Appendix B
Traffic Impact Assessment

Hong Kong Resort Company Limited

Optimization of Land Use in Discovery Bay – Area 10b

Traffic Impact Assessment

TIA

Rev 0 | 15 December 2015

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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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 1,125 nos. of flat would be developed in Area 10b, 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 10b 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 6f 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. Marina Drive connects Discovery Bay Road and the marina.

2.1.8 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 10b along existing Marine Drive. It consists of 1,125 nos. of flat. Location plan of the developments is presented in **Figure 3.1**.

3.1.2 The other possible development in Area 6f of Discovery Bay for residential use is located west of existing Discovery Bay Phase 3 Parkvale Village. It which consists of 476 nos. of flat. The location of this residential development in Area 6f 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 10b (Unit: ped/hr)

Residential Development	No. of Flats	No. of Flats for Assess-ment (1)	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
10b	1,125	1,350	440	147	223	344
Estimated Pedestrian Trips to use External Bus Service (persons/hr)			220	73	112	172
Estimated Pedestrian Trips to use Ferry Service to Central (persons/hr)			220	73	112	172

(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 10b (Unit: pcu/hr)

Residential Development	No. of Flats	No. of Flats for Assess-ment (1)	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Area 10b	1,125	1,350	440 / 56 = 8 veh = 20 pcu	147 / 56 = 3 veh = 8 pcu	223 / 56 = 4 veh = 10 pcu	344 / 56 = 7 veh = 18 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 10b (Unit: pcu/hr)

Residential Development	No. of Flats	No. of Flats for Assess-ment (1)	AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Area 10b	1,125	1,350	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 10b

	% Split (1)	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Estimated Pedestrian Trips to use External Bus Service (persons/hr)	-	220	73	112	172
Estimated Pedestrian Trips for Tung Chung (persons/hr)	25%	55	18	28	43
Estimated Pedestrian Trips for Airport (persons/hr)	5%	11	4	6	9
Estimated Pedestrian Trips for Sunny Bay (persons/hr)	70%	154	51	78	120
Calculated External Bus Trip for Tung Chung (pcu/hr)	-	55 / 56 = 1 veh = 2.5 pcu	18 / 56 = 1 veh = 2.5 pcu	28 / 56 = 1 veh = 2.5 pcu	43 / 56 = 1 veh = 2.5 pcu
Calculated External Bus Trip for Airport (pcu/hr)	-	11 / 56 = 1 veh = 2.5 pcu	4 / 56 = 1 veh = 2.5 pcu	6 / 56 = 1 veh = 2.5 pcu	9 / 56 = 1 veh = 2.5 pcu
Calculated External Bus Trip for Sunny Bay (pcu/hr)	-	154 / 56 = 3 veh = 7.5 pcu	51 / 56 = 1 veh = 2.5 pcu	78 / 56 = 2 veh = 5.0 pcu	120 / 56 = 3 veh = 7.5 pcu
Total Additional Calculated External Bus Trip for Discovery Bay	-	**13 pcu**	**8 pcu**	**10 pcu**	**13 pcu**

(1) Reference to the peak hour Octopus count provided by the operator for the three existing bus routes 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 10b

	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)	7.5	7.5	7.5	7.5
Total Additional Adopted External Bus Trip for Discovery Bay	**13**	**13**	**13**	**13**

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 × 1,350 additional flats (with 20% buffer) = **13 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 10b of Discovery Bay.

Table 4.10 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**

4.1.22 Similarly, the trip generation for the possible trip generation for developments in Area 6f 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 6f of Discovery Bay.

Table 4.11 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**

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 10b and also the possible residential developments in Area 6f. 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 6f (persons/hr)	93	31	47	73
Estimated Pedestrian Trips Generated from Additional Residential Developments in Area 10b (persons/hr)	220	73	112	172
Total Ridership with 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 6f 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 10b 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 6f in Discovery Bay

- Year 2026/2031 "Design Scenario"

  = Traffic Flow under "Reference Scenario"

  + Trips Generation and Attraction for Additional Residential Developments in Area 10b in 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	5,040	5,295	0.83	0.87
	W/B	6,100	4,495	3,575	5,540	5,205	0.91	0.85
North Lantau Highway	E/B	6,100	3,090	3,840	3,320	3,545	0.54	0.58
	W/B	6,100	3,540	3,300	3,870	3,660	0.63	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	230	190	0.22	0.18
Cheung Tung Road Eastern Section	E/B	1,040	165	165	330	375	0.32	0.36
	W/B	1,040	175	120	345	290	0.33	0.28
Discovery Bay Tunnel	E/B	1,280	120	70	410	345	0.32	0.27
	W/B	1,280	105	125	390	410	0.30	0.32
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	195	235	0.19	0.23
	S/B	1,040	155	175	200	220	0.19	0.21
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	245	295	0.24	0.28
	S/B	1,040	190	215	255	285	0.25	0.27
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	345	310	0.33	0.30
	W/B	1,040	55	45	320	310	0.31	0.30

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	6,625	7,230	1.09	1.19
	W/B	6,100	4,495	3,575	7,555	7,100	1.24	1.16
North Lantau Highway	E/B	6,100	3,090	3,840	4,815	5,740	0.79	0.94
	W/B	6,100	3,540	3,300	5,555	5,500	0.91	0.90
Cheung Tung Road Western Section	E/B	1,040	160	105	265	240	0.26	0.23
	W/B	1,040	160	110	230	190	0.22	0.18
Cheung Tung Road Eastern Section	E/B	1,040	165	165	345	400	0.33	0.38
	W/B	1,040	175	120	340	290	0.33	0.28
Discovery Bay Tunnel	E/B	1,280	120	70	410	345	0.32	0.27
	W/B	1,280	105	125	390	410	0.30	0.32
Discovery Bay Road (North of Discovery Valley Road)	N/B	1,040	150	190	195	235	0.19	0.23
	S/B	1,040	155	175	200	220	0.19	0.21
Discovery Bay Road (South of Discovery Valley Road)	N/B	1,040	180	225	245	295	0.24	0.28
	S/B	1,040	190	215	255	285	0.25	0.27
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	345	310	0.33	0.30
	W/B	1,040	55	45	320	310	0.31	0.30

