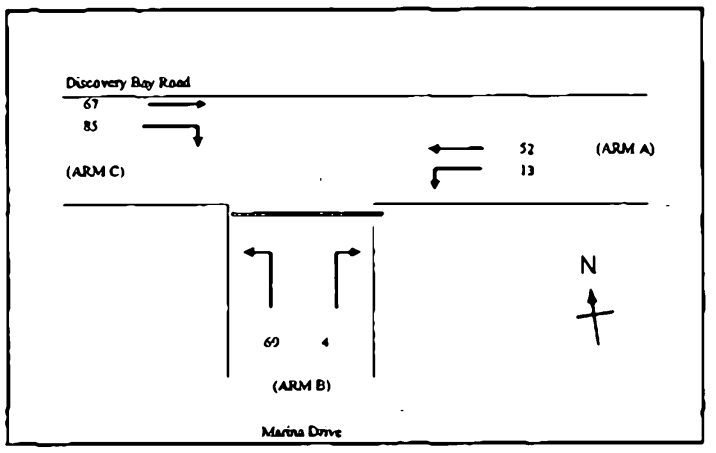
TOTAL FLOW = 332.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0203
DFC b-c	=	0.1112
DFC c-b	=	0.1448
DFC b-ac	=	0.1316

CRITICAL DFC = 0.145

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	52	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	66.85	(pcu/hr)
q c-b	=	85.26	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	4	(pcu/hr)
q b-c	=	69	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	518
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	670

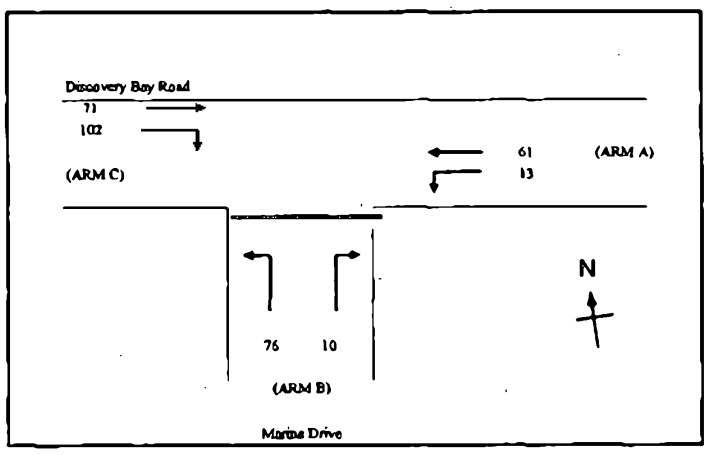
TOTAL FLOW = 290.6005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0072
DFC b-c	=	0.1011
DFC c-b	=	0.1209
DFC b-ac	=	0.1083

CRITICAL DFC = 0.121

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2031 Design Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	61	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	71.27	(pcu/hr)
q c-b	=	101.8	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	10	(pcu/hr)
q b-c	=	78	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	508
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	652.8

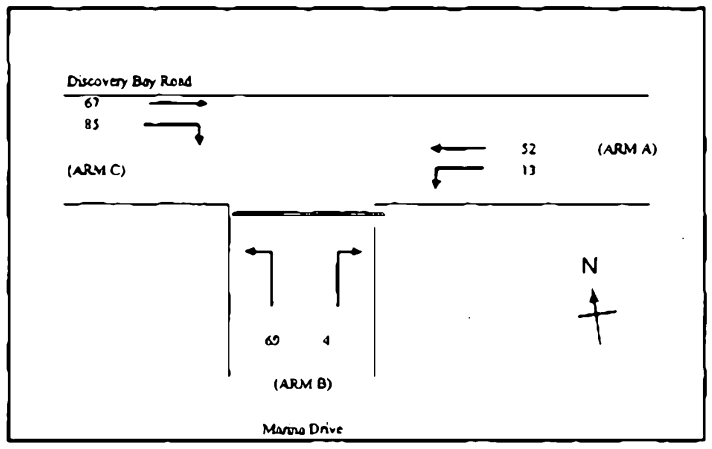
TOTAL FLOW = 332.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0203
DFC b-c	=	0.1112
DFC c-b	=	0.1448
DFC b-ac	=	0.1316

CRITICAL DFC = 0.145

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2031 Design Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	8.50	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	52	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	100	(metres)
q c-a	=	86.85	(pcu/hr)
q c-b	=	85.28	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.50	(metres)
W b-c	=	3.50	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	4	(pcu/hr)
q b-c	=	69	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.905
E	=	0.933
F	=	0.968
Y	=	0.707

THE CAPACITY OF MOVEMENT :

Q b-a	=	518
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	670

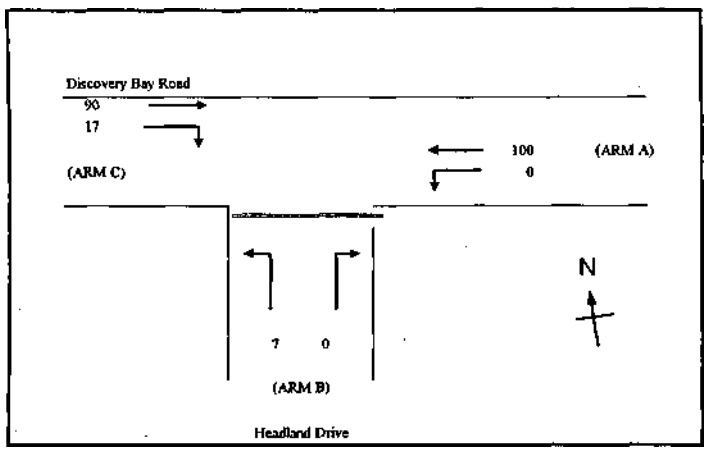
TOTAL FLOW = 290.6005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0072
DFC b-c	=	0.1011
DFC c-b	=	0.1209
DFC b-ac	=	0.1083

CRITICAL DFC = 0.121

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	90.47	(pcu/hr)
q c-b	=	17.08	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	458
Q b-c	=	613
Q c-b	=	682
Q b-ac	=	613

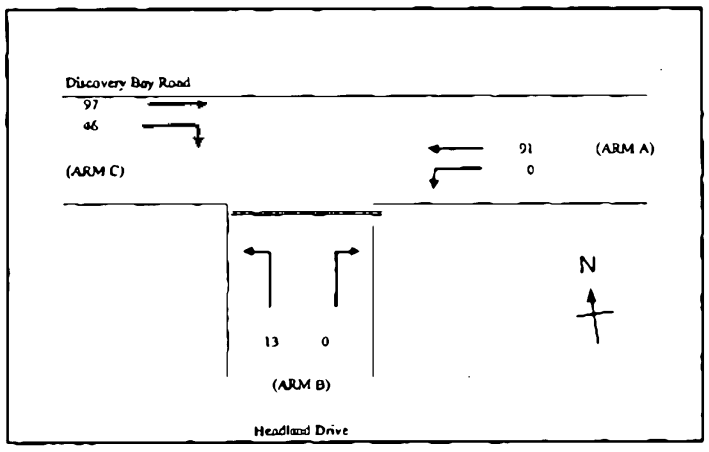
TOTAL FLOW = 215.0415223 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0119
DFC c-b	=	0.0250
DFC b-ac	=	0.0119

CRITICAL DFC = 0.025

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	91	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	87.22	(pcu/hr)
q c-b	=	45.52	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.80	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	451
Q b-c	=	616
Q c-b	=	585
Q b-ac	=	616

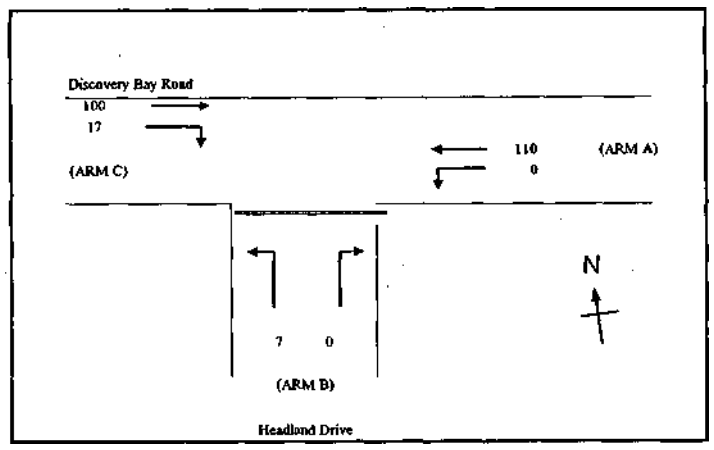
TOTAL FLOW = 246.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0211
DFC c-b	=	0.0665
DFC b-ac	=	0.0211

CRITICAL DFC = 0.066

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2031 Design Traffic Flows (AM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	110	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	100.5	(pcu/hr)
q c-b	=	17.06	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	455
Q b-c	=	611
Q c-b	=	680
Q b-ac	=	611

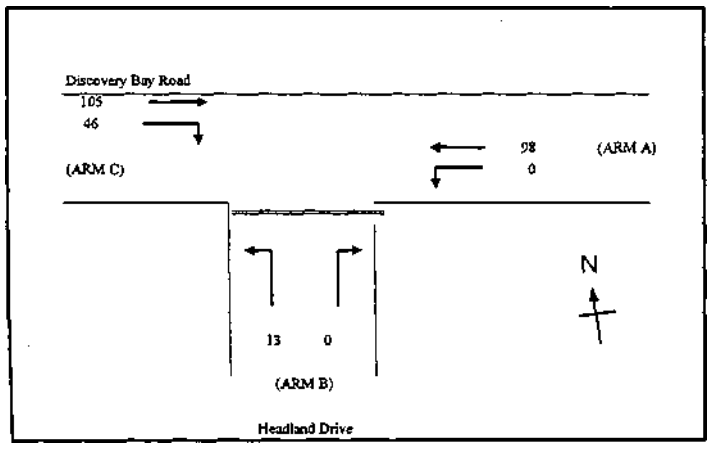
TOTAL FLOW = 235.0415223 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0120
DFC c-b	=	0.0251
DFC b-ac	=	0.0120

CRITICAL DFC = 0.025

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		PROJECT NO: 236078	DESIGNED BY:
J5 - Discovery Bay Road / Headland Drive	Year 2031 Design Traffic Flows (PM Peak)	DATE : 03/11/15	FILENAME :



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH (6-20m) (minor road turn left only, 2W)
W cr	=	CENTRAL RESERVE WIDTH (0m, 1.2-9m)
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a (0m, 2.2-5m)
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c (2.2-5m)
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b (0m, 2.2-5m)
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a (0-250m)
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a (0-250)
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c (0-250)
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b (0-250)
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	98	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	104.7	(pcu/hr)
q c-b	=	45.52	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.90	(metres)
W b-c	=	2.90	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	30	(metres)
Vr b-c	=	30	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	13	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.793
E	=	0.854
F	=	0.95
Y	=	0.738

THE CAPACITY OF MOVEMENT :

Q b-a	=	448
Q b-c	=	814
Q c-b	=	683
Q b-ac	=	814

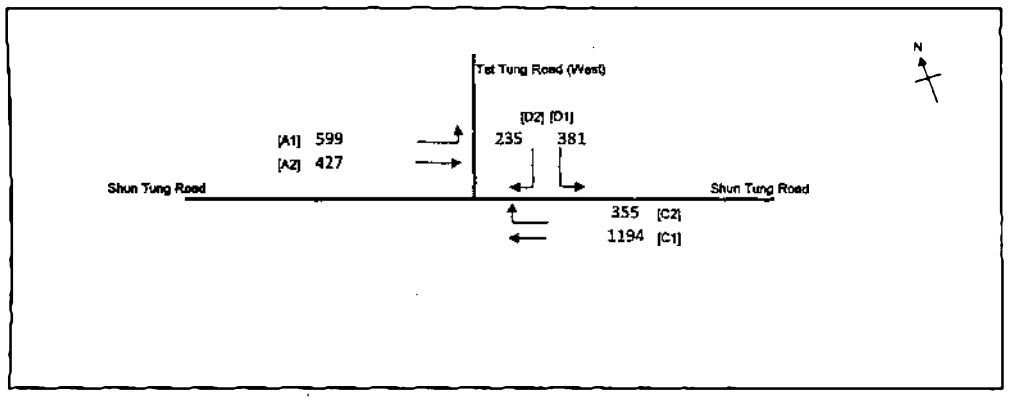
TOTAL FLOW = 261.8402298 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

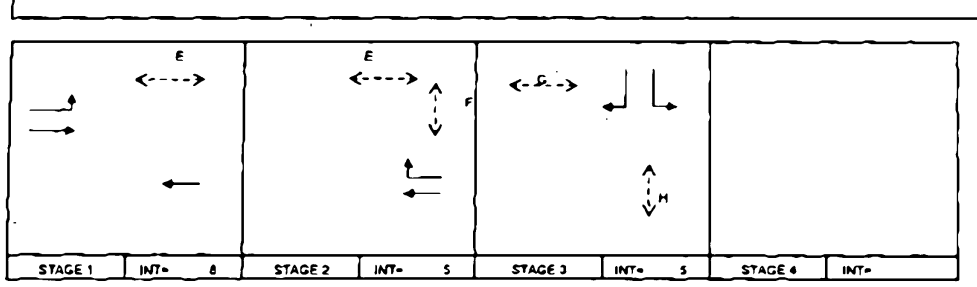
DFC b-a	=	0.0000
DFC b-c	=	0.0212
DFC c-b	=	0.0686
DFC b-ac	=	0.0212

CRITICAL DFC = 0.067

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: Z36078	
J8 - Shun Tung Road / Tat Tung Road (West)	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	3	
Cycle time	C =	120	sec
Sum(y)	Y =	0.875	
Loss time	L =	15	sec
Total Flow	=	3191.273	pcu
Co = (1.5*L+5)/(1-Y)	=	84.7	sec
Cm = L/(1-Y)	=	46.2	sec
Yult	=	0.788	
R.C.ult = (Yult-Y)/Y*100%	=	16.8	%
Cp = 0.9*L/(0.9-Y)	=	60.1	sec
Ymax = 1-L/C	=	0.875	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	16.8	%

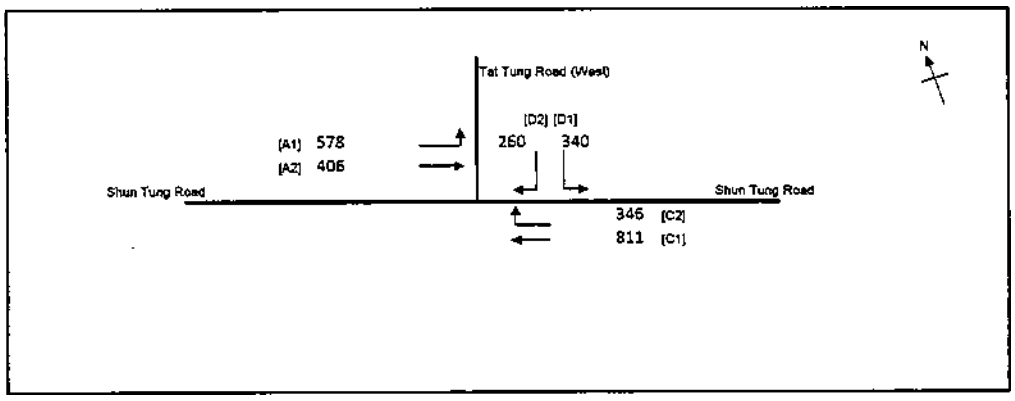


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	8	16	2	8	OK

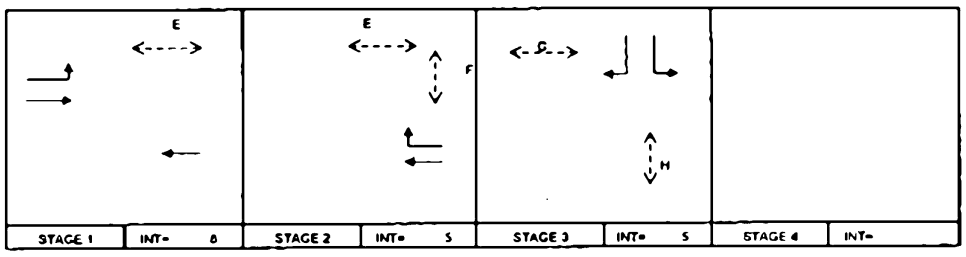
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1885	599			599	1.00	1786			1786	0.336	0.336		52	52	0.772	88
A2	1	3.50	A	1				2105		427		427	0.00	2105			2105	0.203			32	52	0.467	48
C1	1,2	3.50	B	2			N	4070		1194		1194	0.00	4070			4070	0.293			46	83	0.426	37
C2	2	3.50	C	1	30			2105			355	355	1.00	2005			2005	0.177	0.177		28	28	0.772	55
D1	3	3.50	D	1	15		N	1885	291			291	1.00	1786			1786	0.163	0.163		25	25	0.772	48
D1,D2	3	3.50	D	1	30			2105	90		235	325	1.00	2005			2005	0.162			25	25	0.768	51

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 8m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	120 sec
Sum(y)	Y =	0.655
Loss time	L =	15 sec
Total Flow	=	2741.273 pcu
Co = (1.5*L+5)/(1-Y)	=	79.8 sec
Cm = L/(1-Y)	=	43.4 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	20.3 %
Cp = 0.9*L/(0.9-Y)	=	55.0 sec
Ymax = 1-L/C	=	0.875
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	20.3 %

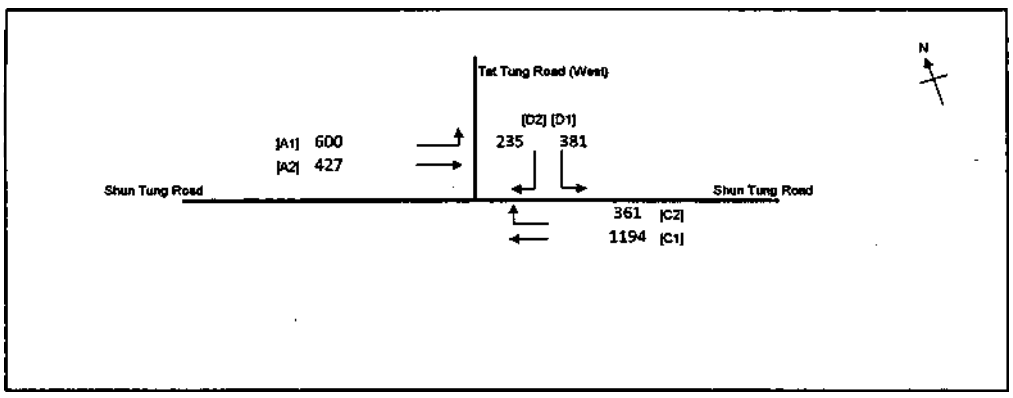


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	9	18	2	9	OK

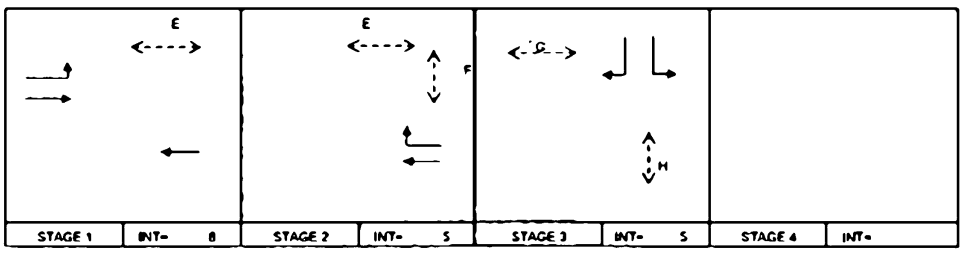
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	578			578	1.00	1788			1788	0.324	0.324		52	52	0.748	66
A2	1	3.50	A	1				2105		406		406	0.00	2105			2105	0.193			31	52	0.446	40
C1	1,2	3.50	B	2			N	4070		811		811	0.00	4070			4070	0.199			32	63	0.290	25
C2	2	3.50	C	1	30			2105			346	346	1.00	2005			2005	0.173	0.173		28	28	0.748	53
D1	3	3.50	D	1	15		N	1965	283			283	1.00	1788			1788	0.158	0.158		25	25	0.748	45
D1,D2	3	3.50	D	1	30			2105	57		280	337	1.00	2005			2005	0.158			25	25	0.747	50

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2031 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3
No. of stage using for calculation	N =	3
Cycle time	C =	120 sec
Sum(y)	Y =	0.679
Loss time	L =	15 sec
Total Flow	=	3198.052 pcu
Co = (1.5*L+5)/(1-Y)	=	85.6 sec
Cm = L/(1-Y)	=	46.7 sec
Yult	=	0.788
R.C.ult = (Yult-Y)/Y*100%	=	16.0 %
Cp = 0.9*L/(0.9-Y)	=	61.1 sec
Ymax = 1-L/C	=	0.875
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	16.0 %