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	0.18	0.21	0.19
J2	Discovery Bay Road / Discovery Valley Road	Priority	0.06	0.09	0.11	0.15	0.11	0.15
J3	Discovery Bay Road / Plaza Lane	Priority	0.35	0.36	0.49	0.49	0.55	0.55
J4	Discovery Bay Road / Marina Drive	Priority	0.10	0.08	0.12	0.09	0.14	0.12
J5	Discovery Bay Road / Headland Drive	Priority	0.02	0.05	0.02	0.07	0.03	0.07
J6	Shun Tung Road / Tat Tung Road (West)	Signal	42%	33%	17%	21%	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	0.34	0.42	0.37	0.45
J9	Sunny Bay Road / Cheung Tung Road	Priority	0.05	0.05	0.49	0.50	0.52	0.53
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority	0.17	0.20	0.70	0.72	0.75	0.77
J11	Siena Avenue North Roundabout	Roundabout	0.06	0.04	0.27	0.24	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	0.18	0.21	0.19
J2	Discovery Bay Road / Discovery Valley Road	Priority	0.06	0.09	0.11	0.15	0.11	0.15
J3	Discovery Bay Road / Plaza Lane	Priority	0.35	0.36	0.49	0.49	0.55	0.55
J4	Discovery Bay Road / Marina Drive	Priority	0.10	0.08	0.12	0.09	0.14	0.12
J5	Discovery Bay Road / Headland Drive	Priority	0.02	0.05	0.02	0.07	0.03	0.07
J6	Shun Tung Road / Tat Tung Road (West)	Signal	42%	33%	17%	21%	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	0.40	0.40	0.43	0.43
J9	Sunny Bay Road / Cheung Tung Road	Priority	0.05	0.05	0.53	0.54	0.55	0.57
J10	Cheung Tung Road / Discovery Bay Tunnel	Priority	0.17	0.20	0.70	0.73	0.75	0.78
J11	Siena Avenue North Roundabout	Roundabout	0.06	0.04	0.27	0.24	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 10b with a total of 1,125 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

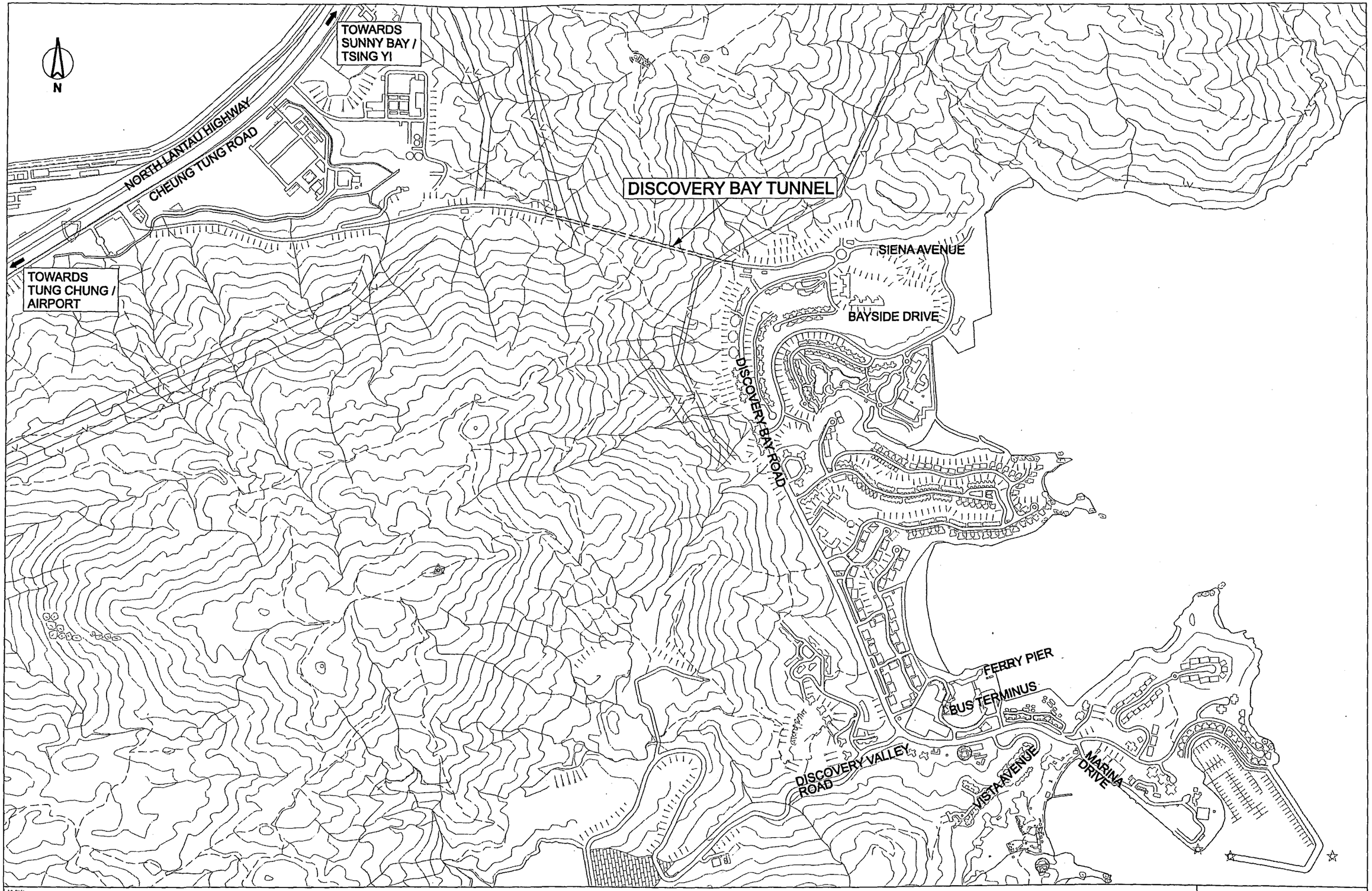
5.1.5 All key road links and junctions would be operated below v/c ratio of 1.2 (except Lantau Link W/B during AM Peak of Year 2031 Reference and Design Scenarios) and within practicable capacity during both AM and PM peak hour. Lantau Link W/B would be operating with v/c ratio of 1.24 during AM Peak, 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.

5.1.6 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 10b) 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



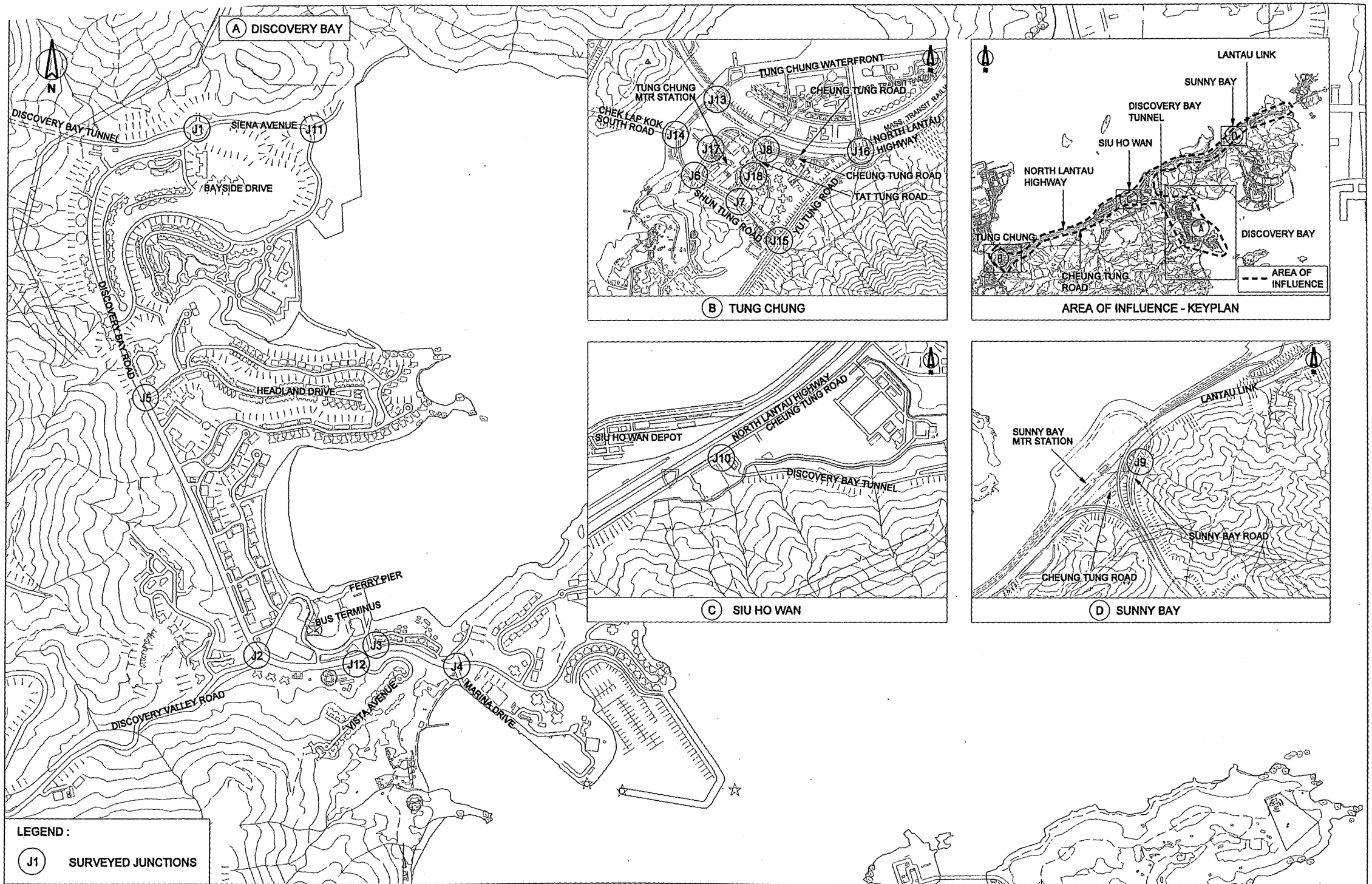
Job Title
OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B

FIGURE 2.1

Date	Scale	Drawing Title
NOV 15	1:11000	EXISTING ROAD NETWORK IN DISCOVERY BAY
Drawn WTL	Job No. 236078	

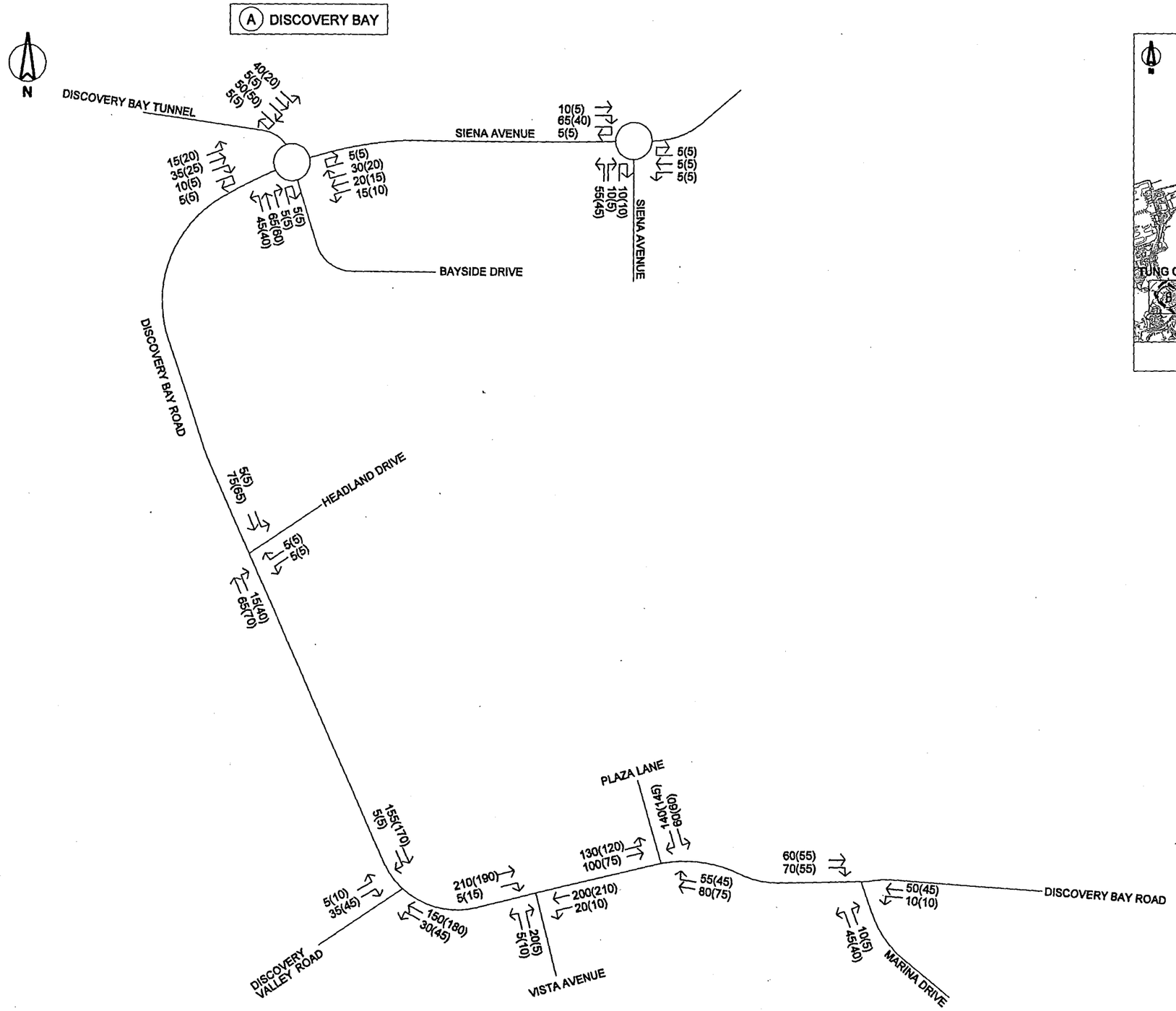
ARUP

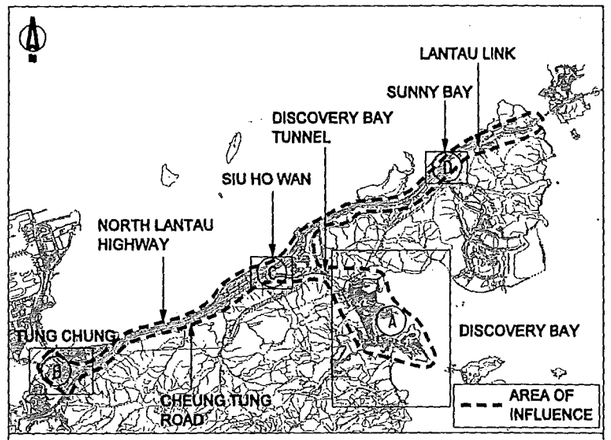
M:\Drawings\230000\236078 10Discovery Bay TIA\Drawings\20151130\10B\FIGURE_2.1.dgn