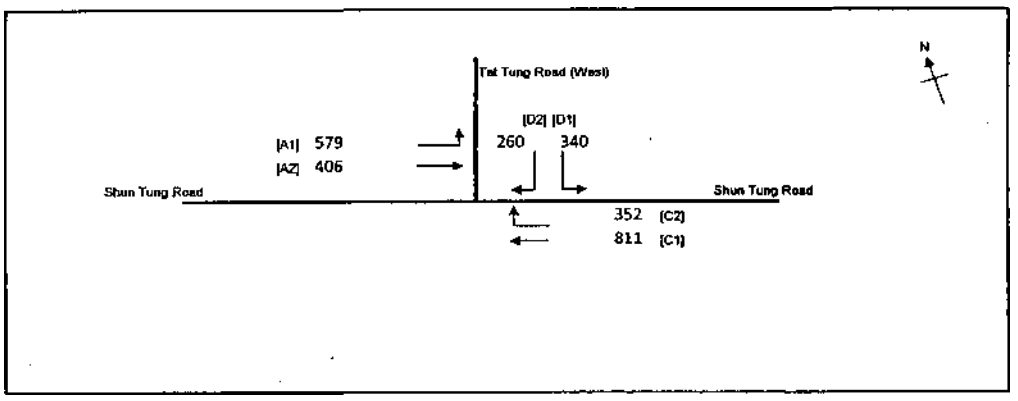


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	9	18	2	9	OK

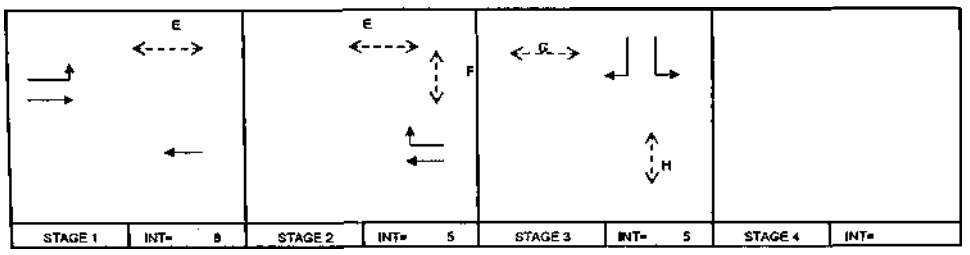
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				15				
A1	1	3.50	A	1	15		N	1965	600			600	1.00	1788			1788	0.336	0.336		52	52	0.776	68
A2	1	3.50	A	1				2105		427		427	0.00	2105			2105	0.203			31	52	0.469	46
C1	1,2	3.50	B	2			N	4070		1194		1194	0.00	4070			4070	0.293			45	63	0.425	37
C2	2	3.50	C	1	30			2105			361	361	1.00	2005			2005	0.180	0.180		28	28	0.776	55
D1	3	3.50	D	1	15		N	1965	291			291	1.00	1788			1788	0.163	0.163		25	25	0.776	46
D1,D2	3	3.50	D	1	30			2105	88		235	323	1.00	2005			2005	0.162			25	25	0.772	51

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2031 Design Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.858
Loss time		L =	15 sec
Total Flow		=	2748.082 pcu
Co	= (1.5*L+5)/(1-Y)	=	80.4 sec
Cm	= L/(1-Y)	=	43.9 sec
Yult		=	0.768
R.C.ult	= (Yult-Y)/Y*100%	=	19.7 %
Cp	= 0.9*L/(0.9-Y)	=	55.8 sec
Ymax	= 1-L/C	=	0.875
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	19.7 %

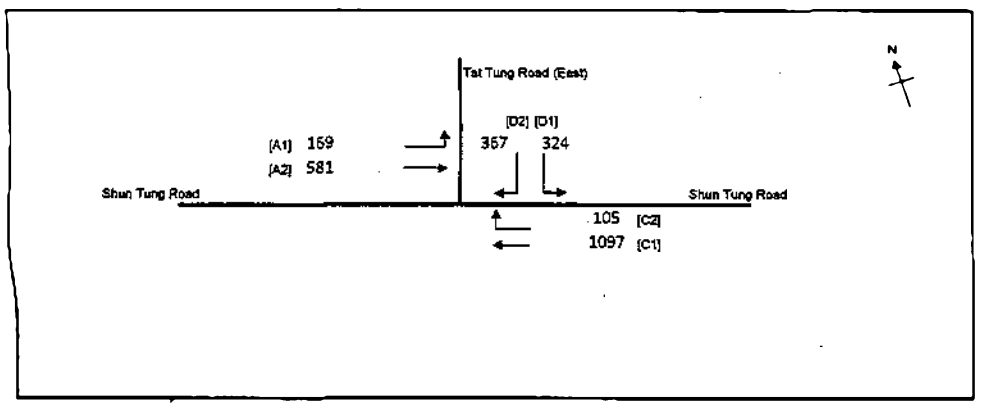


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	8	7	18	8	7	OK
H	11	5	2	9	18	2	9	OK

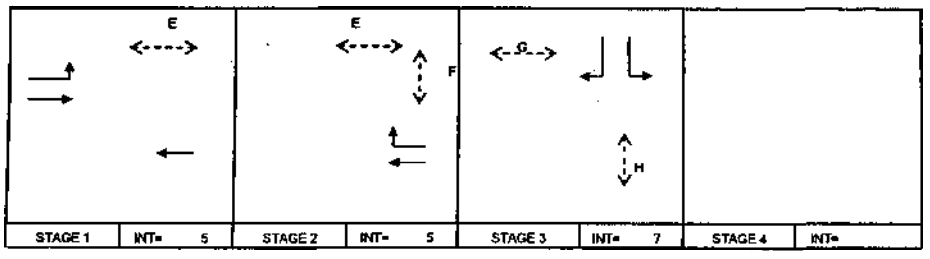
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1983	579			579	1.00	1788			1788	0.324	0.324		32	32	0.752	68
A2	1	3.50	A	1				2105		406		406	0.00	2105			2105	0.193			31	32	0.448	40
C1	1,2	3.50	B	2			N	4070		811		811	0.00	4070			4070	0.199			32	63	0.269	25
C2	2	3.50	C	1	30			2105			352	352	1.00	2005			2005	0.176	0.176		28	28	0.752	54
D1	3	3.50	D	1	15		N	1983	283			283	1.00	1788			1788	0.158	0.158		25	25	0.752	45
D1,D2	3	3.50	D	1	30			2105	57		260	317	1.00	2005			2005	0.158			25	25	0.751	50

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.633
Loss time		L =	21 sec
Total Flow		=	2643.848 pcu
Co	= (1.5*L+5)/(1-Y)	=	64.4 sec
Cm	= L/(1-Y)	=	37.0 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	17.4 %
Cp	= 0.9*L/(0.9-Y)	=	40.5 sec
Ymax	= 1-L/C	=	0.767
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.3 %

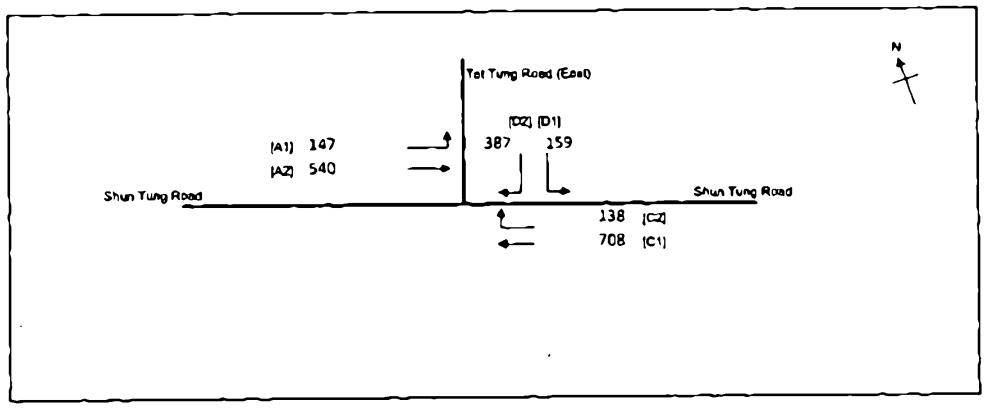


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	45	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	23	7	7	OK
H	10	5	2	8	27	2	8	OK

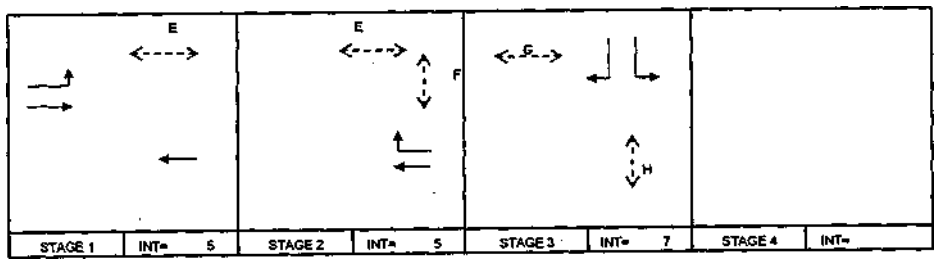
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1986	189	185		354	0.48	1875			1875	0.189	0.189		30	30	0.565	35
A2	1	3.50	A	1				2105		398		398	0.00	2105			2105	0.188			30	30	0.563	40
C1	1,2	3.50	B	2			N	4070		1097		1097	0.00	4070			4070	0.270			43	48	0.501	38
C2	2	3.50	C	1	30			2105			105	105	1.00	2005			2005	0.052	0.052	7	8	15	0.307	13
D1	3	3.50	D	1	15		N	1983	324			324	1.00	1788			1788	0.181	0.102		29	31	0.534	32
D1,D2	3	3.50	D	1	15			2105	0		357	357	1.00	1914			1914	0.182			31	31	0.565	36

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.444
Lose time		L =	18 sec
Total Flow		=	2079.849 pcu
Co	= (1.5*L+5)/(1-Y)	=	57.6 sec
Cm	= L/(1-Y)	=	32.4 sec
Yult		=	0.785
R.C.ult	= (Yult-Y)/Y*100%	=	72.2 %
Cp	= 0.9*L/(0.9-Y)	=	35.5 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	62.1 %

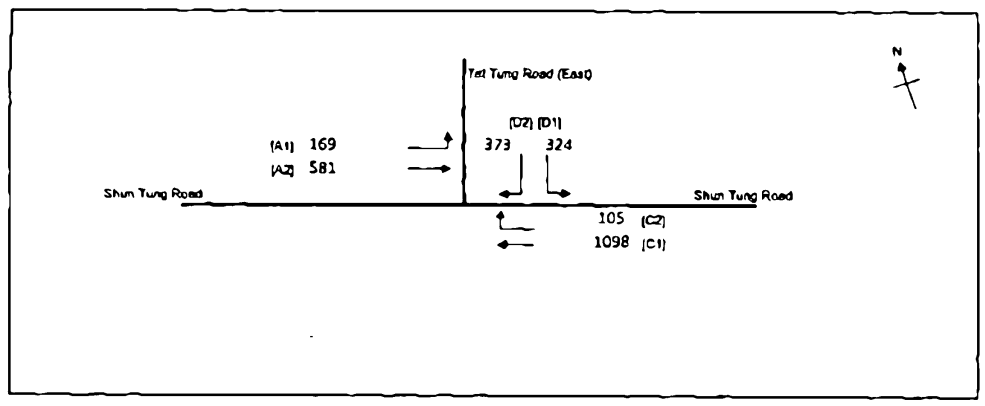


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	42	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	25	7	7	OK
H	10	5	2	8	29	2	8	OK

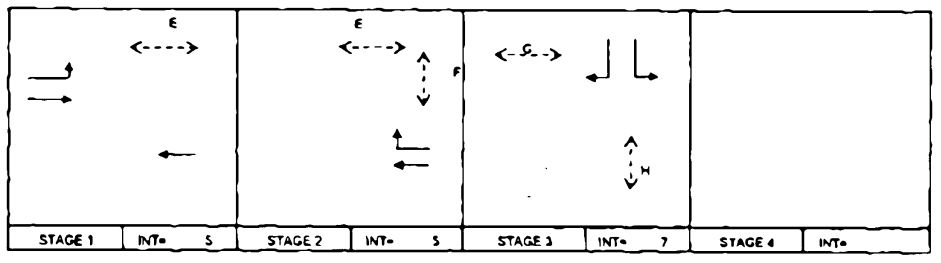
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	D	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1865	147	178		325	0.48	1880			1880	0.173	0.173		28	28	0.555	34
A2	1	3.50	A	1				2105		382		382	0.00	2105			2105	0.172			28	28	0.552	37
C1	1,2	3.50	B	2			N	4070		708		708	0.00	4070			4070	0.174			28	40	0.339	28
C2	2	3.50	C	1	30			2105			138	138	1.00	2005			2005	0.069	0.069	4	11	15	0.409	17
D1	3	3.50	D	1	15		N	1865	159			159	1.00	1788			1788	0.089	0.202		14	33	0.244	15
D1,D2	3	3.50	D	1	15			2105	0		387	387	1.00	1914			1914	0.202			33	33	0.555	37

NOTE : 'O'- OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2031 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.436
Lose time		L =	21 sec
Total Flow		=	2850.055 pcu
Co	= (1.5*L+5)/(1-Y)	=	64.7 sec
Cm	= L/(1-Y)	=	37.2 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	70.3 %
Cp	= 0.9*L/(0.9-Y)	=	40.7 sec
Ymax	= 1-L/C	=	0.767
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	58.2 %



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	44	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	23	7	7	OK
H	10	5	2	8	27	2	8	OK

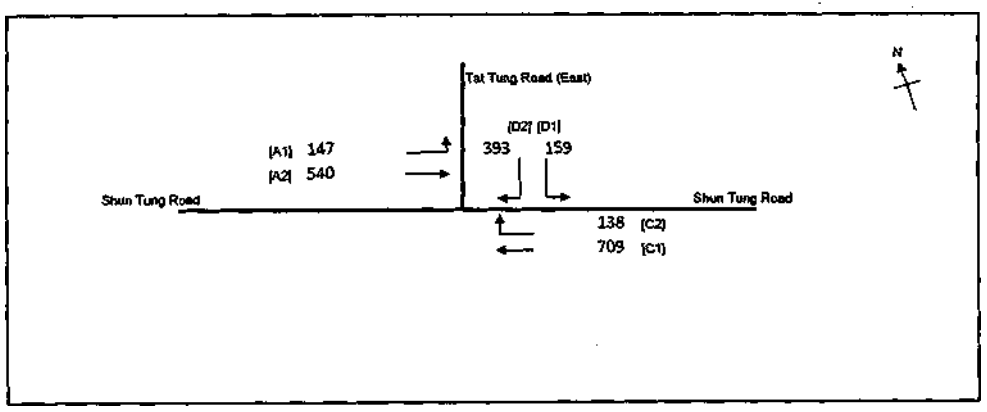
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	D	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1865	169	185		354	0.48	1875			1875	0.189	0.189		30	30	0.569	35
A2	1	3.50	A	1				2105		386		386	0.00	2105			2105	0.168			30	30	0.567	40
C1	1,2	3.50	B	2			N	4070		1098		1098	0.00	4070			4070	0.270			43	46	0.504	38
C2	2	3.50	C	1	30			2105			105	105	1.00	2005			2005	0.052	0.052	7	8	15	0.308	13
D1	3	3.50	D	1	15		N	1865	324			324	1.00	1788			1788	0.181	0.195		29	31	0.529	32
D1,D2	3	3.50	D	1	15			2105	0		373	373	1.00	1914			1914	0.195			31	31	0.569	37

NOTE : 'O' - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

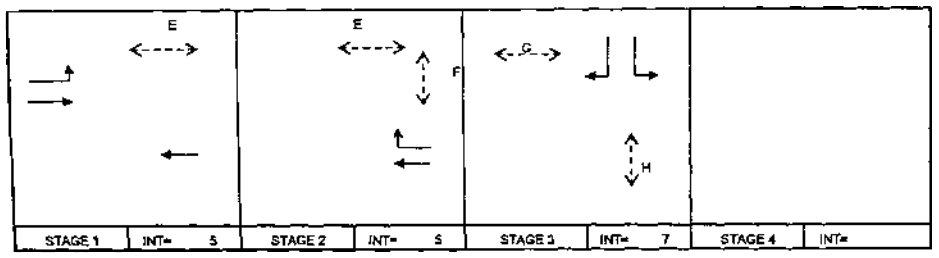
OVE ARUP & PARTNERS — TRAFFIC SIGNAL CALCULATION

Discovery Bay | PROJECT NO: 236078

J7 - Shun Tung Road / Tat Tung Road (East) | Year 2031 Design Traffic Flows (PM Peak) | DATE : 30-Nov-15 | FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.447
Loss time		L =	18 sec
Total Flow		=	2086.055 pcu
Co	= (1.5*L+5)/(1-Y)	=	57.9 sec
Om	= U/(1-Y)	=	32.8 sec
Yult		=	0.765
R.C ult	= (Yult-Y)/Y*100%	=	71.1 %
Cp	= 0.9*L/(0.9-Y)	=	35.8 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	61.0 %



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	42	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	25	7	7	OK
H	10	5	2	8	29	2	8	OK

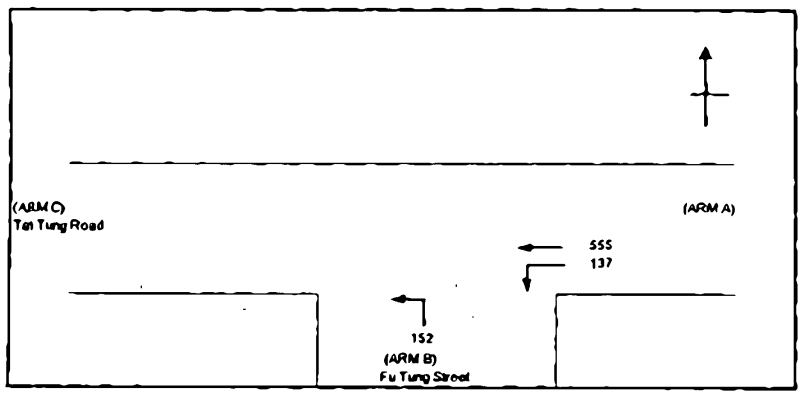
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	G (required) sec	G (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1885	147	178		325	0.45	1880			1880	0.173	0.173		28	28	0.559	34
A2	1	3.50	A	1				2105		352		352	0.00	2105			2105	0.172			28	28	0.558	36
A2	1	3.50	A	2			N	4070	0	709		709	0.00	4070			4070	0.174			28	40	0.341	28
C1	2	3.50	B	1	30		N	2105	0	0	138	138	1.00	2005			2005	0.069	0.069	4	11	15	0.411	17
A1	1	3.50	A	1	15		N	1885	159	0		159	1.00	1788			1788	0.089	0.205		14	33	0.242	15
C2	2	3.50	B	1	30		N	2105	0	0	393	393	1.00	1914			1914	0.205			33	33	0.559	37

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS — PRIORITY JUNCTION CALCULATION

Discovery Bay | Project No. : 236078

J8 - Tat Tung Road / Fu Tung Street | Year 2031 Reference Traffic Flows (AM Peak) | DATE : Nov 2015 | JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

- W = MAJOR ROAD WIDTH
- W cr = CENTRAL RESERVE WIDTH
- W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
- W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
- W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
- Vl b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
- Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
- Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
- Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
- D = STREAM-SPECIFIC B-A
- E = STREAM-SPECIFIC B-C
- F = STREAM-SPECIFIC C-B
- Y = (1-0.0045W)
- P = PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	137	(pcu/hr)
q a-c	=	555	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	152	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5880
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	353
Q b-c	=	375
Q c-b	=	327
Qb-ac	=	375

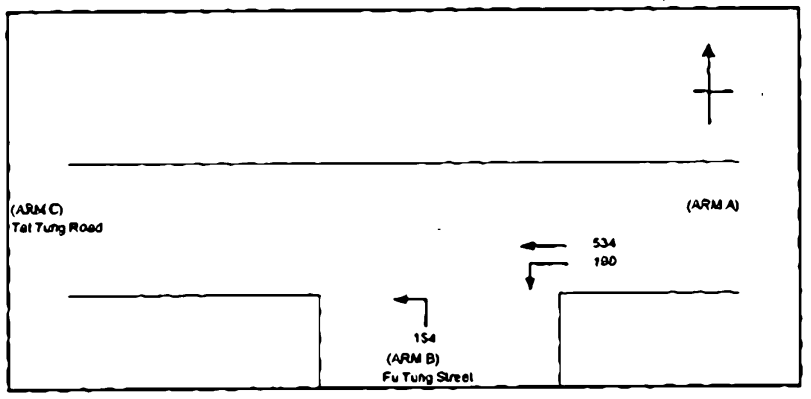
TOTAL FLOW = 845 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4061
DFC c-b	=	0.0000
DFC b-ac	=	0.4061

CRITICAL DFC = 0.41

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2031 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	190	(pcu/hr)
q a-c	=	534	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	154	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	353
Q b-c	=	375
Q c-b	=	322
Qb-ac	=	375

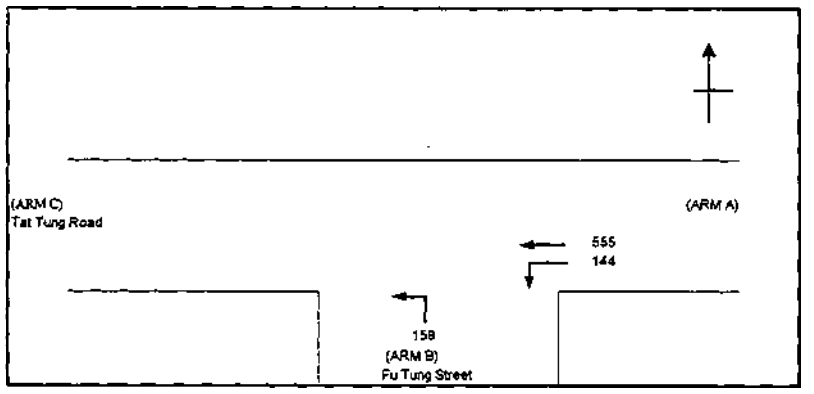
TOTAL FLOW = 879 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4114
DFC c-b	=	0.0000
DFC b-ac	=	0.4114