M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\20Jul30\08\FIGURE_2.2.dgn

Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 2.2
Date: NOV 15	Scale: N.T.S.	ARUP
Drawn: WTL	Job No.: 236078	
Drawing Title: LOCATION OF SURVEYED KEY JUNCTIONS		





AREA OF INFLUENCE - KEYPLAN

LEGEND :

556 (454) ← PM PEAK (PCU/HR)

AM PEAK (PCU/HR)

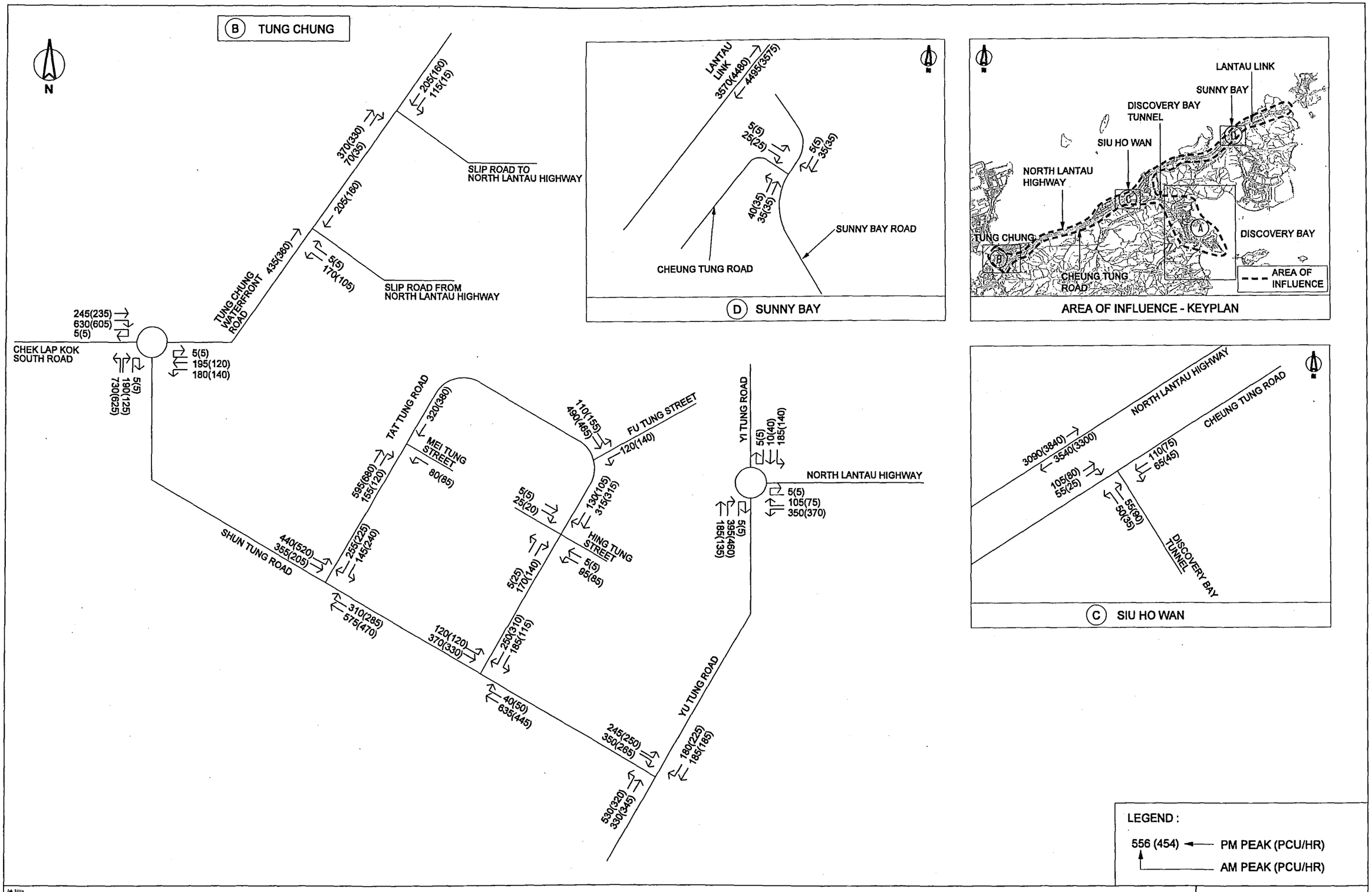
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B

FIGURE 2.3

Date	Scale	Drawing Title
NOV 15	N.T.S.	EXISTING YEAR 2015 OBSERVED TRAFFIC FLOWS (INTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	

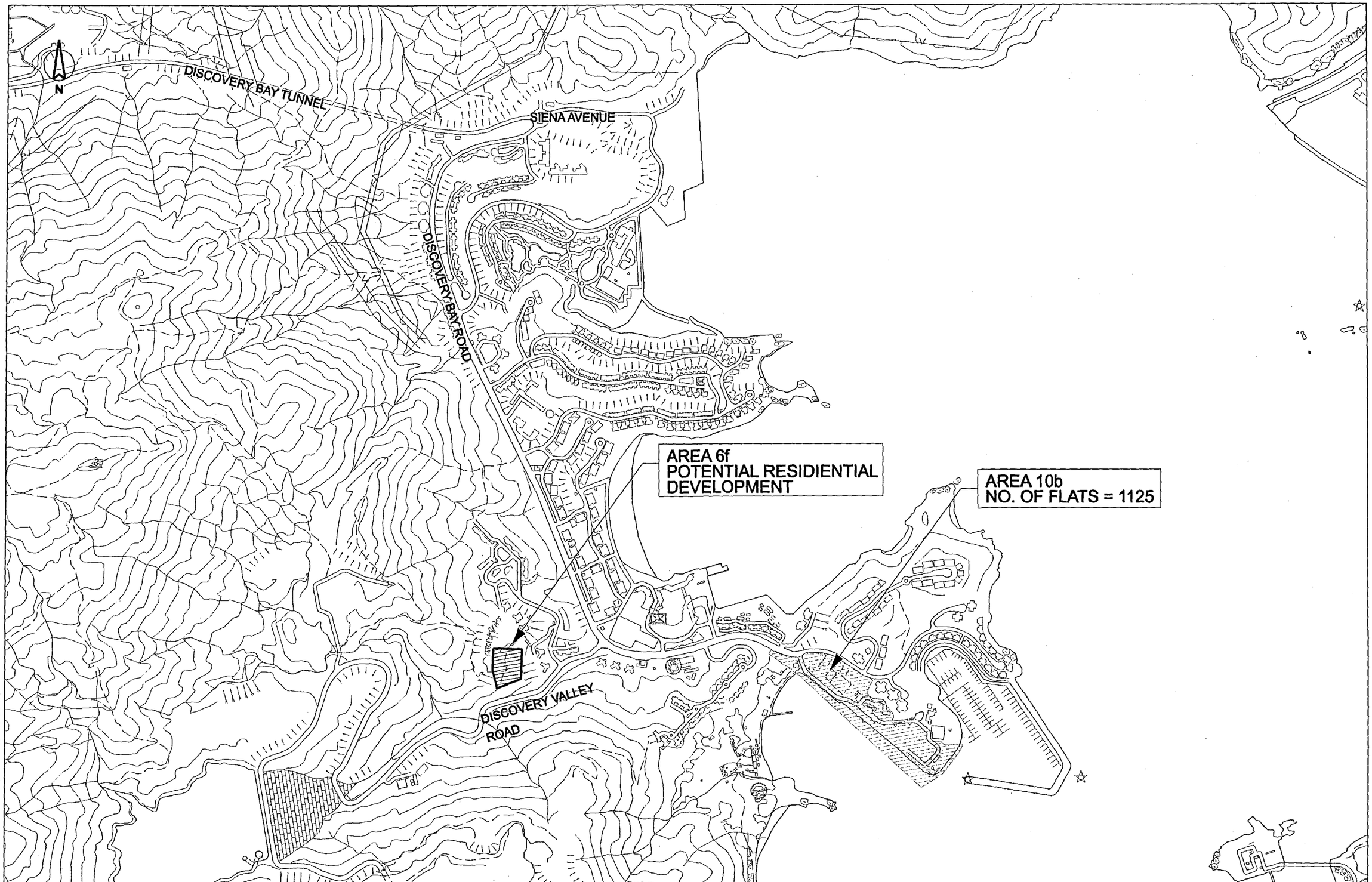
ARUP

M:\Drawing\250000\236078 (Discovery Bay TIA)\Drawing\2015\30\08\FIGURE_2.3.dgn



M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\205in30\108\FIGURE_2.4.dgn

Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 2.4
Date: NOV 15	Scale: N.T.S.	EXISTING YEAR 2015 OBSERVED TRAFFIC FLOWS (EXTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	ARUP



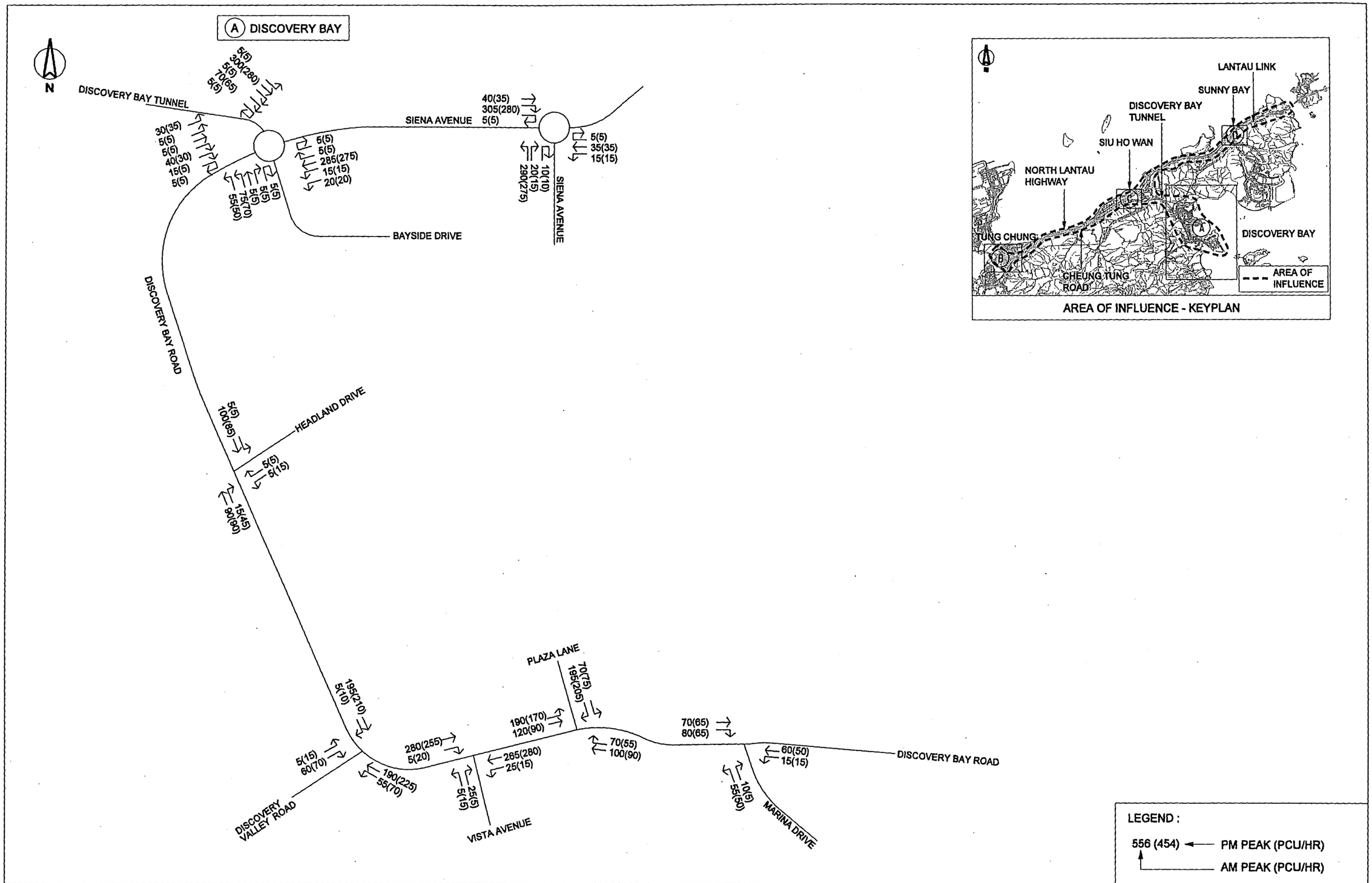
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B