CRITICAL DFC = 0.41

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2031 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	144	(pcu/hr)
q a-c	=	555	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	0.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	159	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.6451
F	=	0.5860
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	352
Q b-c	=	374
Q c-b	=	326
Qb-ac	=	374

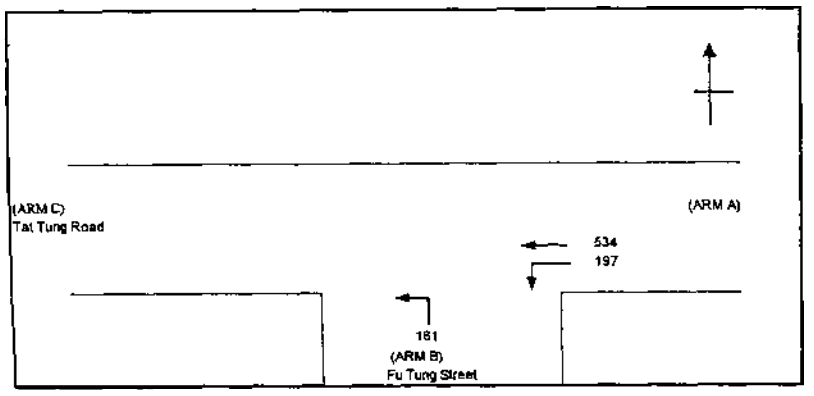
TOTAL FLOW = 858 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4254
DFC c-b	=	0.0000
DFC b-ac	=	0.4254

CRITICAL DFC = 0.43

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J8 - Tat Tung Road / Fu Tung Street	Year 2031 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.5	(metres)
W cr	=	0	(metres)
q a-b	=	197	(pcu/hr)
q a-c	=	534	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	0.0	(metres)
Vr c-b	=	0	(metres)
q c-a	=	0	(pcu/hr)
q c-b	=	0	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	3.0	(metres)
Vl b-a	=	0	(metres)
Vr b-a	=	0	(metres)
Vr b-c	=	100	(metres)
q b-a	=	0	(pcu/hr)
q b-c	=	181	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7621
E	=	0.8451
F	=	0.5980
Y	=	0.7413
P	=	1.0000

THE CAPACITY OF MOVEMENT :

Q b-a	=	352
Q b-c	=	374
Q c-b	=	321
Qb-ac	=	374

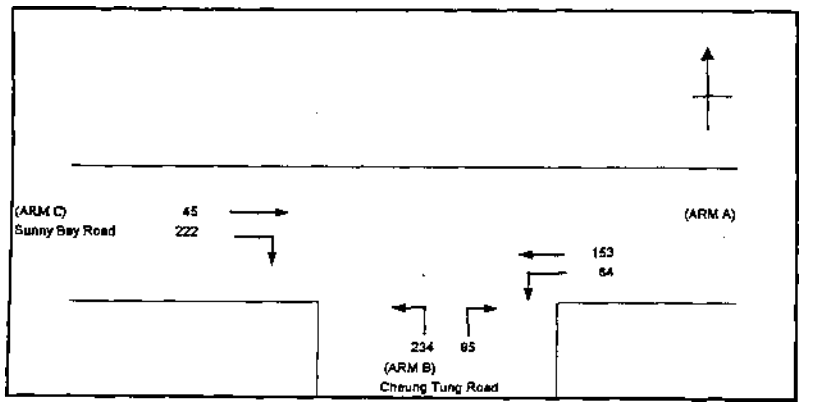
TOTAL FLOW = 892 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4307
DFC c-b	=	0.0000
DFC b-ac	=	0.4307

CRITICAL DFC = 0.43

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2031 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	84	(pcu/hr)
q a-c	=	153	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	45	(pcu/hr)
q c-b	=	222	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	60	(metres)
Vr b-c	=	60	(metres)
q b-a	=	85	(pcu/hr)
q b-c	=	234	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.7113

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	664
Q c-b	=	681
Qb-ac	=	612

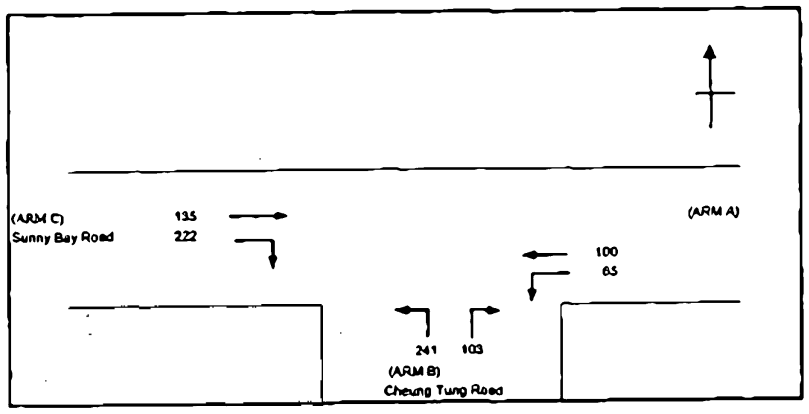
TOTAL FLOW = 893 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1846
DFC b-c	=	0.3525
DFC c-b	=	0.3261
DFC b-ac	=	0.5373

CRITICAL DFC = 0.54

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2031 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	65	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
W c-b	=	50	(metres)
q c-a	=	135	(pcu/hr)
q c-b	=	222	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	80	(metres)
Vr b-c	=	88	(metres)
q b-a	=	100	(pcu/hr)
q b-c	=	241	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7008

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	674
Q c-b	=	683
Qb-ac	=	617

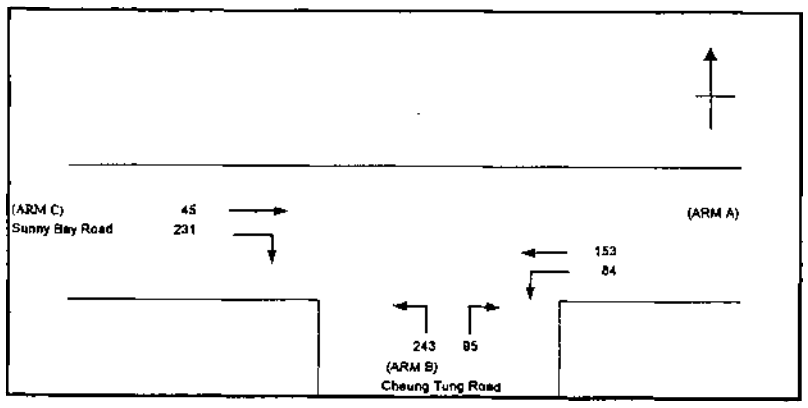
TOTAL FLOW = 866 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.2004
DFC b-c	=	0.3576
DFC c-b	=	0.3264
DFC b-ac	=	0.5560

CRITICAL DFC = 0.56

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2031 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	84	(pcu/hr)
q a-c	=	153	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	45	(pcu/hr)
q c-b	=	231	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.5	(metres)
W b-c	=	3.5	(metres)
Vl b-a	=	40	(metres)
Vr b-a	=	80	(metres)
Vr b-c	=	80	(metres)
q b-a	=	85	(pcu/hr)
q b-c	=	243	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7187

THE CAPACITY OF MOVEMENT :

Q b-a	=	512
Q b-c	=	664
Q c-b	=	681
Qb-ac	=	613

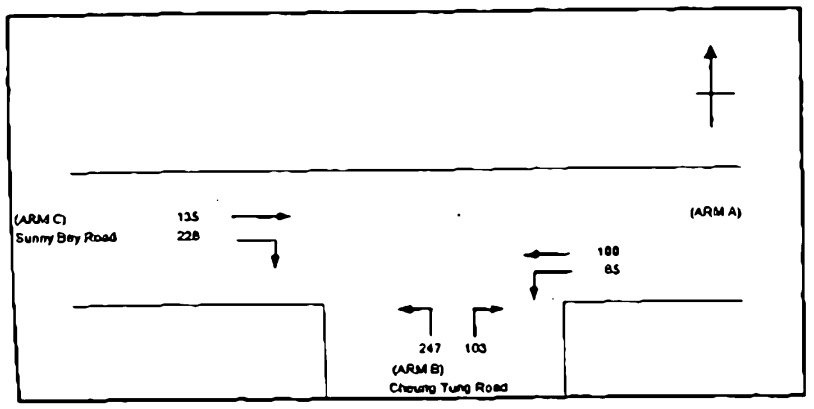
TOTAL FLOW = 850 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1855
DFC b-c	=	0.1655
DFC c-b	=	0.3387
DFC b-ac	=	0.3510

CRITICAL DFC = 0.55

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2031 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	15.0	(metres)
W cr	=	4	(metres)
q a-b	=	65	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.65	(metres)
Vr c-b	=	50	(metres)
q c-a	=	135	(pcu/hr)
q c-b	=	228	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.0	(metres)
W b-c	=	3.0	(metres)
Vl b-a	=	50	(metres)
Vr b-a	=	50	(metres)
Vr b-c	=	50	(metres)
q b-a	=	247	(pcu/hr)
q b-c	=	103	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7059

THE CAPACITY OF MOVEMENT :

Q b-a	=	513
Q b-c	=	674
Q c-b	=	693
Qb-ac	=	617

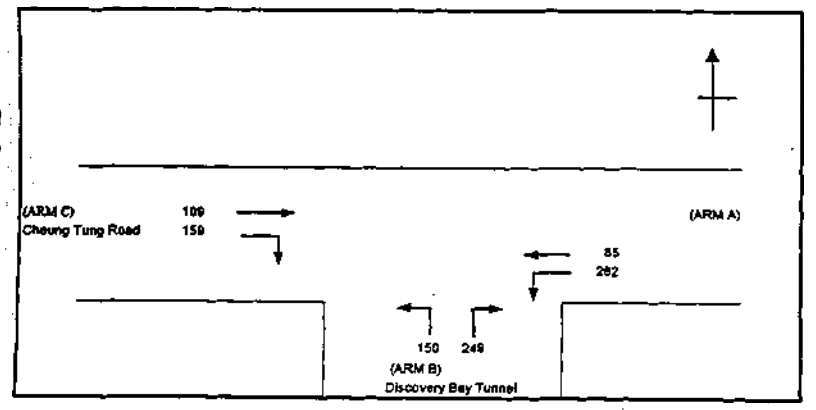
TOTAL FLOW = 878 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.2008
DFC b-c	=	0.3667
DFC c-b	=	0.3292
DFC b-ac	=	0.5675

CRITICAL DFC = 0.57

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2031 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
W b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
W c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.6	(metres)
W cr	=	0	(metres)
q a-b	=	262	(pcu/hr)
q a-c	=	85	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	109	(pcu/hr)
q c-b	=	159	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	249	(pcu/hr)
q b-c	=	150	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3783

THE CAPACITY OF MOVEMENT :

Q b-a	=	483
Q b-c	=	727
Q c-b	=	614
Qb-ac	=	553

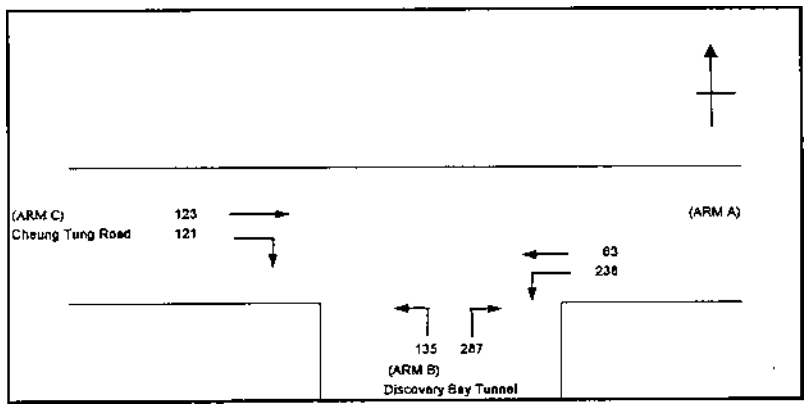
TOTAL FLOW = 1015 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5156
DFC b-c	=	0.2067
DFC c-b	=	0.2594
DFC b-ac	=	0.7223

CRITICAL DFC = 0.72

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2031 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	238	(pcu/hr)
q a-c	=	63	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	123	(pcu/hr)
q c-b	=	121	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	287	(pcu/hr)
q b-c	=	135	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3203

THE CAPACITY OF MOVEMENT :

Q b-a	=	503
Q b-c	=	735
Q c-b	=	625
Qb-ac	=	580

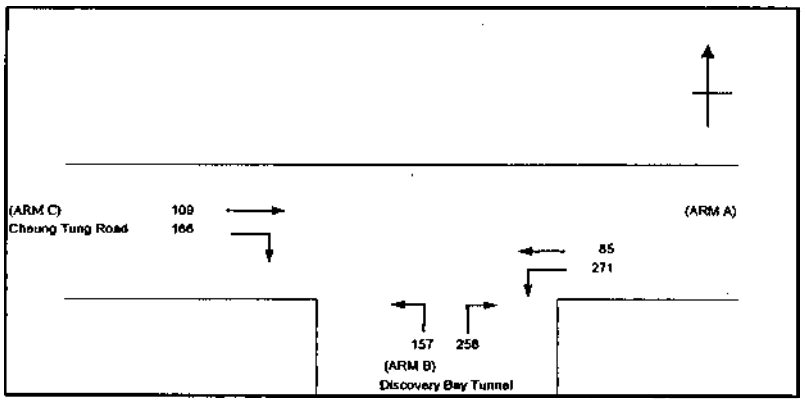
TOTAL FLOW = 868 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5701
DFC b-c	=	0.1840
DFC c-b	=	0.1940
DFC b-ac	=	0.7347

CRITICAL DFC = 0.75

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2031 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.034SW)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	271	(pcu/hr)
q a-c	=	85	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	109	(pcu/hr)
q c-b	=	166	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	258	(pcu/hr)
q b-c	=	157	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3787

THE CAPACITY OF MOVEMENT :

Q b-a	=	480
Q b-c	=	726
Q c-b	=	812
Qb-ac	=	551

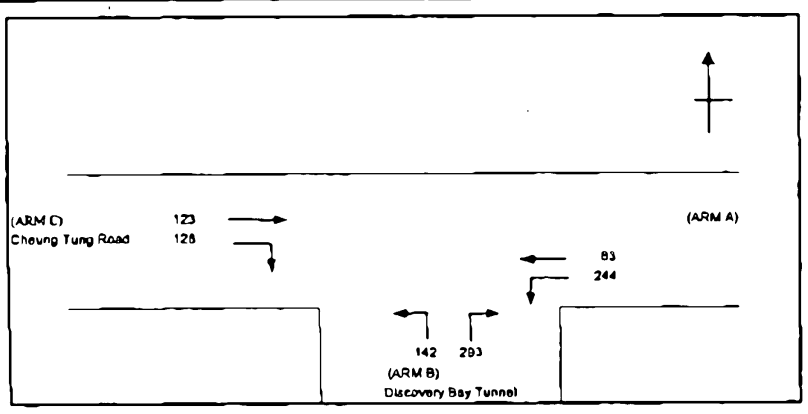
TOTAL FLOW = 1045 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5368
DFC b-c	=	0.2164
DFC c-b	=	0.2714
DFC b-ac	=	0.7532

CRITICAL DFC = 0.75

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J10 - Cheung Tung Road / Discovery Bay Tunnel	Year 2031 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	7.8	(metres)
W cr	=	0	(metres)
q a-b	=	244	(pcu/hr)
q a-c	=	83	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.9	(metres)
Vr c-b	=	30	(metres)
q c-a	=	123	(pcu/hr)
q c-b	=	128	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	5.0	(metres)
W b-c	=	5.0	(metres)
Vl b-a	=	30	(metres)
Vr b-a	=	40	(metres)
Vr b-c	=	40	(metres)
q b-a	=	293	(pcu/hr)
q b-c	=	142	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9406
Y	=	0.7309
P	=	0.3284

THE CAPACITY OF MOVEMENT :

Q b-a	=	500
Q b-c	=	735
Q c-b	=	824
Qb-ac	=	558

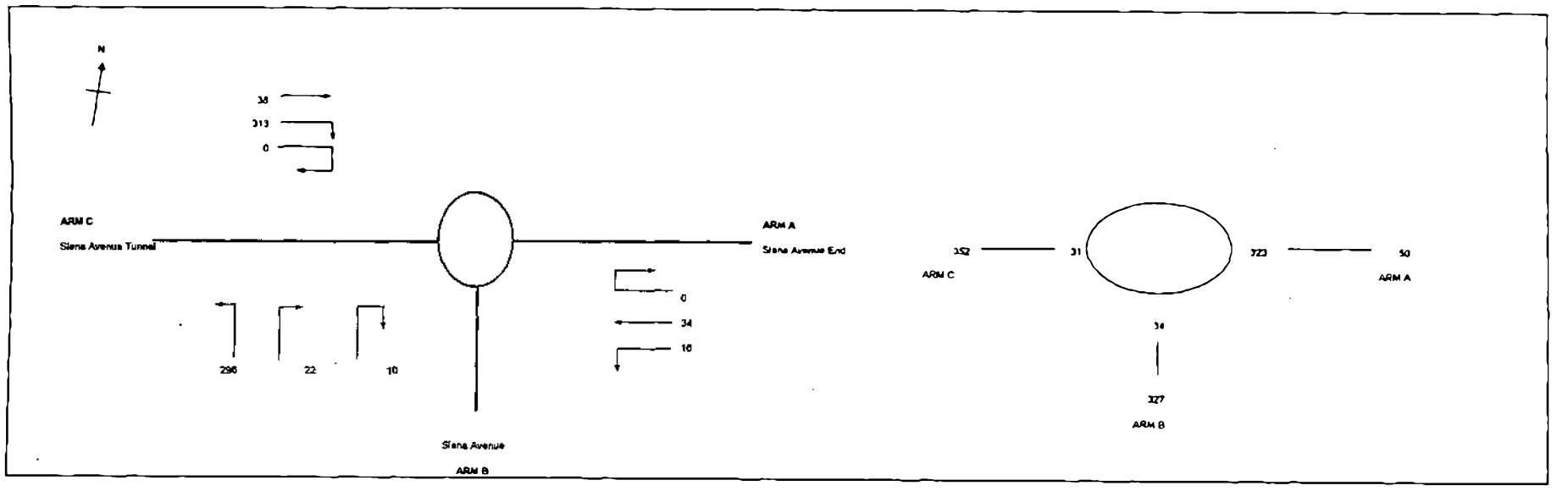
TOTAL FLOW = 883 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5863
DFC b-c	=	0.1933
DFC c-b	=	0.2053
DFC b-ac	=	0.7796

CRITICAL DFC = 0.78

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME

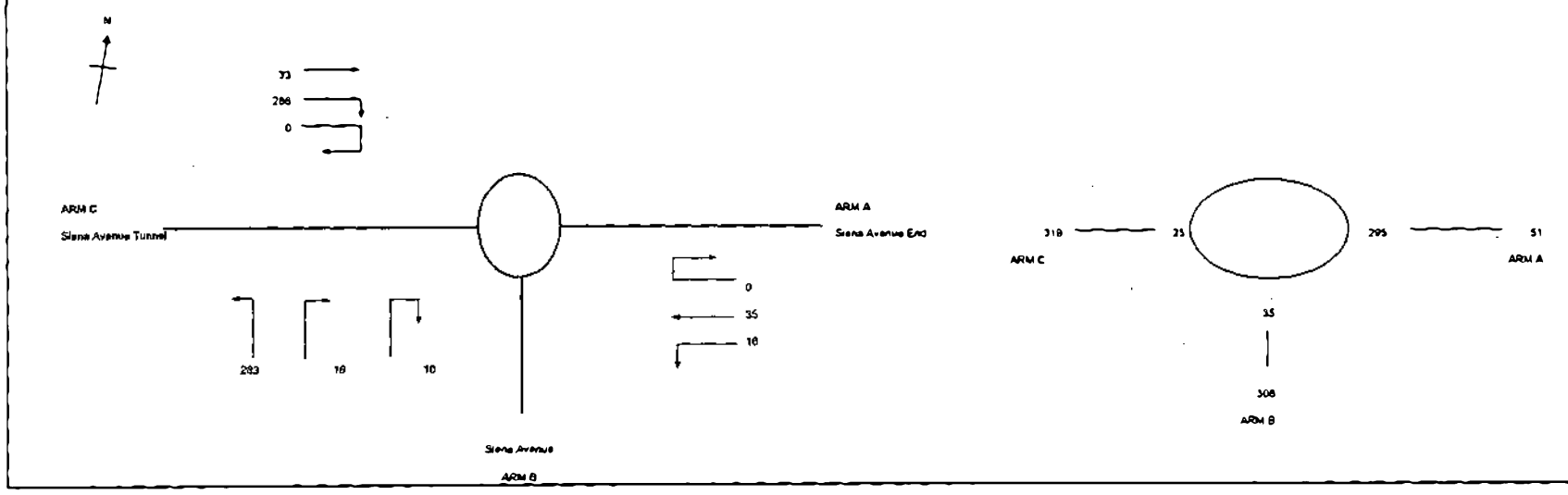


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	50	327	352
Qc	=	Circulating flow across entry (pcu/h)	323	34	31
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.16	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87
M	=	EXP((D-60)/10)	0.05	0.05	0.05
F	=	303-X2	1174	1615	1478
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48
Fe	=	0.21*Td(1+0.2*X2)	0.56	0.84	0.81
Qe	=	K(F-Fc*Qc)	885	1488	1274
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.22	0.28