FIGURE 3.1

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

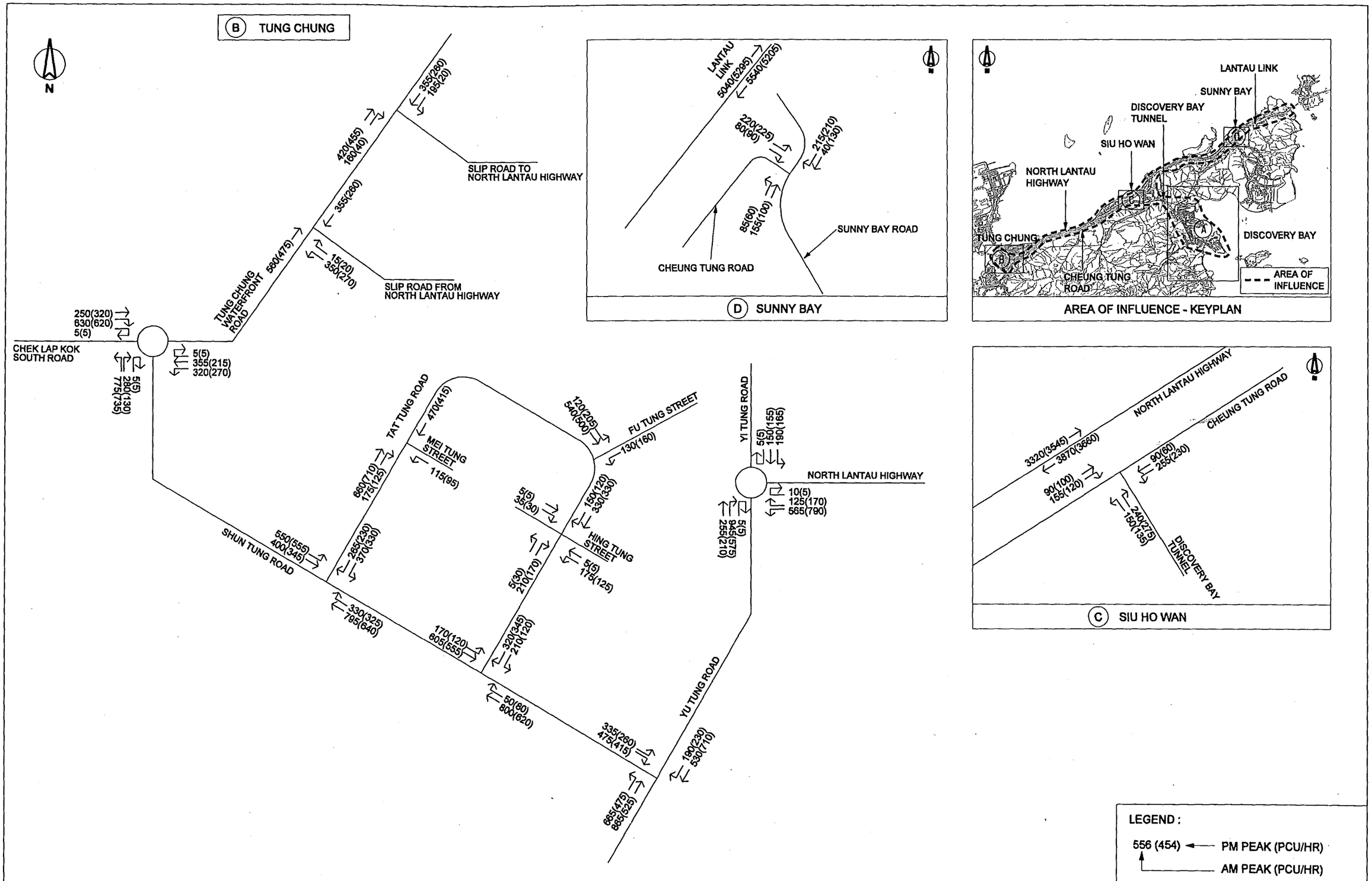
ARUP

M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\205430\10B\FIGURE_3.1.dgn



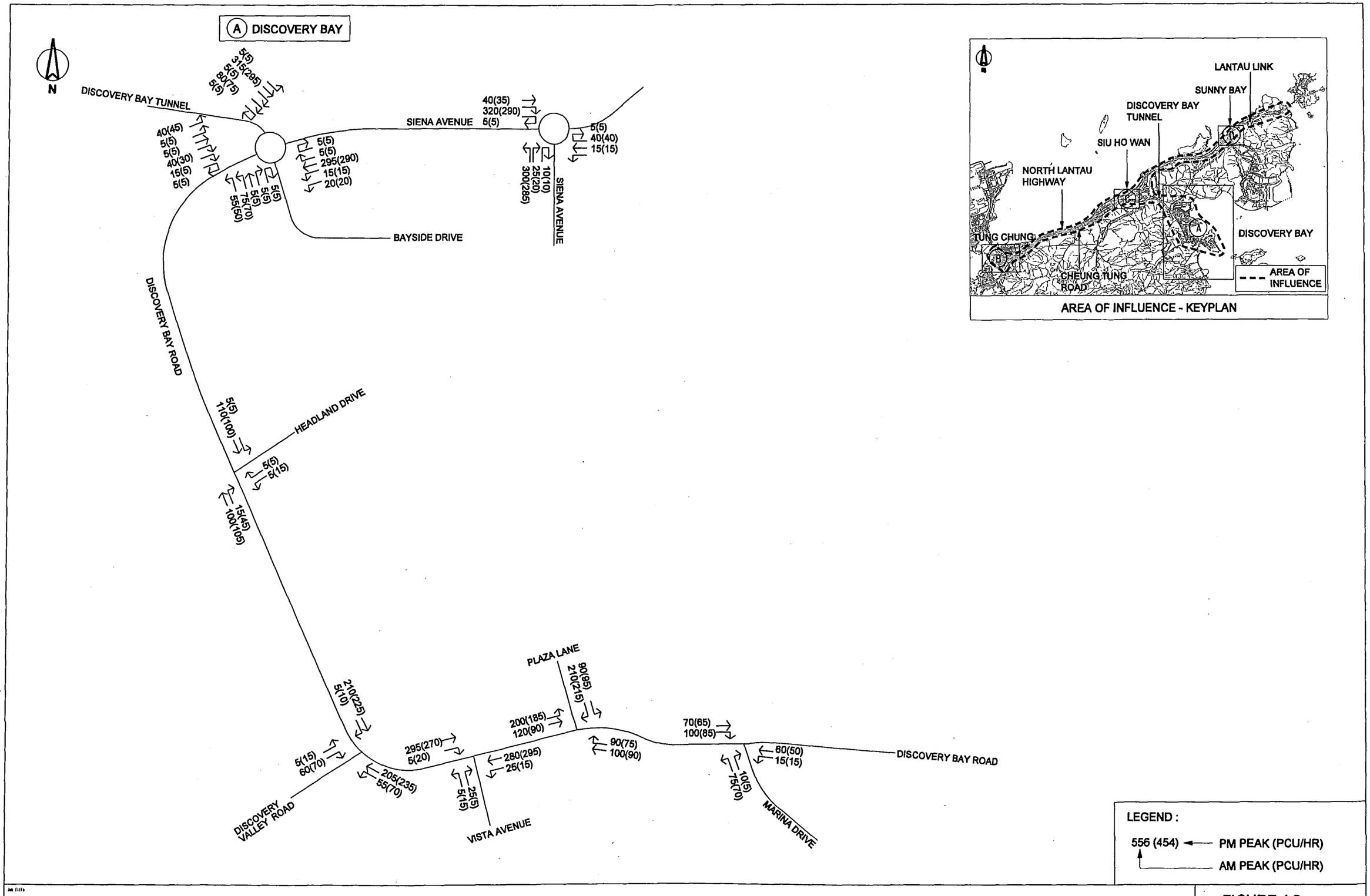
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.1
Date: NOV 15	Scale: N.T.S.	Drawing Title: PROJECTED YEAR 2026 TRAFFIC FLOWS - REFERENCE SCENARIO (INTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	ARUP

M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\2015\30\08\FIGURE_4J.dgn



Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.2
Date: NOV 15	Scale: N.T.S.	Drawing Title: PROJECTED YEAR 2026 TRAFFIC FLOWS - REFERENCE SCENARIO (EXTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	ARUP

\\hkgnts69\Traffic\Drawing\230000\236078 @Discovery Bay TIA\Drawing\20151130\108\FIGURE_4.2.dgn



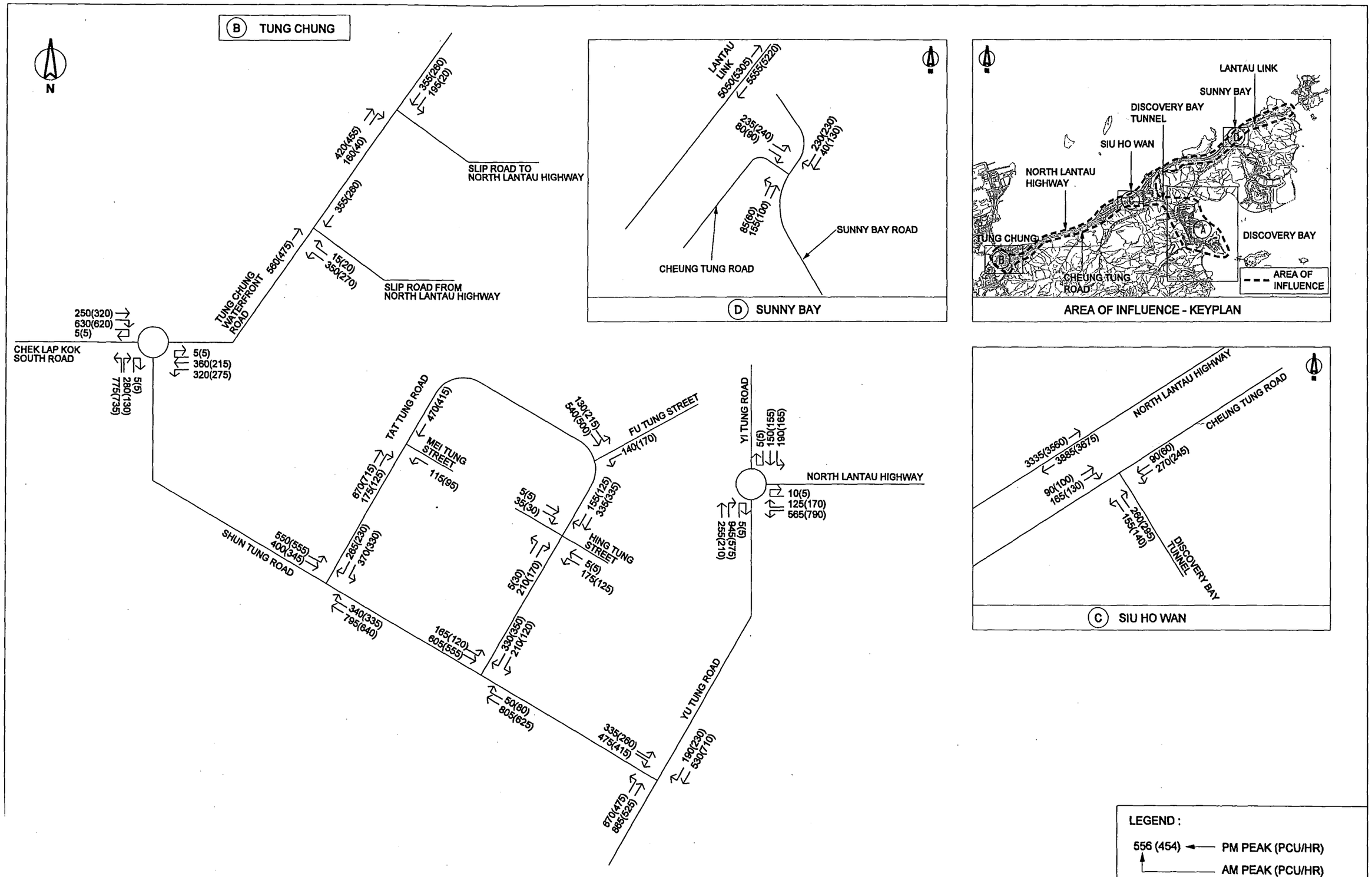
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B

FIGURE 4.3

Date	Scale	Drawing Title
NOV 15	N.T.S.	PROJECTED YEAR 2026 TRAFFIC FLOWS - DESIGN SCENARIO (INTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	