Total In Sum = 729 PCU

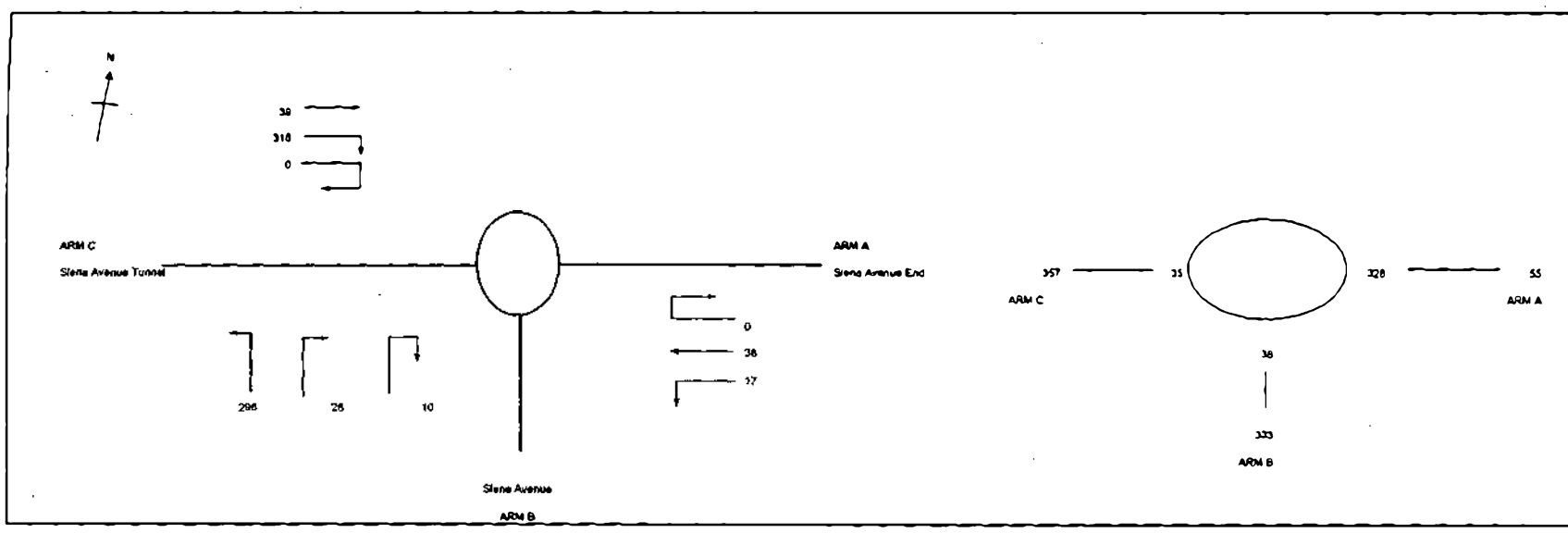
DFC of Critical Approach = 0.28

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



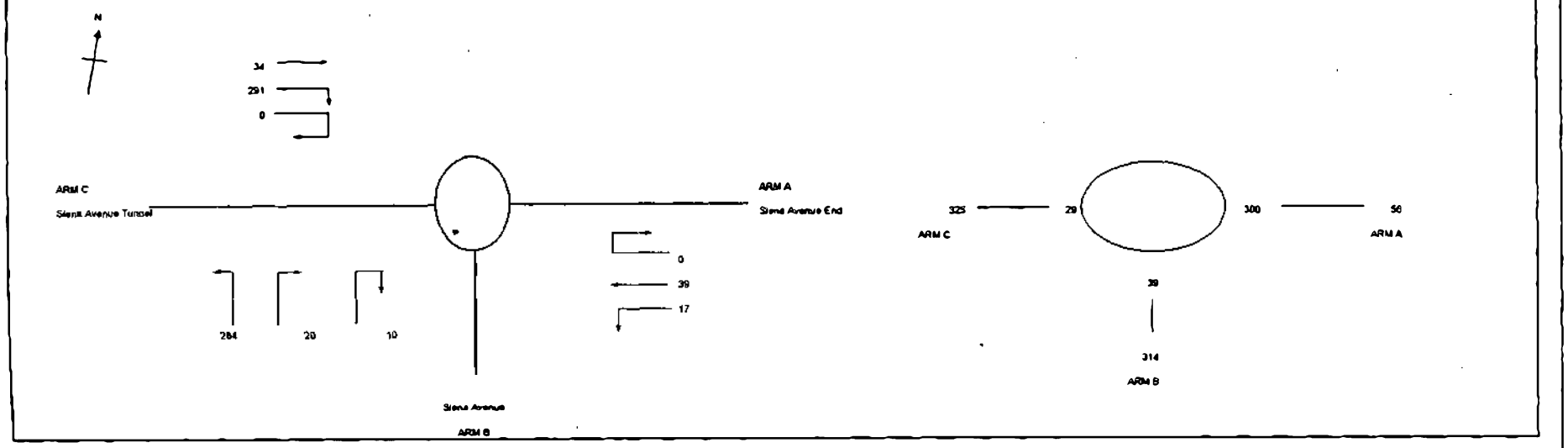
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	43.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	51	308	318			
Qc	=	Circulating flow across entry (pcu/h)	295	35	25			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1478			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.64	0.61			
Qe	=	K(F-fc*Qc)	896	1467	1279	Total In Sum =	679	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.21	0.25	DFC of Critical Approach =	0.25	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



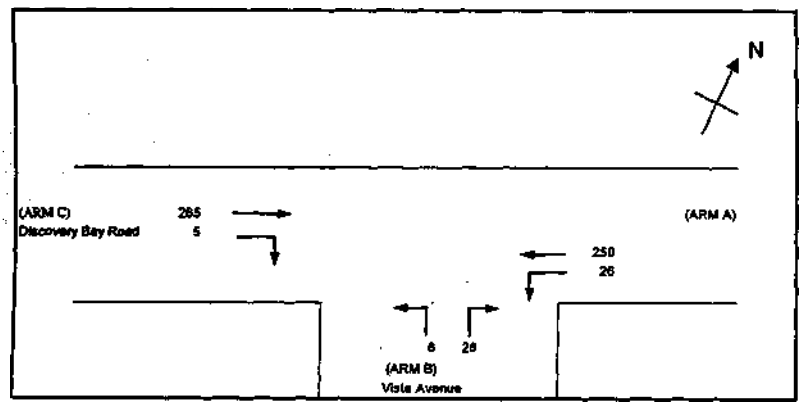
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	55	333	357			
Qc	=	Circulating flow across entry (pcu/h)	328	38	35			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.11			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.89	0.93	0.87			
X2	=	V + ((E-V)/(1+2S))	3.87	5.33	4.87			
M	=	EXP((D-60)/10)	0.05	0.05	0.05			
F	=	303*X2	1174	1615	1478			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48			
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.64	0.61			
Qe	=	K(F-fc*Qc)	882	1485	1272	Total In Sum =	745	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.22	0.28	DFC of Critical Approach =	0.28	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



ARM			A	B	C		
INPUT PARAMETERS:							
V	=	Approach half width (m)	3.65	4.80	4.30		
E	=	Entry width (m)	4.00	5.50	5.00		
L	=	Effective length of flare (m)	2.00	7.00	10.00		
R	=	Entry radius (m)	9.00	10.00	8.00		
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00		
A	=	Entry angle (degree)	45.00	35.00	45.00		
Q	=	Entry flow (pcu/h)	56	314	325		
Qc	=	Circulating flow across entry (pcu/h)	300	39	29		
OUTPUT PARAMETERS:							
Y	=	Y=1-mean of flare = 1-[E-V]/L	0.26	0.19	0.11		
K	=	1-0.00347(A-30)-0.978[1/R-0.05]	0.89	0.93	0.87		
Xc	=	V + [E-V]/[1+2S]	3.87	5.33	4.87		
Dc	=	Exp[(D-60)/10]	0.05	0.05	0.05		
F	=	303*Xc	1174	1615	1478		
Tb	=	T=[0.5/(1+Dc)]	1.48	1.48	1.48		
Fb	=	0.21*Tb*(1+0.2*Xc)	0.55	0.64	0.61		
Qe	=	K(F-Fc*Qc)	660	1485	1275	Total In Sum =	694 PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.21	0.25	DFC of Critical Approach =	0.25

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2031 Reference Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	26	(pcu/hr)
q a-c	=	250	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	265	(pcu/hr)
q c-b	=	5	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.9	(metres)
W b-c	=	3.9	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	28	(pcu/hr)
q b-c	=	8	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.6491
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1652

THE CAPACITY OF MOVEMENT :

Q b-a	=	502
Q b-c	=	671
Q c-b	=	758
Qb-ac	=	527

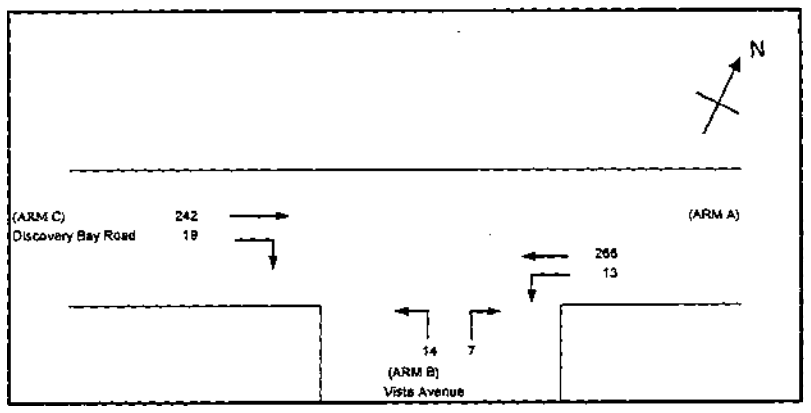
TOTAL FLOW = 578 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0326
DFC b-c	=	0.0089
DFC c-b	=	0.0063
DFC b-ac	=	0.0616

CRITICAL DFC = 0.06

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2031 Reference Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
W b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	266	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	80	(metres)
q c-a	=	242	(pcu/hr)
q c-b	=	19	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.9	(metres)
W b-c	=	3.9	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	7	(pcu/hr)
q b-c	=	14	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8481
E	=	0.9774
F	=	1.1105
Y	=	0.8205
P	=	0.8731

THE CAPACITY OF MOVEMENT :

Q b-a	=	495
Q b-c	=	668
Q c-b	=	757
Qb-ac	=	601

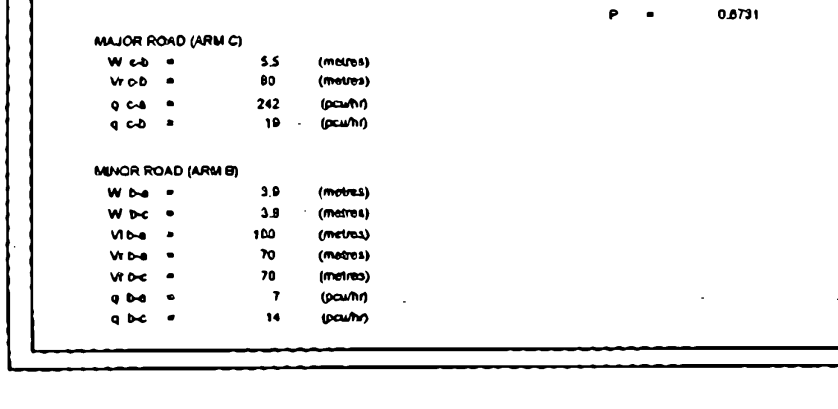
TOTAL FLOW = 582 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0141
DFC b-c	=	0.0216
DFC c-b	=	0.0234
DFC b-ac	=	0.0156

CRITICAL DFC = 0.04

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2031 Design Traffic Flows (AM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	28	(pcu/hr)
q a-c	=	280	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
W c-b	=	80	(metres)
q c-a	=	295	(pcu/hr)
q c-b	=	5	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.9	(metres)
W b-c	=	3.9	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	28	(pcu/hr)
q b-c	=	6	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8481
E	=	0.9774
F	=	1.1105
Y	=	0.8205
P	=	0.1652

THE CAPACITY OF MOVEMENT :

Q b-a	=	491
Q b-c	=	884
Q c-b	=	751
Qb-ac	=	516

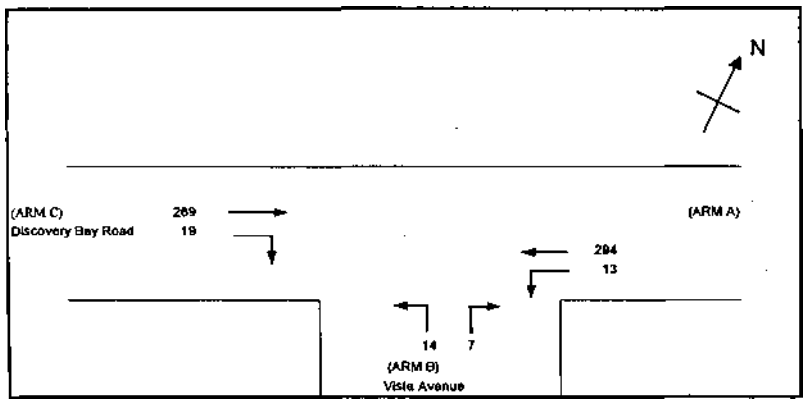
TOTAL FLOW = 838 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0538
DFC b-c	=	0.0090
DFC c-b	=	0.0064
DFC b-ac	=	0.0629

CRITICAL DFC = 0.06

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2031 Design Traffic Flows (PM Peak)	DATE : Nov 2015	JUNCTION NO.



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)
P	=	PROPORTION OF MINOR ROAD TRAFFIC TURNING LEFT

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	11.0	(metres)
W cr	=	0	(metres)
q a-b	=	13	(pcu/hr)
q a-c	=	294	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
W c-b	=	60	(metres)
q c-a	=	268	(pcu/hr)
q c-b	=	19	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.9	(metres)
W b-c	=	3.9	(metres)
Vl b-a	=	100	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	7	(pcu/hr)
q b-c	=	14	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9491
E	=	0.8774
F	=	1.1105
Y	=	0.8205
P	=	0.8731

THE CAPACITY OF MOVEMENT :

Q b-a	=	488
Q b-c	=	662
Q c-b	=	750
Qb-ac	=	503

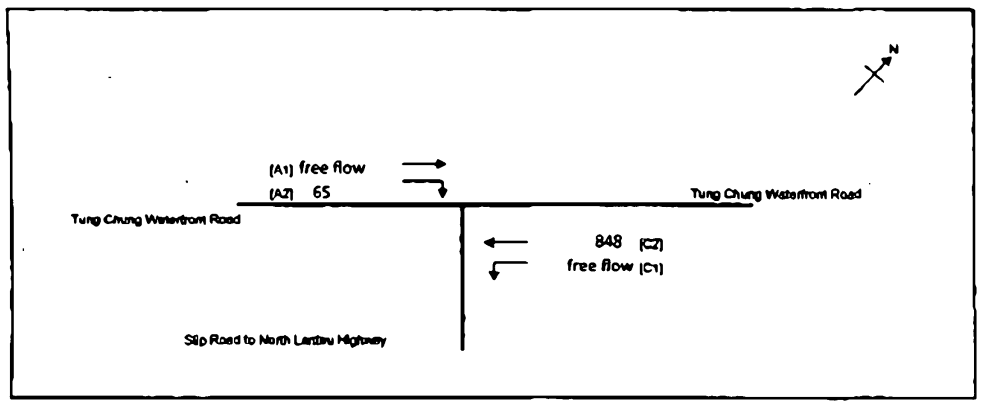
TOTAL FLOW = 617 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

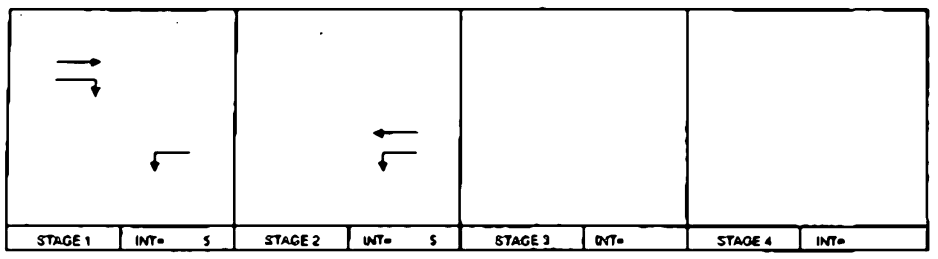
DFC b-a	=	0.0143
DFC b-c	=	0.0218
DFC c-b	=	0.0256
DFC b-ac	=	0.0361

CRITICAL DFC = 0.04

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2	
No. of stage using for calculation	N =	2	
Cycle time	C =	80	sec
Sum(y)	Y =	0.735	
Lost time	L =	8	sec
Total Flow	=	813	pcu
Co = (1.5*L+5)/(1-Y)	=	22.2	sec
Cm = L/(1-Y)	=	10.5	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	258.8	%
Cp = 0.9*L/(0.9-Y)	=	10.8	sec
Ymax = 1-L/C	=	0.867	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	231.4	%

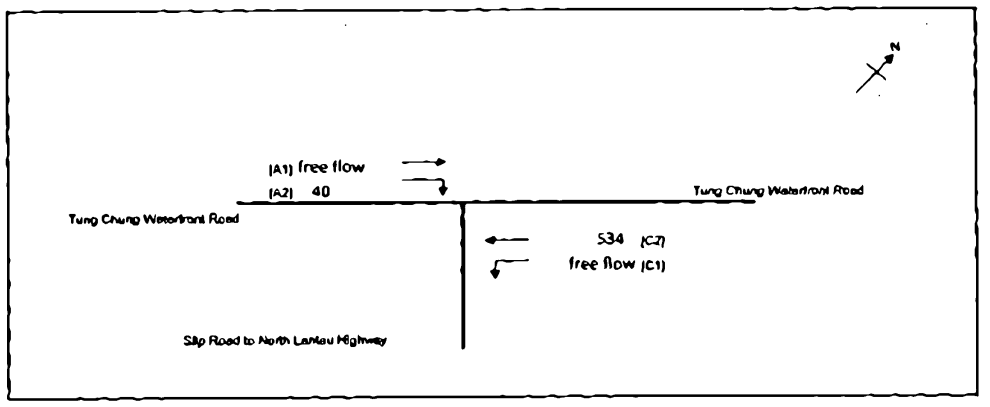


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

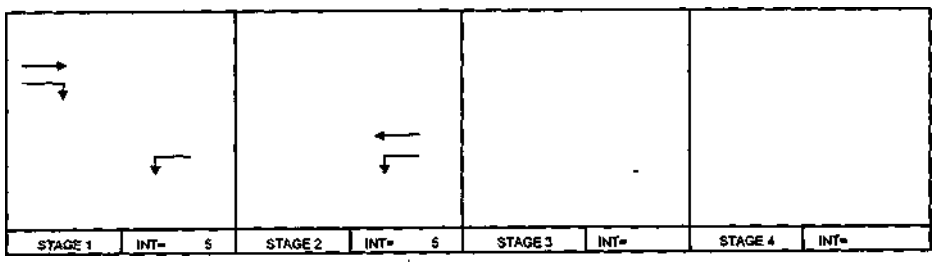
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A2	1	3.50	A	1	15			2105			65	65	1.00	1914			1914	0.034	0.034		8	8	0.272	6
C2	2	3.50	B	2				4210		848		848	0.00	4210			4210	0.201	0.201		44	44	0.272	11

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.148
Lose time	L =	8 sec
Total Flow	=	574 pcu
Co = (1.5*L+5)/(1-Y)	=	19.9 sec
Cm = L/(1-Y)	=	9.4 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	468.8 %
Cp = 0.9*L/(0.9-Y)	=	9.8 sec
Ymax = 1-L/C	=	0.867
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	427.9 %

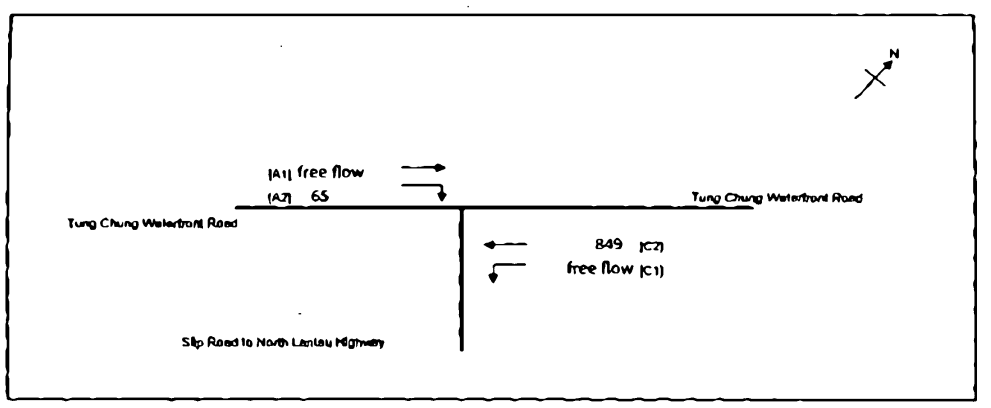


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

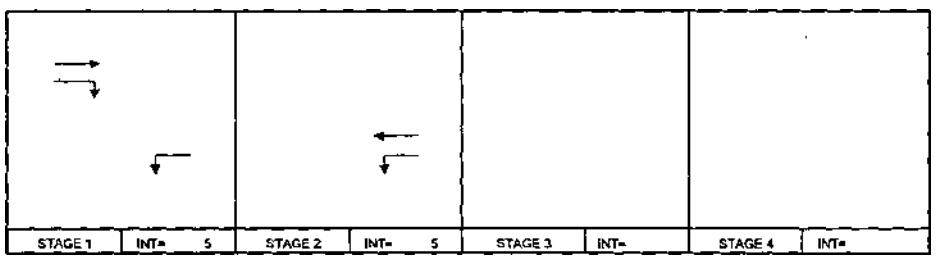
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A2	1	3.50	A	1	15			2105			40	40	1.00	1914			1914	0.021	0.021		7	7	0.170	4
C2	2	3.50	B	2				4210		534		534	0.00	4210			4210	0.127	0.127		45	45	0.170	7

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2031 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.236
Lose time	L =	8 sec
Total Flow	=	814 pcu
Co = (1.5*L+5)/(1-Y)	=	22.2 sec
Cm = L/(1-Y)	=	10.5 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	256.5 %
Cp = 0.9*L/(0.9-Y)	=	10.8 sec
Ymax = 1-L/C	=	0.867
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	231.0 %

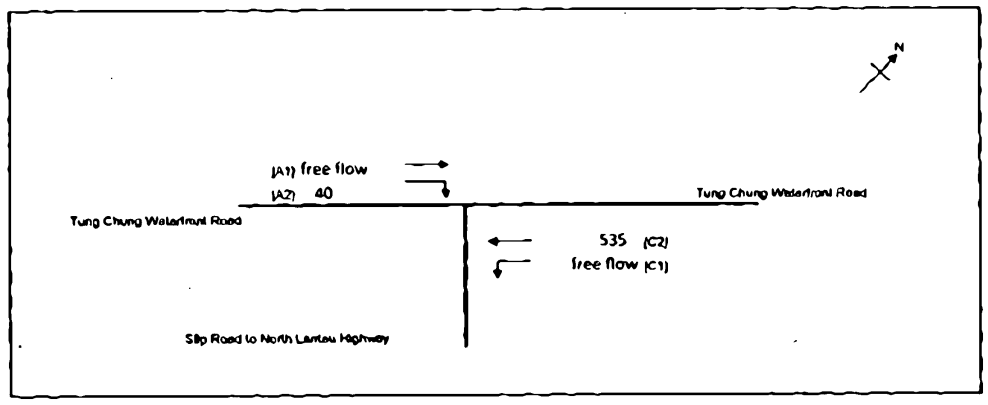


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

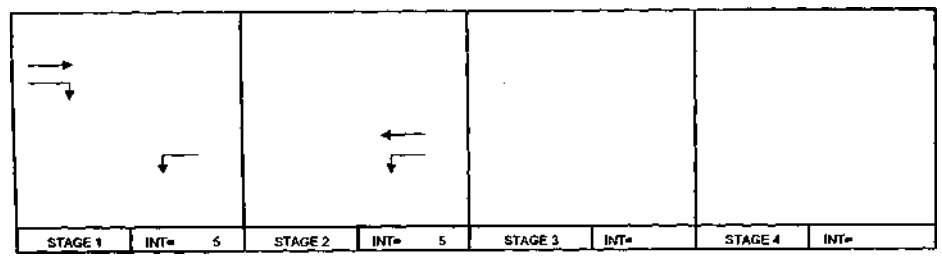
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A2	1	3.50	A	1	15			2105			65	65	1.00	1914			1914	0.034	0.034		7	7	0.272	6
C2	2	3.50	B	2				4210		849		849	0.00	4210			4210	0.202	0.202		45	45	0.272	11

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2031 Design Traffic Flows (PM Peak)	DATE: 30-Nov-15	FILENAME:



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.148
Loss time	L =	8 sec
Total Flow	=	573 pcu
Co = (1.5*L+5)/(1-Y)	=	20.0 sec
Cm = L/(1-Y)	=	9.4 sec
Yult	=	0.840
R.C.ult = (Yult-Y)/Y*100%	=	467.6 %
Cp = 0.9*L/(0.9-Y)	=	9.8 sec
Ymax = 1-L/C	=	0.867
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	427.1 %

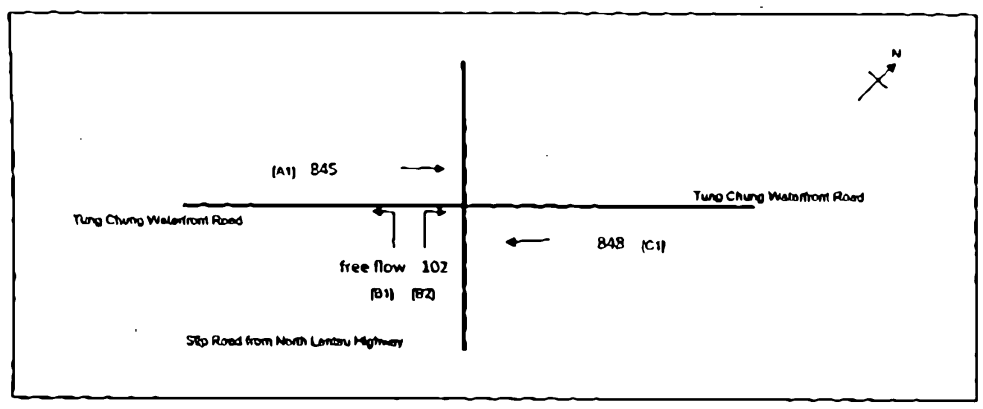


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

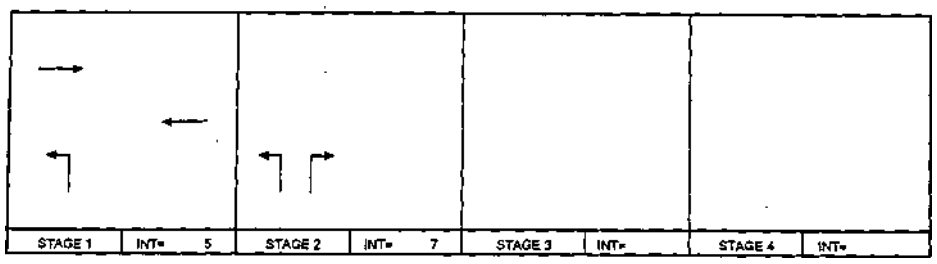
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				8				
A2	1	3.50	A	1	15			2105			40	40	1.00	1914			1914	0.021	0.021		7	7	0.171	4
C2	2	3.50	B	2				4210		535		535	0.00	4210			4210	0.127	0.127		45	45	0.171	7

NOTE: O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Reference Traffic Flows (AM Peak)	DATE: 3-Nov-15	FILENAME:



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.254
Loss time	L =	10 sec
Total Flow	=	1795 pcu
Co = (1.5*L+5)/(1-Y)	=	25.8 sec
Cm = L/(1-Y)	=	13.4 sec
Yult	=	0.825
R.C.ult = (Yult-Y)/Y*100%	=	224.8 %
Cp = 0.9*L/(0.9-Y)	=	13.9 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	195.3 %

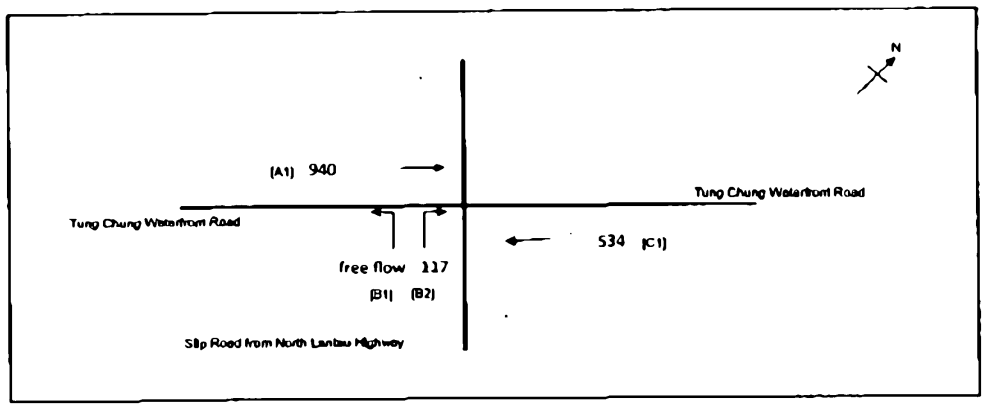


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

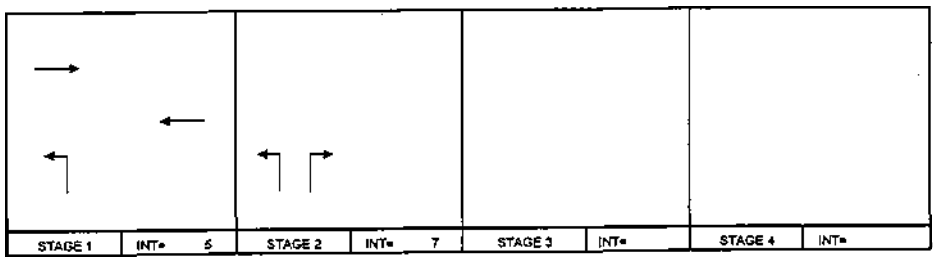
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		845		845	0.00	4210			4210	0.201	0.201		40	40	0.305	14
B2	2	3.50	B	1	15			2105			102	102	1.00	1914			1914	0.053	0.053		10	10	0.305	6
C1	1	3.50	A	2				4210		848		848	0.00	4210			4210	0.201			40	40	0.306	14

NOTE: O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.264
Lose time	L =	10 sec
Total Flow	=	1591 pcu
Co = (1.5*L+5)/(1-Y)	=	27.8 sec
Cm = L/(1-Y)	=	14.0 sec
Yult	=	0.525
R.C.ult = (Yult-Y)/Y*100%	=	190.1 %
Cp = 0.9*L/(0.9-Y)	=	14.6 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	183.7 %

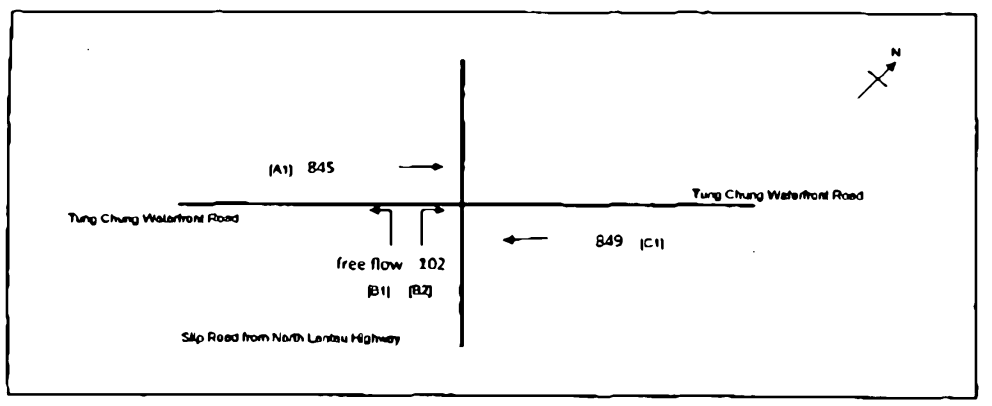


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

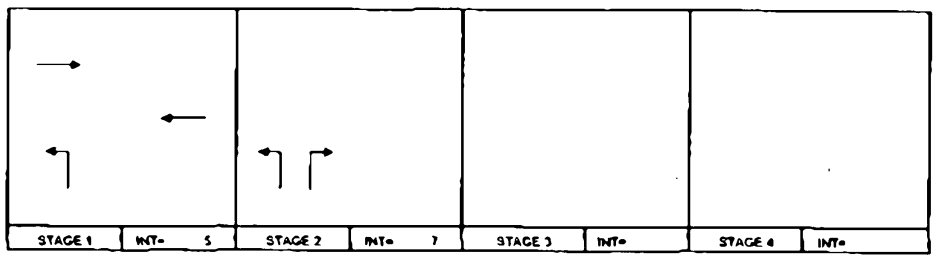
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	*2				4210		940		940	0.00	4210			4210	0.223	0.223		38	38	0.341	16
B2	2	3.50	B	1	15			2105			117	117	1.00	1914			1914	0.061	0.061		11	11	0.341	10
C1	1	3.50	A	2				4210		534		534	0.00	4210			4210	0.127			22	38	0.194	9

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 8m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J138 - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Design Traffic Flows (AM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	60 sec
Sum(y)	Y =	0.256
Lose time	L =	10 sec
Total Flow	=	1786 pcu
Co = (1.5*L+5)/(1-Y)	=	26.8 sec
Cm = L/(1-Y)	=	13.4 sec
Yult	=	0.525
R.C.ult = (Yult-Y)/Y*100%	=	223.6 %
Cp = 0.9*L/(0.9-Y)	=	14.0 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	184.2 %

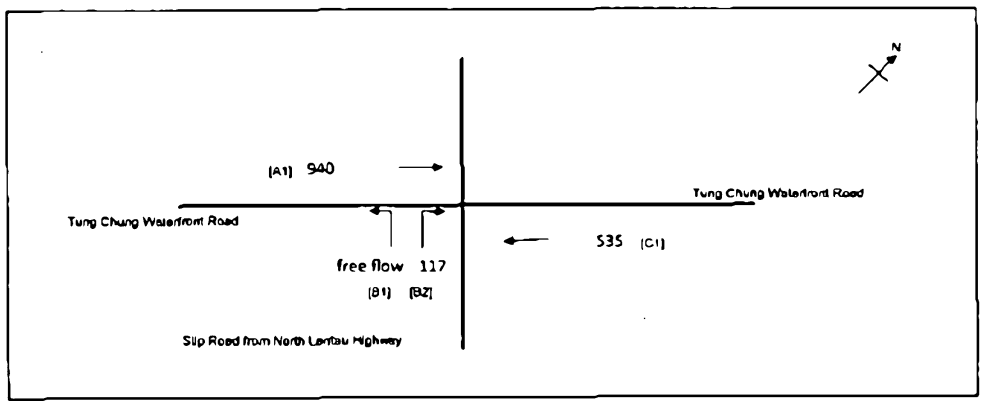


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

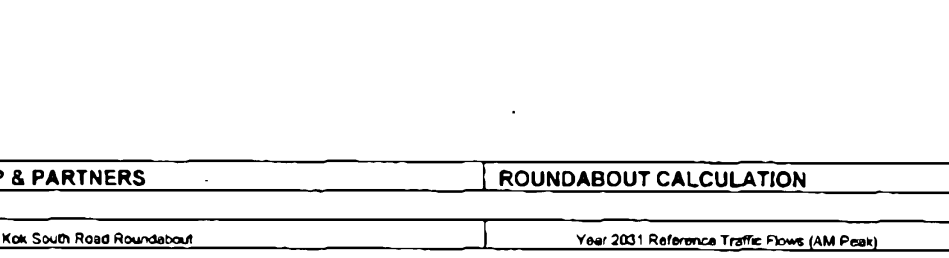
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m: Left pcu/h	m: Straight pcu/h	m: Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				10				
A1	1	3.50	A	2				4210		845		845	0.00	4210			4210	0.201			38	38	0.308	15
B2	2	3.50	B	1	15	>>		2105			102	102	1.00	1914			1914	0.053	0.053		10	10	0.308	8
C1	1	3.50	A	2				4210		849		849	0.00	4210			4210	0.202	0.202		40	38	0.307	15

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	Z36078
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Design Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	2
No. of stage using for calculation	N =	2
Cycle time	C =	80 sec
Sum(y)	Y =	0.284
Loss time	L =	10 sec
Total Flow	=	1592 pcu
Co = (1.5*L+5)/(1-Y)	=	27.9 sec
Cm = L/(1-Y)	=	14.0 sec
Yult	=	0.625
R.C.ult = (Yult-Y)/Y*100%	=	180.1 %
Cp = 0.9*L/(0.9-Y)	=	14.8 sec
Ymax = 1-L/C	=	0.833
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	163.7 %

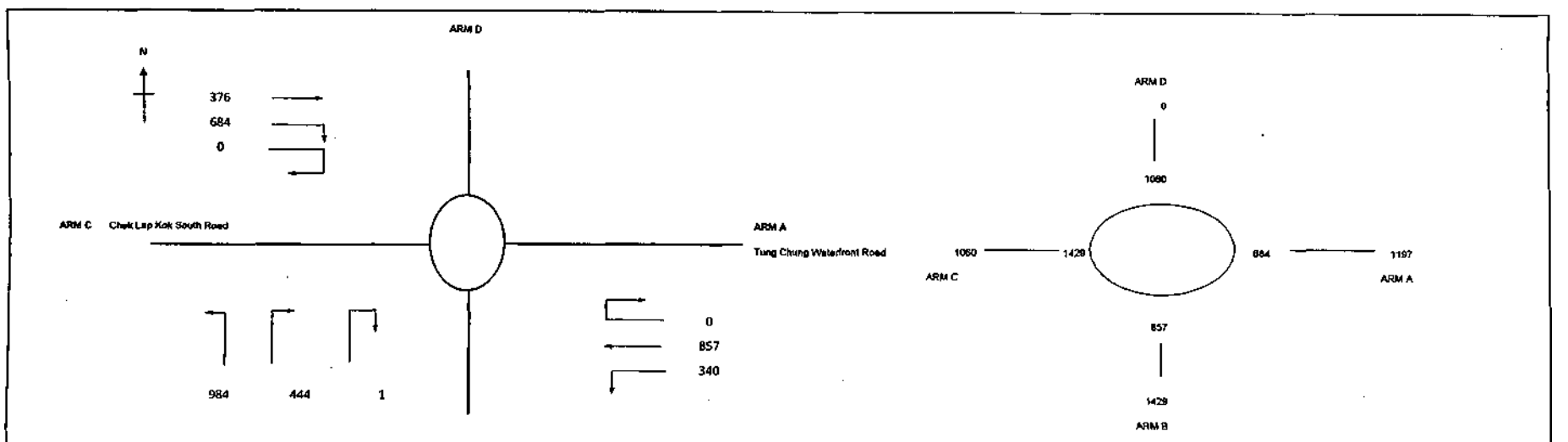


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				10				
(A1)	1	3.50	A	2				4210		940		940	0.00	4210			4210	0.223	0.223		39	39	0.341	16
(C1)	1	3.50	A	2				(2105		117	117	117	1.00	1914			1914	0.061	0.061		11	11	0.341	10
(B2)	2	3.50	A	2				4210		535		535	0.00	4210			4210	0.127			22	39	0.184	8

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2031 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME

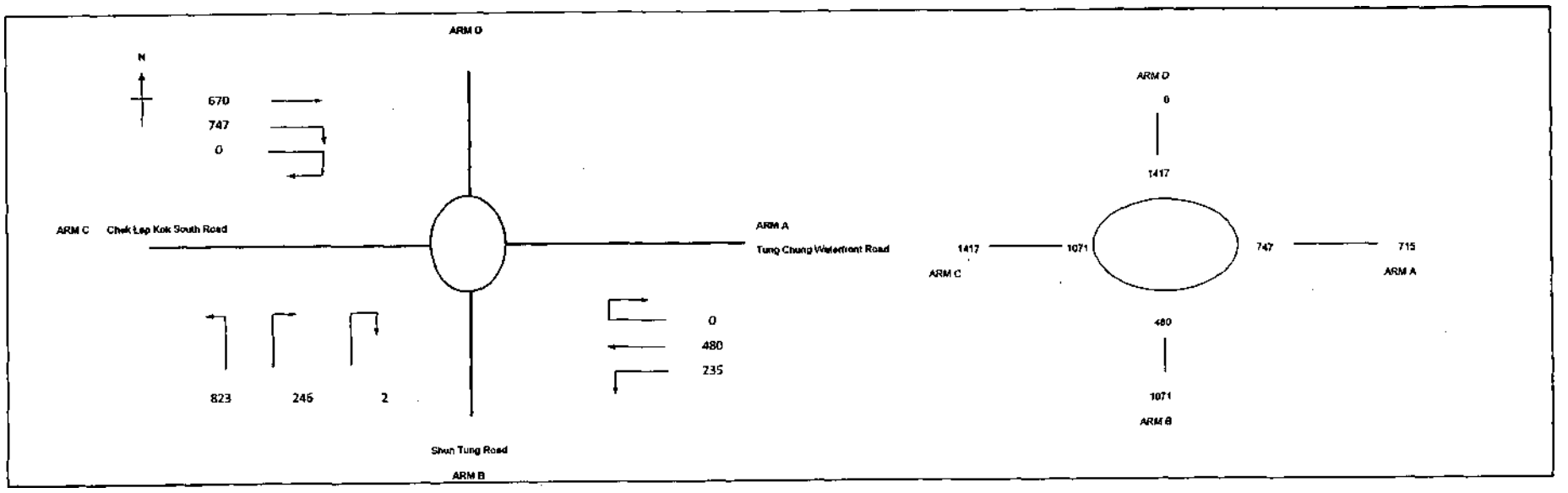


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
O	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	1197	1429	1080
Qc	=	Circulating flow across entry (pcu/h)	684	857	1429
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.96	0.96
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	0.99
X2	=	V + ((E-V)/(1+2S))	8.12	8.00	8.00
M	=	EXP((O-60)/10)	1.00	1.00	1.00
F	=	303*X2	2461	2432	2432
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68
Qe	=	K(F-Fc*Qc)	2032	1775	1436
DFC	=	Design flow/Capacity = Q/Qe	0.59	0.81	0.74

Total In Sum = 3686 PCU

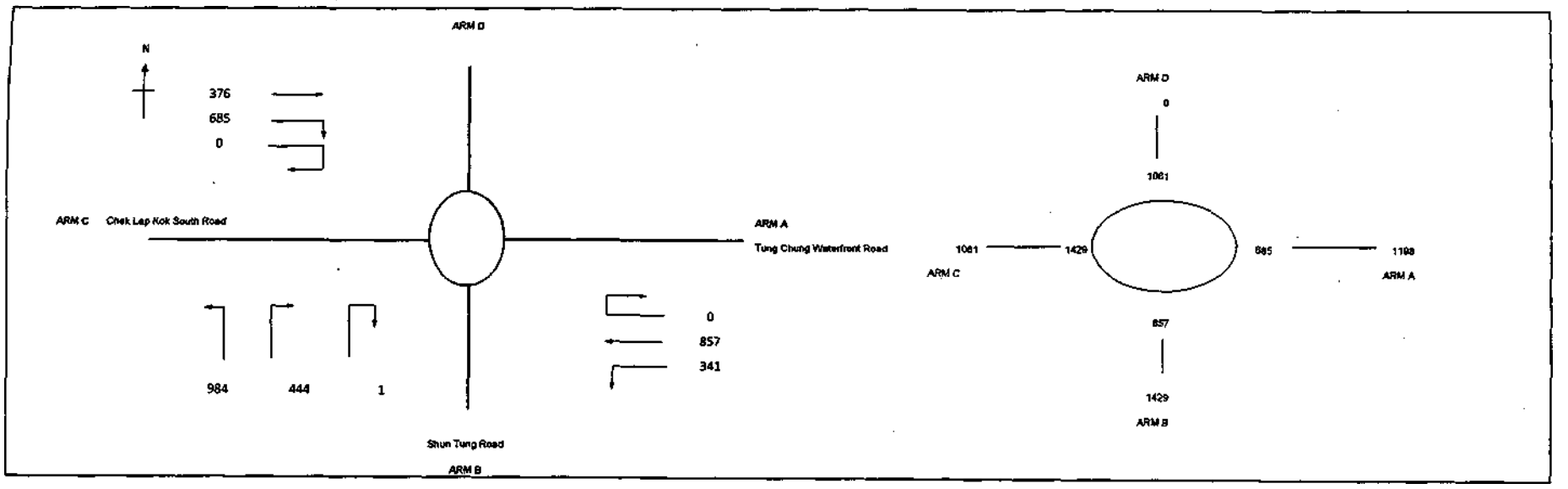
DFC of Critical Approach = 0.81

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2031 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



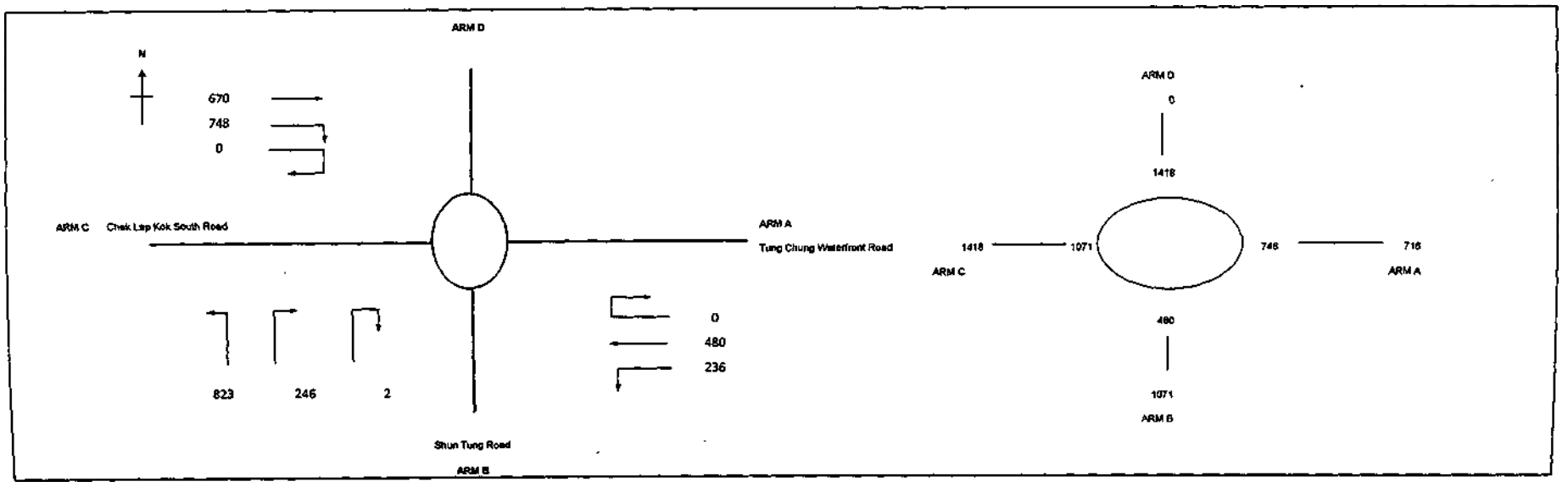
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	715	1071	1417			
Qc	=	Circulating flow across entry (pcu/h)	747	480	1071			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.96	0.96			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.92	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2481	2432	2432			
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	1988	2023	1660	Total In Sum =	3203	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.36	0.53	0.84	DFC of Critical Approach =	0.84	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2031 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



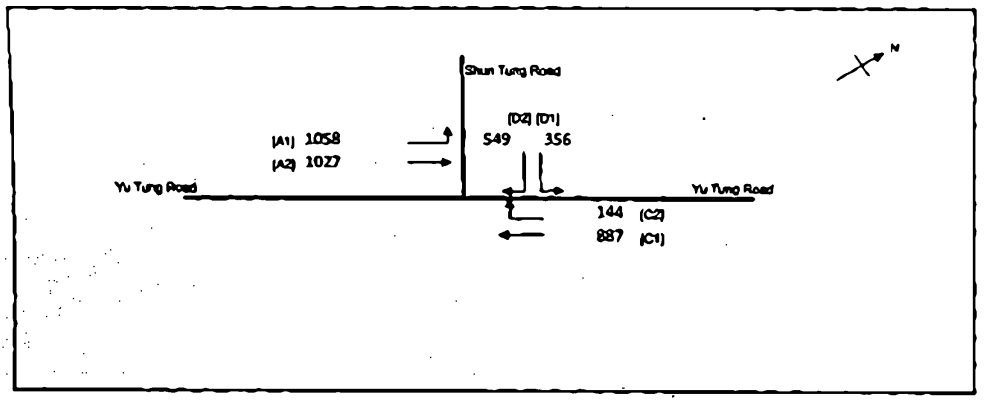
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	1198	1429	1081			
Qc	=	Circulating flow across entry (pcu/h)	885	857	1429			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	1.28	0.96	0.96			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.98	0.99			
X2	=	V + ((E-V)/(1+2S))	8.12	8.03	8.03			
M	=	EXP((D-60)/10)	1.00	1.00	1.00			
F	=	303*X2	2461	2432	2432			
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	2031	1775	1438	Total In Sum =	3688	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.59	0.81	0.74	DFC of Critical Approach =	0.81	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J14 - Chek Lap Kok South Road Roundabout	Year 2031 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

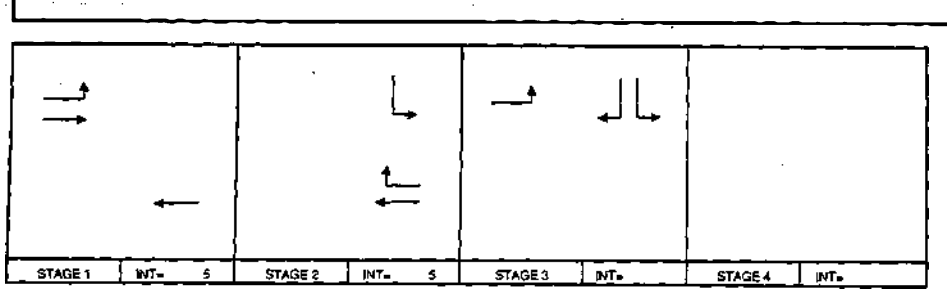


ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	80.00	80.00	80.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	716	1071	1418			
Qc	=	Circulating flow across entry (pcu/h)	748	480	1071			
INTERIM PARAMETERS:								
e	=	Flare length / Entry width	1.29	0.90	0.90			
f	=	V / E (m/m)	1.02	0.90	0.90			
Qe	=	Flow across entry (pcu/h)	0.12	0.63	0.83			
Y	=	1 - 0.1(f-1.0)	1.00	1.00	1.00			
X2	=	V + (E-V)e/2	2491	2432	2432			
Dq	=	Q/Qe (pcu/h)	1.25	1.25	1.25			
Z	=	0.21t(Dq-1)	0.69	0.69	0.69			
Qe'	=	Qe*Y*Z (pcu/h)	1067	2023	1680	Total In Sum =	3205	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.36	0.53	0.84	DFC of Critical Approach =	0.84	

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J19 - Yu Tung Road / Shun Tung Road	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 2-Dec-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	70	sec
Sum(y)	Y =	0.684	
Lost time	L =	8	sec
Total Flow	=	4021	pcu
Co = (1.5*L+5)/(1-Y)	=	50.6	sec
Cm = L/(1-Y)	=	23.8	sec
Yult	=	0.840	
R.C.ult = (Yult-Y)/Y*100%	=	28.5	%
Cp = 0.9*L/(0.9-Y)	=	34.5	sec
Ymax = 1-L/C	=	0.886	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	20.0	%

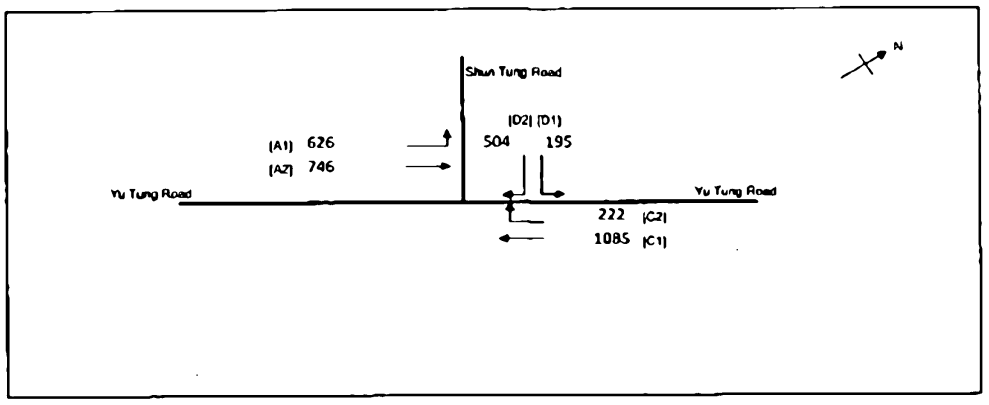


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

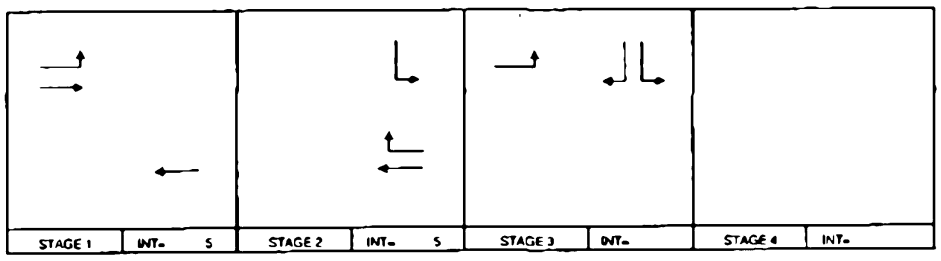
Movement	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greatest y	L sec	g (required) sec	g (Input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	1058			1058	1.00	1788			1788	0.592	0.592		55	55	0.750	28
A2	1	3.50	A	2				4210		1027		1027	0.00	4210			4210	0.244			23	23	0.750	40
C1	1,2	3.50	F	2			N	3979		887		887	0.00	4070			4070	0.218			20	34	0.441	25
C2	2	3.50	E	1	30			2105			144	144	1.00	2005			2005	0.072	0.072		7	7	0.750	15
D1	2,3	3.50	D	1	15			1965	356			356	1.00	1788			1788	0.199			19	40	0.347	18
D2	3	3.50	C	2	30			4210			549	549	1.00	4010			4010	0.137			13	29	0.536	19

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	70	sec
Sum(y)	Y =	0.461	
Loss time	L =	8	sec
Total Flow	=	3378	pcu
Co = (1.5*L+5)/(1-Y)	=	31.5	sec
Cm = L/(1-Y)	=	14.8	sec
Yult	=	0.840	
R.C ult = (Yult-Y)/Y*100%	=	82.1	%
Cp = 0.9*L/(0.9-Y)	=	16.4	sec
Ymax = 1-L/C	=	0.886	
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	72.8	%

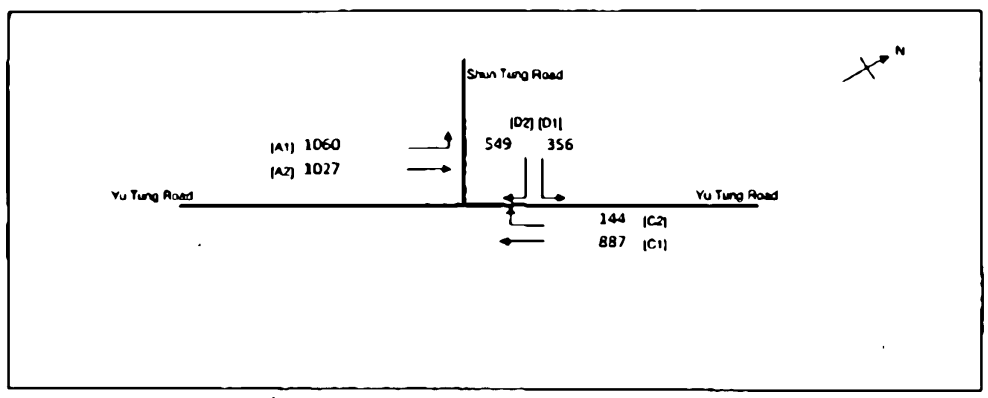


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

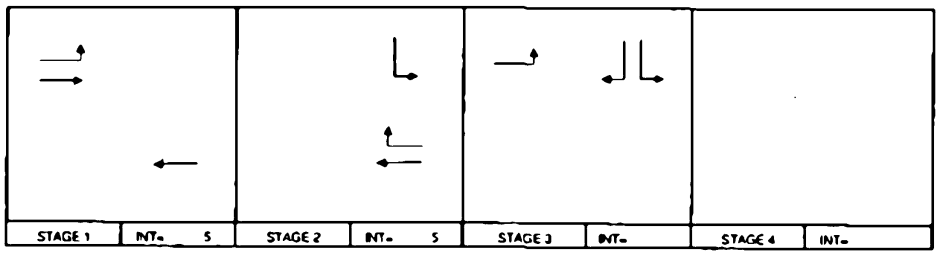
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (Input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1865	628			828	1.00	1788			1788	0.350	0.350		47	47	0.521	24
A2	1	3.50	A	2				4210		746		746	0.00	4210			4210	0.177			24	24	0.521	29
C1	1,2	3.00	F	2			N	4070		1085		1085	0.00	4070			4070	0.267			36	44	0.427	24
C2	2	3.50	E	1	30			2105			222	222	1.00	2005			2005	0.111	0.111		16	15	0.521	20
D1	2,3	3.50	D	1	15		N	1865	185			185	1.00	1788			1788	0.109			15	38	0.185	10
D2	3	3.50	C	2	30			4210			504	504	1.00	4010			4010	0.126			17	19	0.456	21

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2031 Design Traffic Flows (AM Peak)	DATE : 2-Dec-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	70	sec
Sum(y)	Y =	0.685	
Loss time	L =	8	sec
Total Flow	=	4023	pcu
Co = (1.5*L+5)/(1-Y)	=	50.8	sec
Cm = L/(1-Y)	=	23.9	sec
Yult	=	0.840	
R.C ult = (Yult-Y)/Y*100%	=	26.3	%
Cp = 0.9*L/(0.9-Y)	=	30.7	sec
Ymax = 1-L/C	=	0.886	
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	19.8	%

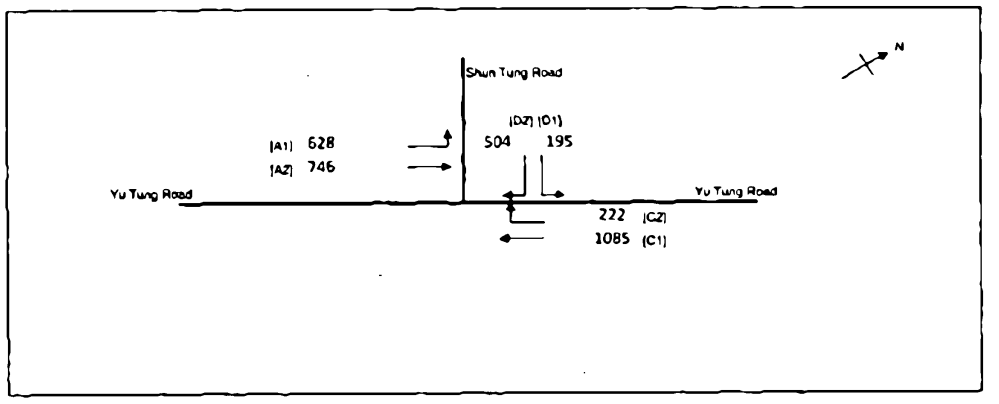


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

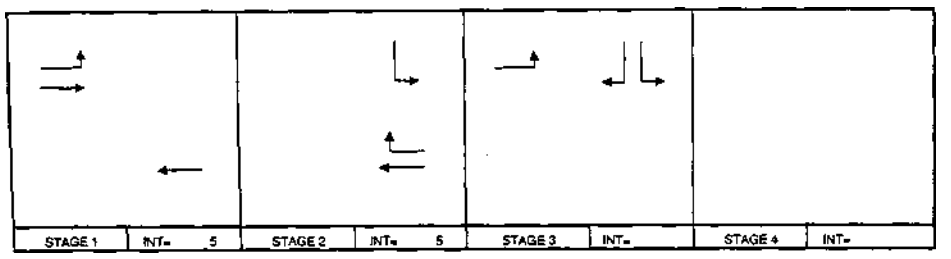
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (Input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1865	1060			1060	1.00	1788			1788	0.593	0.593		56	56	0.751	26
A2	1	3.50	A	2				4210		1027		1027	0.00	4210			4210	0.244			23	23	0.751	40
C1	1,2	3.50	F	2			N	4070		887		887	0.00	4070			4070	0.218			20	34	0.443	28
C2	2	3.50	E	1	30			2105			144	144	1.00	2005			2005	0.072	0.072		7	7	0.751	15
D1	2,3	3.50	D	1	15		N	1865	356			356	1.00	1788			1788	0.199			19	40	0.946	16
D2	3	3.50	C	2	30			4210			549	549	1.00	4010			4010	0.137			13	29	0.333	19

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO:	236078
J15 - Yu Tung Road / Shun Tung Road	Year 2031 Design Traffic Flows (PM Peak)	DATE : 2-Dec-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	70 sec
Sum(y)		Y =	0.462
Loss time		L =	8 sec
Total Flow		=	3380 pcu
Co	= (1.5*L+5)/(1-Y)	=	31.6 sec
Cm	= L/(1-Y)	=	14.9 sec
Yult		=	0.840
R.C.ult	= (Yult-Y)/Y*100%	=	81.7 %
Cp	= 0.9*L/(0.9-Y)	=	16.4 sec
Ymax	= 1-L/C	=	0.886
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	72.4 %

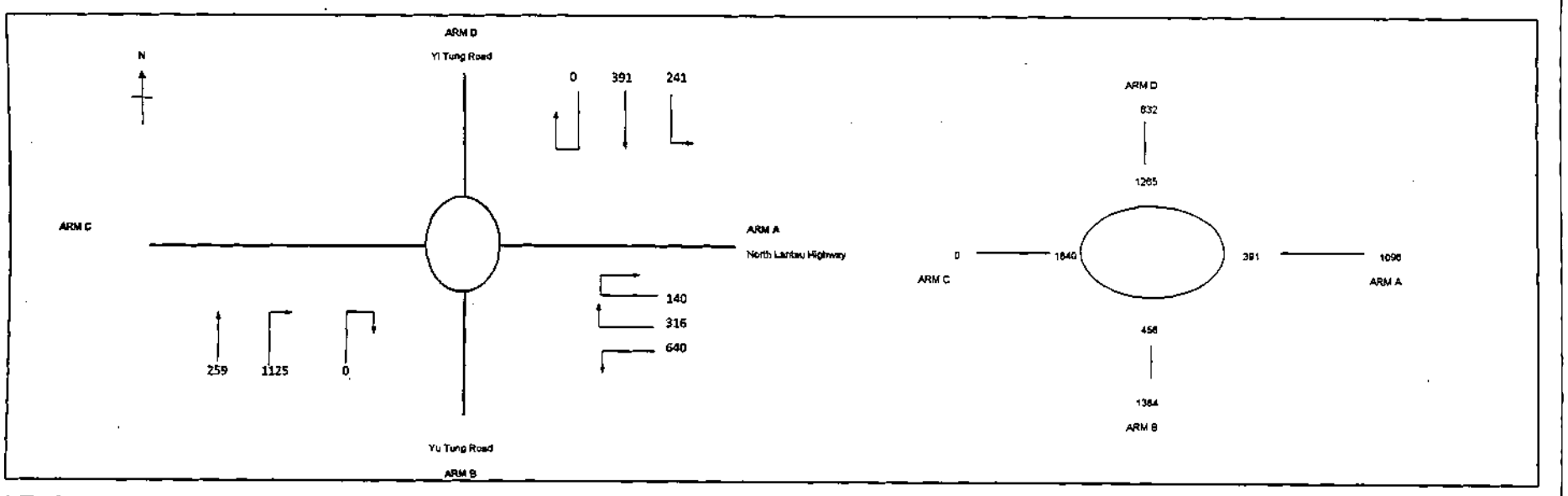


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1865	828			828	1.00	1788			1788	0.352	0.352		47	47	0.522	24
A2	1	3.50	A	2				4210		746		746	0.00	4210			4210	0.177			24	24	0.522	29
D1	1	3.50	D	2	30			4070		1085		1085	0.00	4070			4070	0.267			38	44	0.428	24
C2	2	3.50	C	1	30			2005		222	222	222	1.00	2005			2005	0.111	0.111		16	15	0.522	20
C1	2	3.50	C	2	30			3795	195		504	699	1.00	1788			1788	0.109			15	38	0.165	10
D2	2	3.50	D	2	30			4210			504	504	1.00	4010			4010	0.126			17	19	0.454	21

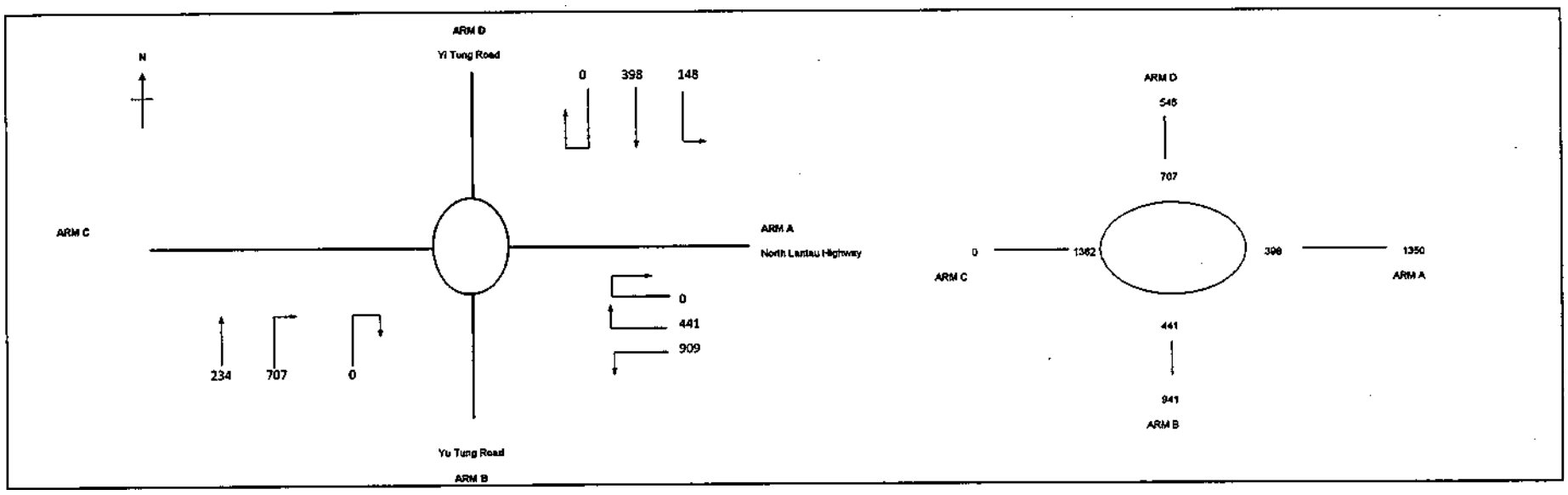
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern interchange	Year 2031 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



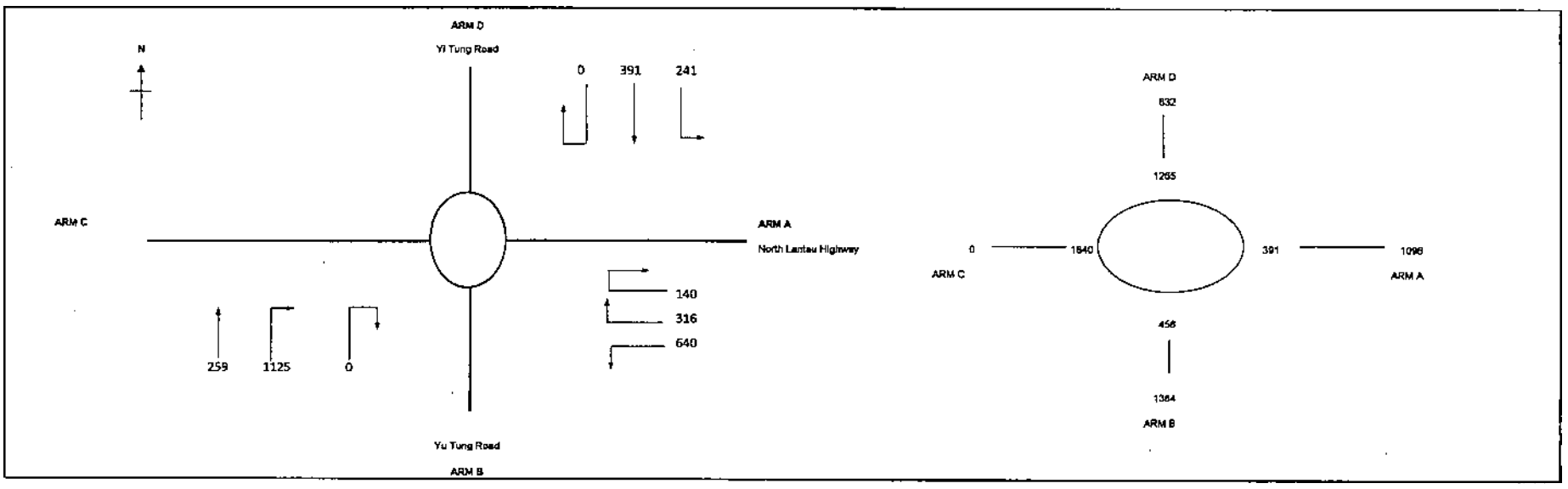
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	80.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1098	1384	632			
Qc	=	Circulating flow across entry (pcu/h)	391	458	1265			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.37			
K	=	1-0.00947(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.86	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3896	3335			
Tc	=	1+(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Tc(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3271	3516	2520	Total In Sum =	3112	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.34	0.39	0.25	DFC of Critical Approach =	0.39	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No	236078
J16 - Tung Chung Eastern interchange	Year 2031 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



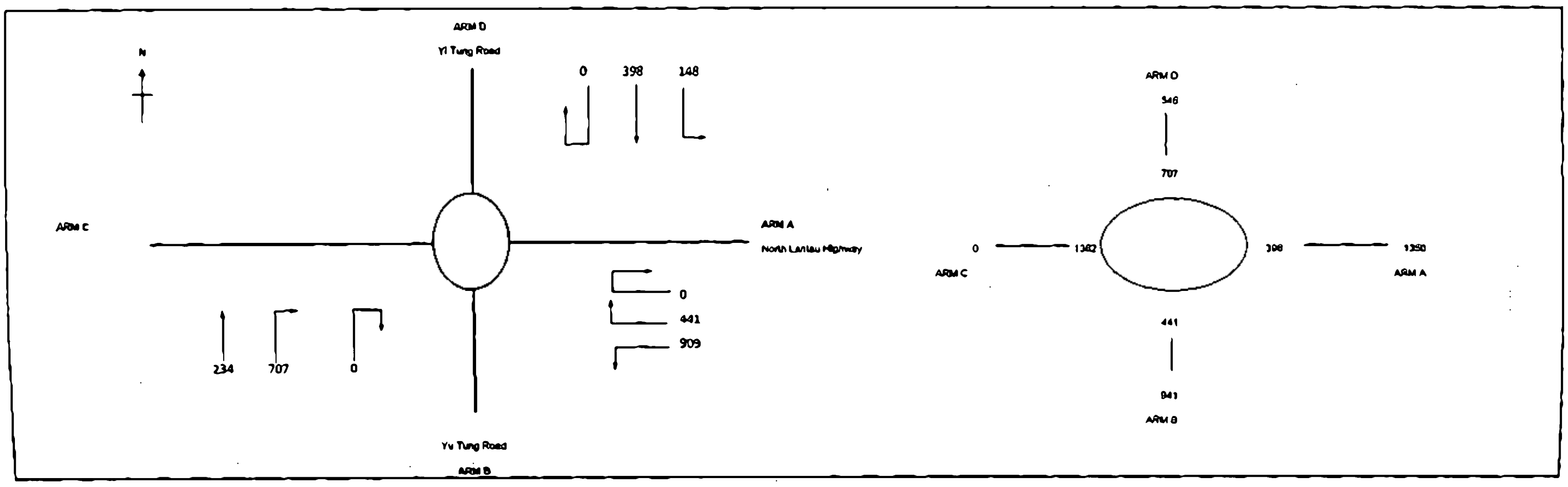
ARM			A	B	D			
INPUT PARAMETERS								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	50.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1350	941	548			
Qc	=	Circulating flow across entry (pcu/h)	398	441	707			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.68	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3896	3335			
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3268	3527	2902	Total In Sum =	2837	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.41	0.27	0.19	DFC of Critical Approach =	0.41	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2031 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



ARM			A	B	D			
INPUT PARAMETERS								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	50.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1098	1364	832			
Qc	=	Circulating flow across entry (pcu/h)	391	456	1265			
OUTPUT PARAMETERS:								
S	=	Sharpness of flare = 1.6(E-V)/L	0.28	0.18	0.37			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	0.99	1.02			
X2	=	V + ((E-V)/(1+2S))	11.49	12.68	11.01			
M	=	EXP((D-60)/10)	148.41	148.41	148.41			
F	=	303*X2	3481	3896	3335			
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00			
Fc	=	0.21*Td(1+0.2*X2)	0.69	0.75	0.67			
Qe	=	K(F-Fc*Qc)	3271	3516	2520	Total In Sum =	3112	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.34	0.39	0.25	DFC of Critical Approach =	0.39	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern interchange	Year 2031 Design Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME

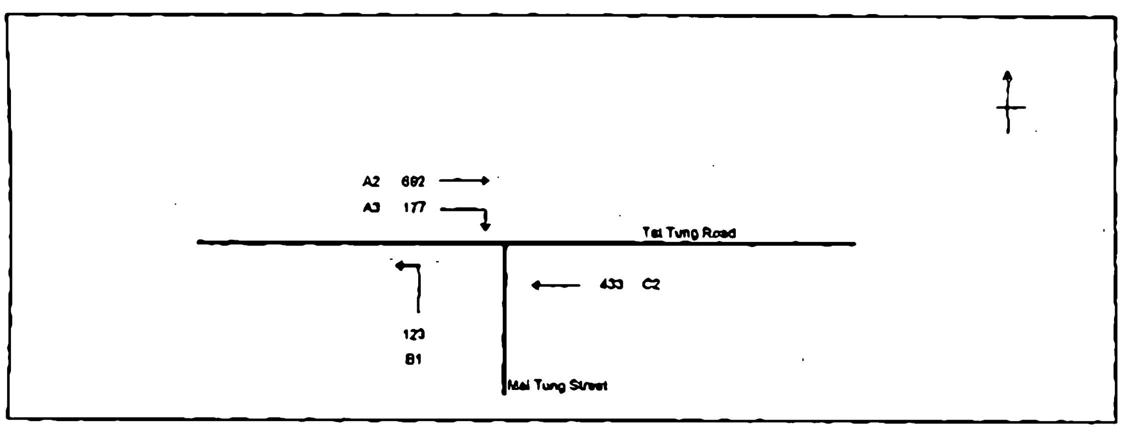


ARM			A	B	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	14.00	15.00	14.00
L	=	Effective length of flare (m)	40.00	70.00	30.00
[illegible]	=	Entry radius (m)	50.00	40.00	60.00
[illegible]	=	[illegible]	110.00	110.00	110.00
[illegible]	=	[illegible]	35.00	40.00	35.00
[illegible]	=	[illegible]	1350	941	546
[illegible]	=	[illegible]	398	441	707
[illegible]					
[illegible]	=	[illegible]	0.28	0.18	0.37
[illegible]	=	[illegible]	1.02	0.99	1.02
[illegible]	=	[illegible]	11.49	12.80	11.01
[illegible]	=	[illegible]	148.41	148.41	148.41
[illegible]	=	[illegible]	3481	3898	3335
[illegible]	=	[illegible]	1.00	1.00	1.00
[illegible]	=	0.21*Td(1+0.2*X2)	0.69	0.75	0.67
[illegible]	=	K(F-Fc*Qc)	3290	3537	2902
DFC	=	Design flow/Capacity = Q/Qe	0.41	0.27	0.19

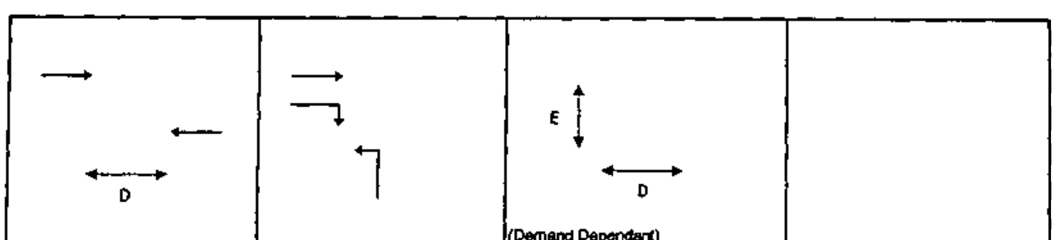
Total In Sum = 2837 PCU

DFC of Critical Approach = 0.41

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	120 sec
Sum(y)		Y =	0.333
Loss time		L =	51 sec
Total Flow		=	780 pcu
Co	= (1.5*L+5)/(1-Y)	=	122.2 sec
Cm	= L/(1-Y)	=	76.5 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	55.3 %
Cp	= 0.9*L/(0.9-Y)	=	81.0 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	55.3 % (Optimized)



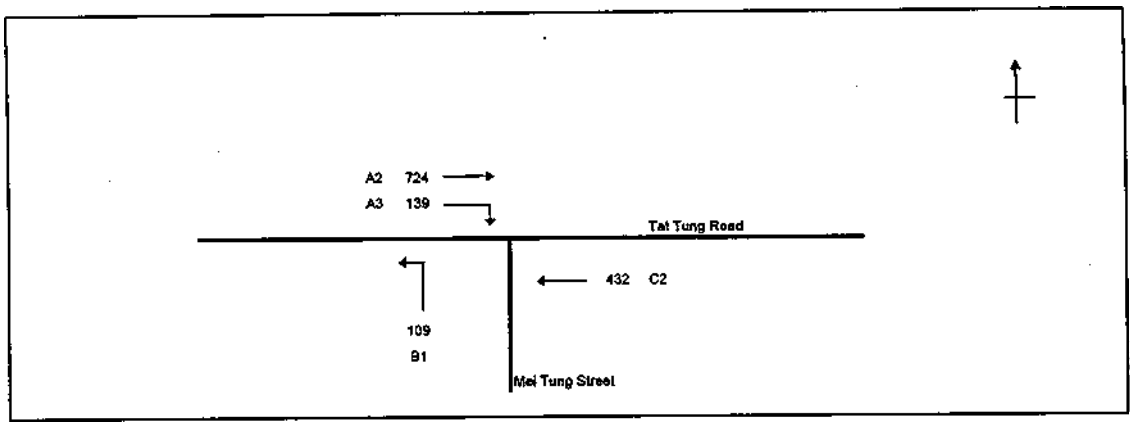
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

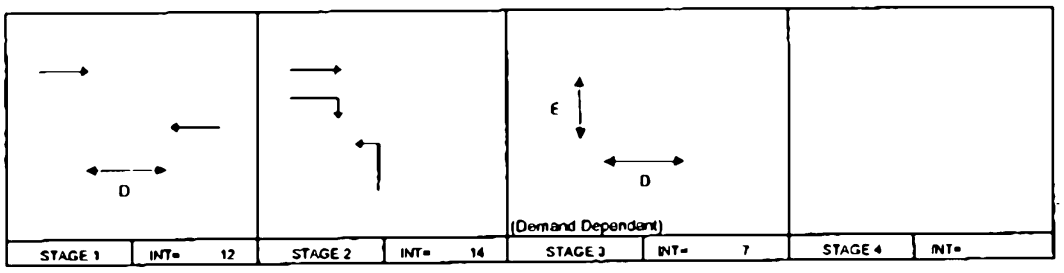
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		845		845	0.00	1945			1946	0.332			69	69	0.579	0
A2,A3	2	3.30	A	1	30			2085		47	177	224	0.79	2008			2008	0.112	0.112		23	69	0.185	18
B1	2	3.20	B	2	15		N	4010	123			123	1.00	3845			2916	0.042			9	9	0.579	11
C2	1	3.40	C	1			N	1955		433		433	0.00	1955			1965	0.221	0.221		46	46	0.579	63
PED	3																			20				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tai Tung Road / Mei Tung Street	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.330	
Loss time	L =	51	sec
Total Flow	=	782	pcu
Co = (1.5*L+5)/(1-Y)	=	121.7	sec
Cm = L/(1-Y)	=	78.2	sec
Yult	=	0.518	
R.C ult = (Yult-Y)/Y*100%	=	56.7	%
Cp = 0.9*L/(0.9-Y)	=	80.6	sec
Ymax = 1-L/C	=	0.575	
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	58.7	% (Optimized)



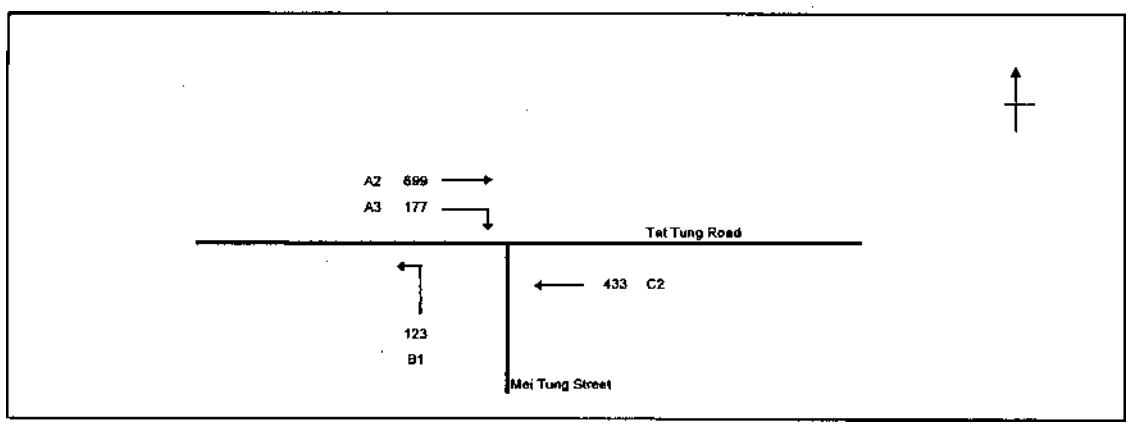
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	8	9	5	8	9	5	OK
E	6.4	5	8	5	7	8	5	OK

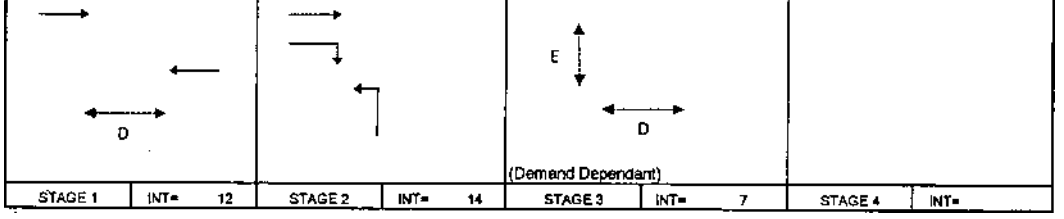
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		842		842	0.00	1945			1945	0.330			89	89	0.574	0
A2,A3	2	3.30	A	1	30			2085		82	139	221	0.63	2021			2021	0.109	0.109		23	69	0.190	19
B1	2	3.20	B	2	15		N	4010	109			109	1.00	3845			2916	0.037			8	8	0.574	10
C2	1	3.40	C	1			N	1955		432		432	0.00	1955			1955	0.221	0.221		48	48	0.574	53
PED	3																			20				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tai Tung Road / Mei Tung Street	Year 2031 Design Traffic Flows (AM Peak)	DATE : 30-Nov-15	FILENAME :



No. of stages per cycle	N =	3	
No. of stage using for calculation	N =	2	
Cycle time	C =	120	sec
Sum(y)	Y =	0.334	
Loss time	L =	51	sec
Total Flow	=	782	pcu
Co = (1.5*L+5)/(1-Y)	=	122.4	sec
Cm = L/(1-Y)	=	76.6	sec
Yult	=	0.518	
R.C ult = (Yult-Y)/Y*100%	=	54.9	%
Cp = 0.9*L/(0.9-Y)	=	81.1	sec
Ymax = 1-L/C	=	0.575	
R.C (C) = (0.9*Ymax-Y)/Y*100%	=	54.9	% (Optimized)



STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	8	9	5	8	9	5	OK
E	6.4	5	8	5	7	8	5	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		650		650	0.00	1945			1945	0.334			89	89	0.581	0
A2,A3	2	3.30	A	1	30			2085		49	177	226	0.78	2008			2008	0.113	0.113		23	89	0.196	19
B1	2	3.20	B	2	15		N	4010	123			123	1.00	3845			2816	0.042			8	8	0.581	11
C2	1	3.40	C	1			N	1955		433		433	0.00	1955			1955	0.221	0.221		48	48	0.581	54
PED	3																			20				

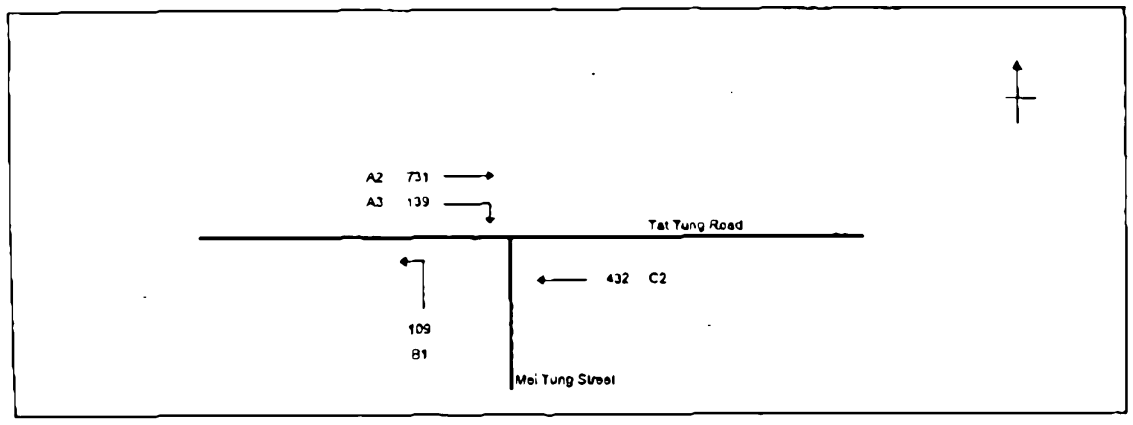
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

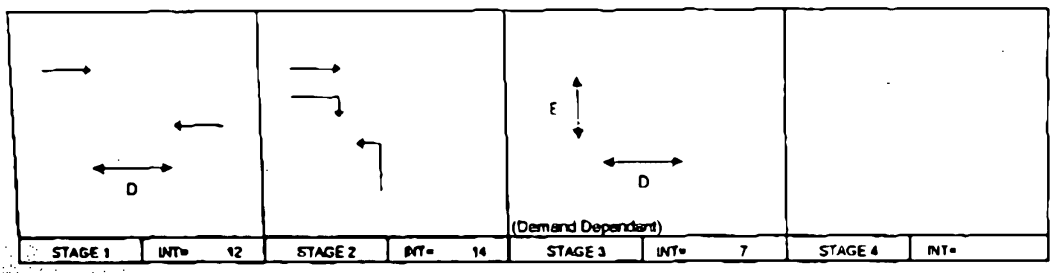
Discovery Bay

PROJECT NO: 236078

J17 - Tat Tung Road / Mei Tung Street | Year 2031 Design Traffic Flows (PM Peak) | DATE : 30-Nov-15 | FILENAME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	120 sec
Sum(y)		Y =	0.332
Loss time		L =	51 sec
Total Flow		=	766 pcu
Co	= (1.5*L+5)/(1-Y)	=	122.0 sec
Cm	= L/(1-Y)	=	76.4 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	55.8 %
Cp	= 0.9*L/(0.9-Y)	=	80.8 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	55.8 % (Optimized)



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
[redacted]												2448	0.00	1948			1948	0.332			69	69	0.578	0
								2085		86	139	225	0.62	2023			2023	0.111	0.111		23	69	0.194	19
								4010	109			109	1.00	3845			2916	0.037			8	8	0.578	10
								1955		432		432	0.00	1955			1955	0.221	0.221		46	46	0.578	53
																				20				

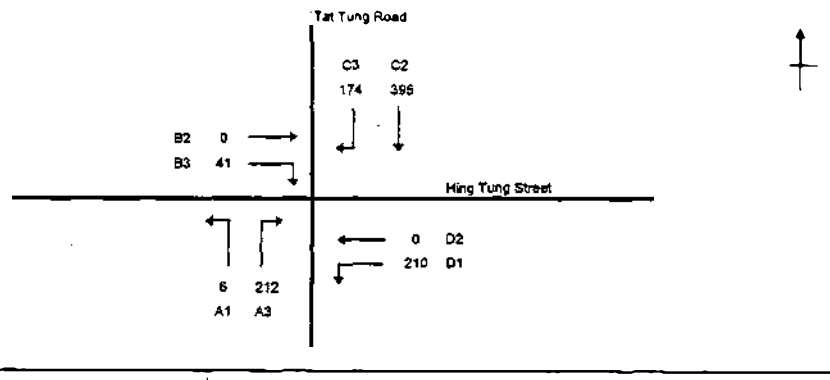
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

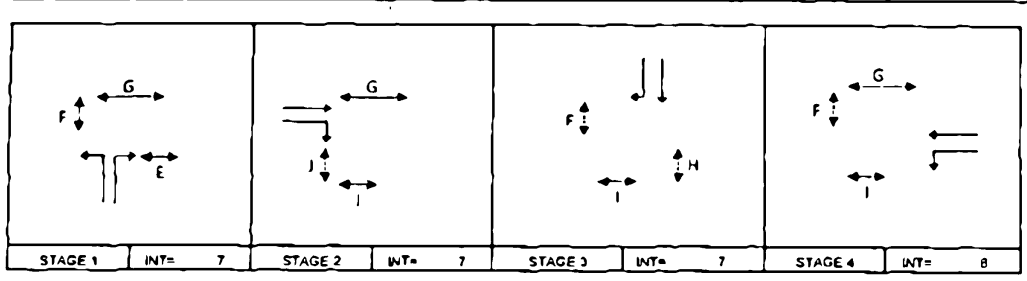
Discovery Bay

PROJECT NO: 236078

J18 - Tat Tung Road / Hing Tung Street | Year 2031 Reference Traffic Flows (AM Peak) | DATE : 3-Nov-15 | FILENAME :



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.358
Loss time		L =	41 sec
Total Flow		=	1033 pcu
Co	= (1.5*L+5)/(1-Y)	=	103.5 sec
Cm	= L/(1-Y)	=	63.8 sec
Yult		=	0.593
R.C.ult	= (Yult-Y)/Y*100%	=	65.6 %
Cp	= 0.9*L/(0.9-Y)	=	68.1 sec
Ymax	= 1-L/C	=	0.658
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	65.8 % (Optimized)



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	16	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	68	2	5	OK
H	6.3	5	7	5	26	7	5	OK
I	7.4	5	2	6	78	2	6	OK
J	6.6	5	6	6	5	6	6	OK

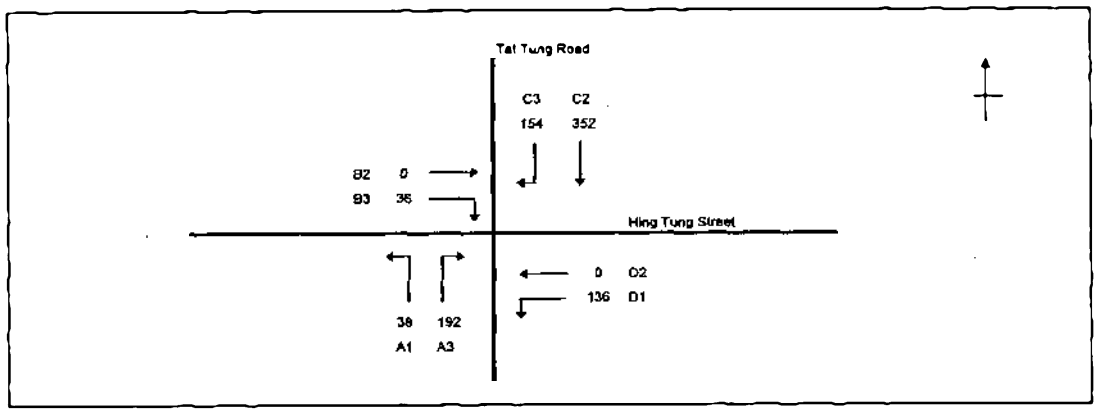
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				24				
A1	1	3.50	A	1	15		N	1985	6			6	1.00	1786			1786	0.003	0.104		1	23	0.017	0
A1,A3	1	3.50	A	1	40			2105	0		212	212	1.00	2029			2029	0.104			23	23	0.543	34
B2,B3	2	3.00	B	1	30		N	1915		0	20	20	1.00	1824			1458	0.014			3	11	0.160	4
B3	2	3.00	B	1	30			2055			21	21	1.00	1957			1566	0.014			3	11	0.149	4
C2	3	3.90	C	1	25		N	2005		280		280	0.00	2005			2005	0.145	0.145		32	32	0.543	43
C2,C3	3	3.90	C	1	25		N	2005		106	174	278	0.62	1933			1933	0.145			32	32	0.543	41
[redacted]																								
PED	2																			17				

NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

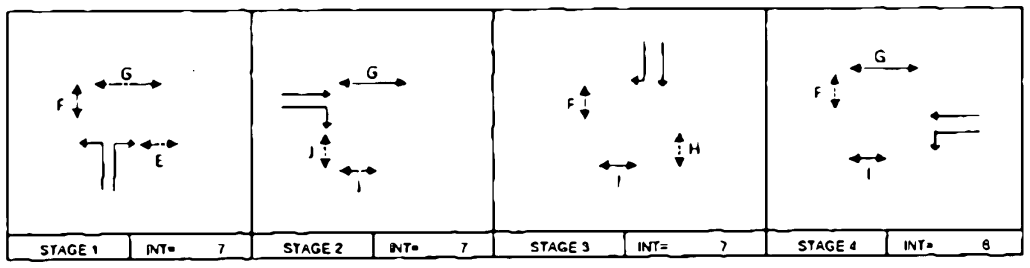
OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

Discovery Bay | PROJECT NO: 236078

J18 - Tat Tung Road / Hing Tung Street | Year 2031 Reference Traffic Flows (PM Peak) | DATE: 3-Nov-15 | FILENAME:



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.294
Loss time		L =	41 sec
Total Flow		=	871 pcu
Co	= (1.5*L+5)/(1-Y)	=	94.2 sec
Cm	= L/(1-Y)	=	58.0 sec
Yult		=	0.393
R.C.ult	= (Yult-Y)/Y*100%	=	101.7 %
Cp	= 0.9*L/(0.9-Y)	=	60.9 sec
Ymax	= 1-L/C	=	0.658
R.C (C)	= (0.9*Ymax-Y)/Y*100%	=	101.7 % (Optimized)



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	18	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	65	2	6	OK
H	8.3	5	7	5	29	7	5	OK
I	7.4	5	2	6	74	2	6	OK
J	6.6	5	6	6	5	6	6	OK

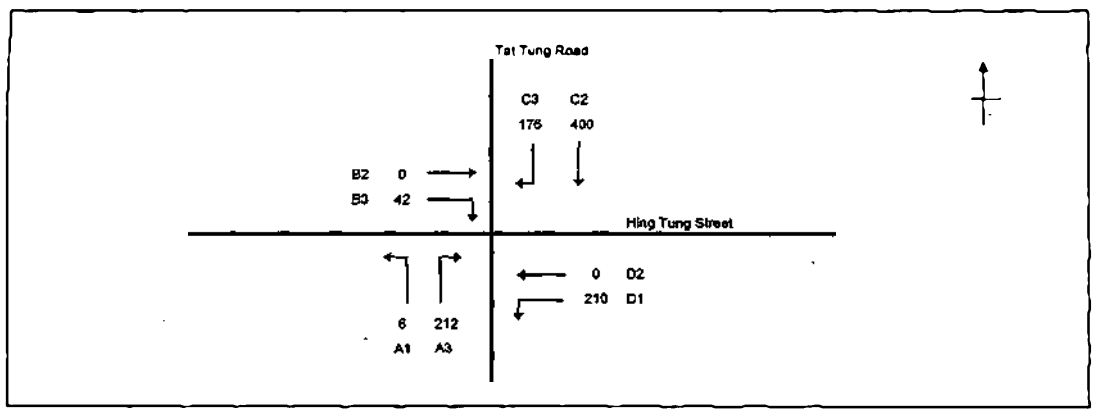
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1985	36			36	1.00	1788			1788	0.021	0.095		6	25	0.100	0
A1,A3	1	3.50	A	1	40			2105	0		182	182	1.00	2029			2029	0.095			25	25	0.446	30
B2,B3	2	3.00	B	1	30		N	1915		0	17	17	1.00	1824			1459	0.012			3	11	0.127	3
B3	2	3.00	B	1	30			2055			19	19	1.00	1957			1566	0.012			3	11	0.135	4
C2	3	3.90	C	1	25		N	2005		258		258	0.00	2005			2005	0.129	0.129		35	35	0.448	37
C2,C3	3	3.90	C	1	25		N	2005		84	154	248	0.62	1933			1933	0.128			35	35	0.445	35
D1	4	3.50	D	1	15		N	2005	136			136	1.00	1788			1788	0.076	0.076		18	18	0.422	23
PED	2																			17				

NOTE: 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

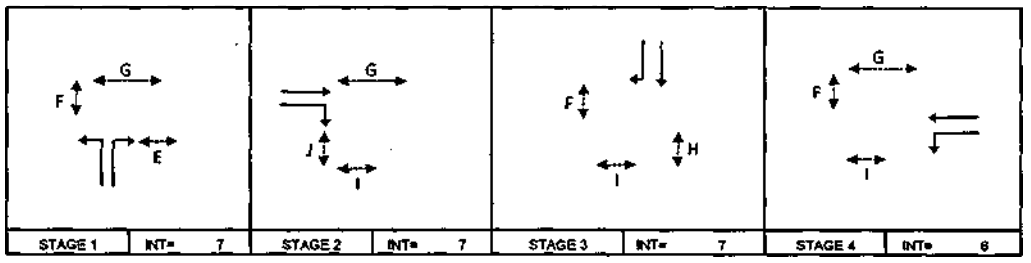
OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

Discovery Bay | PROJECT NO: 236078

J18 - Tat Tung Road / Hing Tung Street | Year 2031 Design Traffic Flows (AM Peak) | DATE: 3-Nov-15 | FILENAME:



No. of stages per cycle		N =	4
No. of stage using for calculation		N =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.360
Loss time		L =	41 sec
Total Flow		=	1040 pcu
Co	= (1.5*L+5)/(1-Y)	=	103.8 sec
Cm	= L/(1-Y)	=	64.0 sec
Yult		=	0.593
R.C.ult	= (Yult-Y)/Y*100%	=	64.8 %
Cp	= 0.9*L/(0.9-Y)	=	68.3 sec
Ymax	= 1-L/C	=	0.658
R.C (C)	= (0.9*Ymax-Y)/Y*100%	=	64.8 % (Optimized)

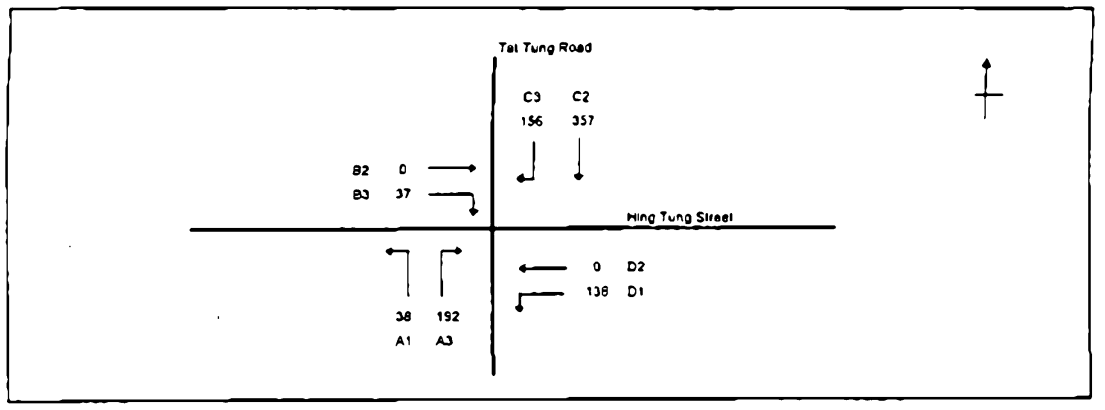


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	16	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	68	2	5	OK
H	8.3	5	7	5	28	7	5	OK
I	7.4	5	2	6	76	2	6	OK
J	6.6	5	6	6	5	6	6	OK

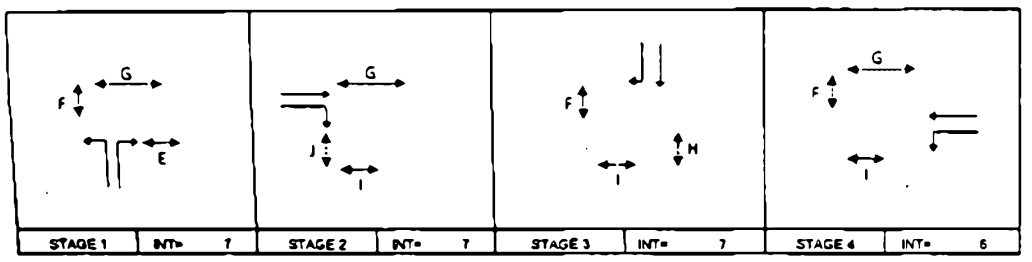
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1985	6			6	1.00	1788			1788	0.003	0.104		1	23	0.018	0
A1,A3	1	3.50	A	1	40			2105	0		212	212	1.00	2029			2029	0.104			23	23	0.546	54
B2,B3	2	3.00	B	1	30		N	1915		0	20	20	1.00	1824			1459	0.014			3	11	0.150	4
B3	2	3.00	B	1	30			2055			22	22	1.00	1957			1566	0.014			3	11	0.153	4
C2	3	3.90	C	1	25		N	2005		293		293	0.00	2005			2005	0.146	0.146		32	32	0.545	43
C2,C3	3	3.90	C	1	25		N	2005		107	176	283	0.62	1933			1933	0.146			32	32	0.546	41
D1	4	3.50	D	1	15		N	2005	210			210	1.00	1788			1788	0.117	0.117		28	28	0.651	36
PED	2																			17				

NOTE: 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J18 - Tat Tung Road / Hing Tung Street	Year 2031 Design Traffic Flows (PM Peak)	DATE : 3-Nov-15	FILENAME :



No. of stages per cycle	N =	4	
No. of stage using for calculation	N =	3	
Cycle time	C =	120	sec
Sum(y)	Y =	0.295	
Loss time	L =	41	sec
Total Flow	=	678	pcu
Co = (1.5*L+5)/(1-Y)	=	94.4	sec
Cm = L/(1-Y)	=	58.2	sec
Yult	=	0.593	
R.C.ult = (Yult-Y)/Y*100%	=	100.6	%
Cp = 0.9*L/(0.9-Y)	=	81.0	sec
Ymax = 1-L/C	=	0.658	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	100.6	% (Optimized)



Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	18	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	65	2	5	OK
H	8.3	5	7	5	29	7	5	OK
I	7.4	5	2	6	74	2	6	OK
J	6.6	5	6	6	5	6	6	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
												38	1.00	1788			1788	0.021	0.095		8	25	0.101	0
												252	1.00	2029			2029	0.095			26	26	0.449	30
							N	1918		0	18	18	1.00	1824			1459	0.012			3	11	0.135	3
								2055			19	19	1.00	1957			1566	0.012			3	11	0.133	3
								2005		261		261	0.00	2005			2005	0.130	0.130		35	35	0.448	37
								2005		0	168	252	0.62	1933			1933	0.130			35	35	0.448	36
																				17				

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m