ARUP

M:\Drawing\230000\236078 (Discovery Bay TIA\Drawing\205i30\108\FIGURE_4.3.dgn

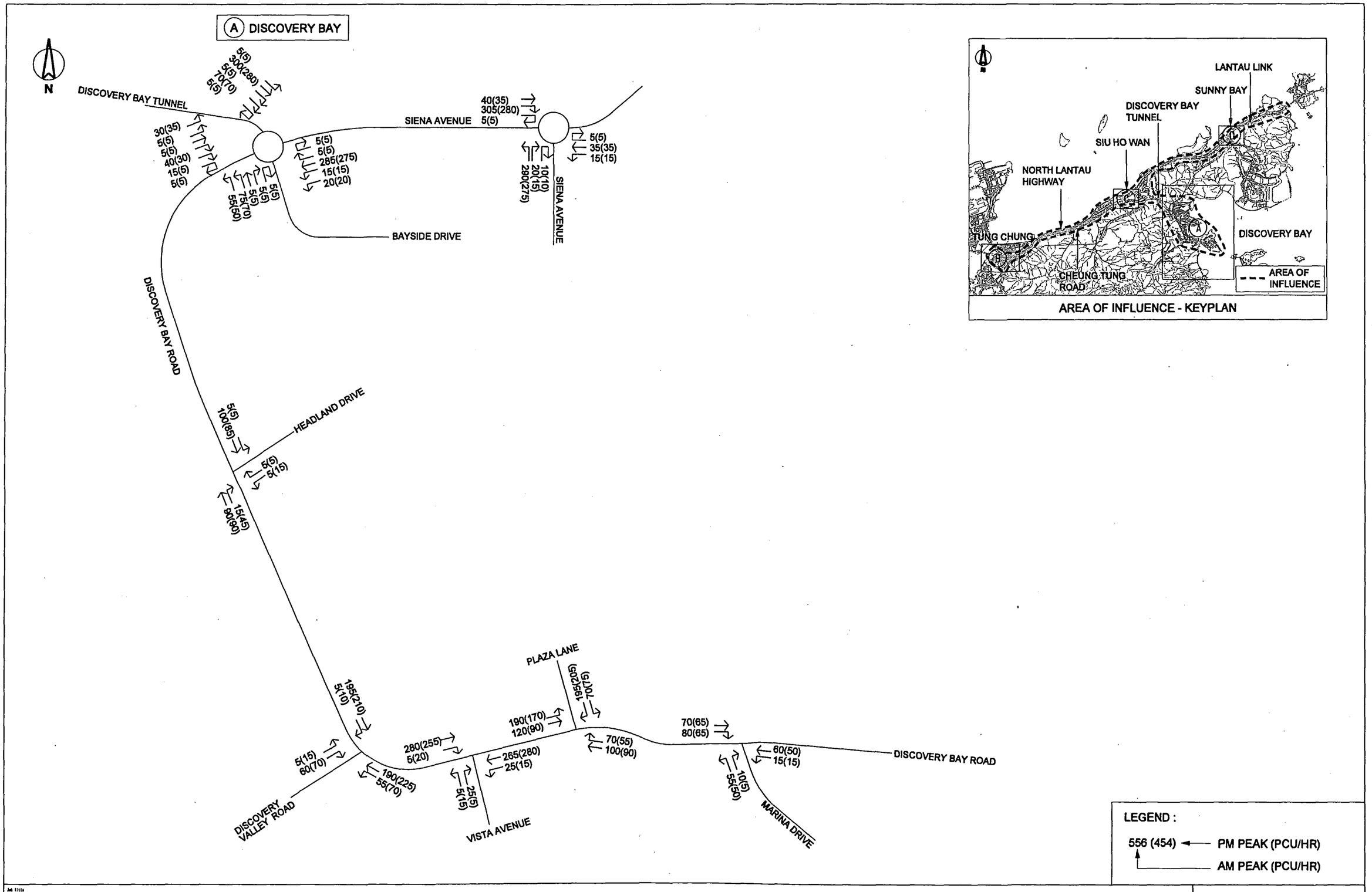


LEGEND :

556 (454) ← PM PEAK (PCU/HR)

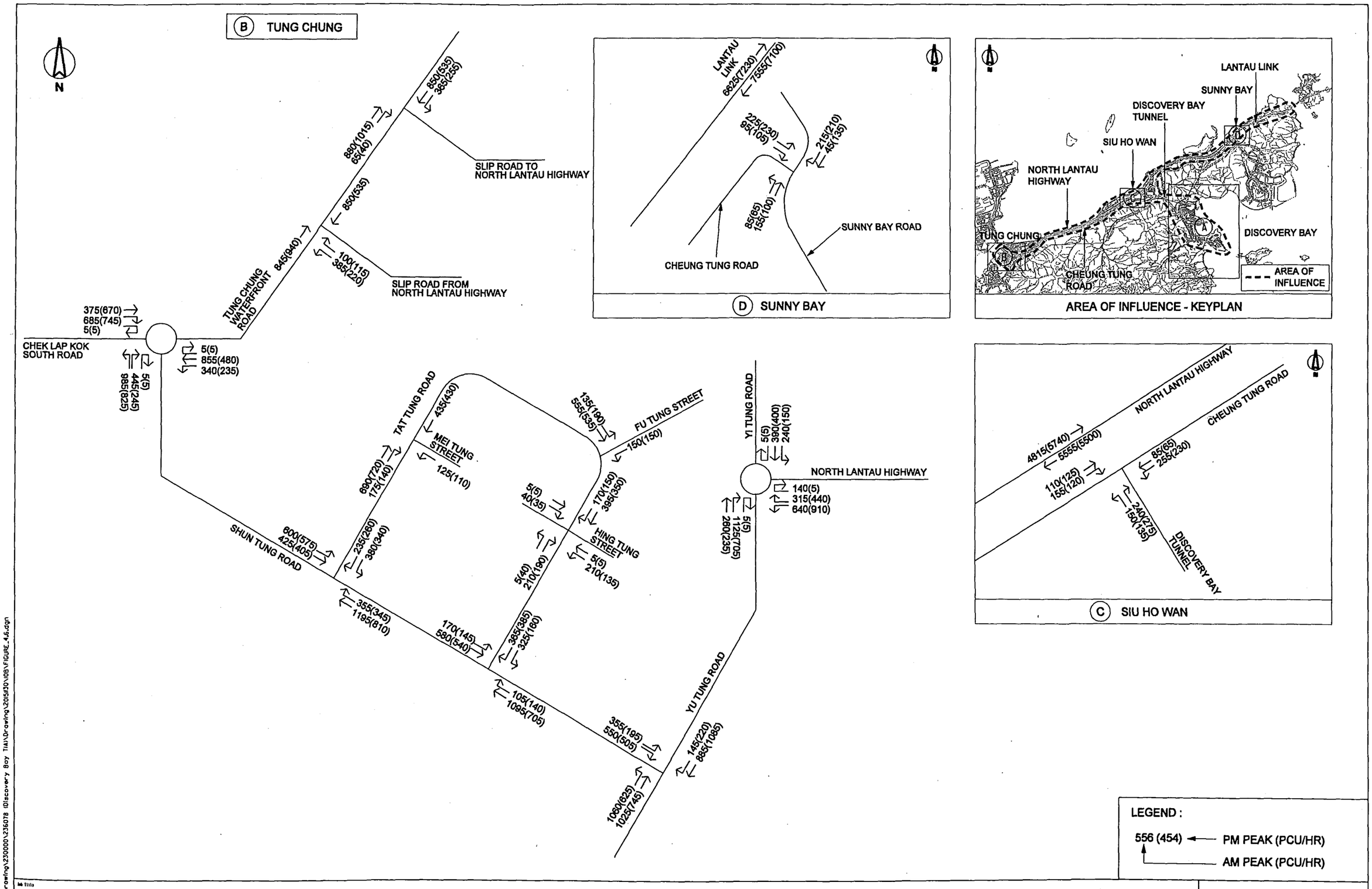
AM PEAK (PCU/HR)

Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.4
Date: NOV 15	Scale: N.T.S.	Drawing Title: PROJECTED YEAR 2026 TRAFFIC FLOWS - DESIGN SCENARIO (EXTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	ARUP



Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.5
Date: NOV 15	Scale: N.T.S.	Drawing Title: PROJECTED YEAR 2031 TRAFFIC FLOWS - REFERENCE SCENARIO (INTERNAL ROAD NETWORK)
Drawn: WTL	Job No.: 236078	ARUP

M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\205930\10B\FIGURE_4.5.dgn



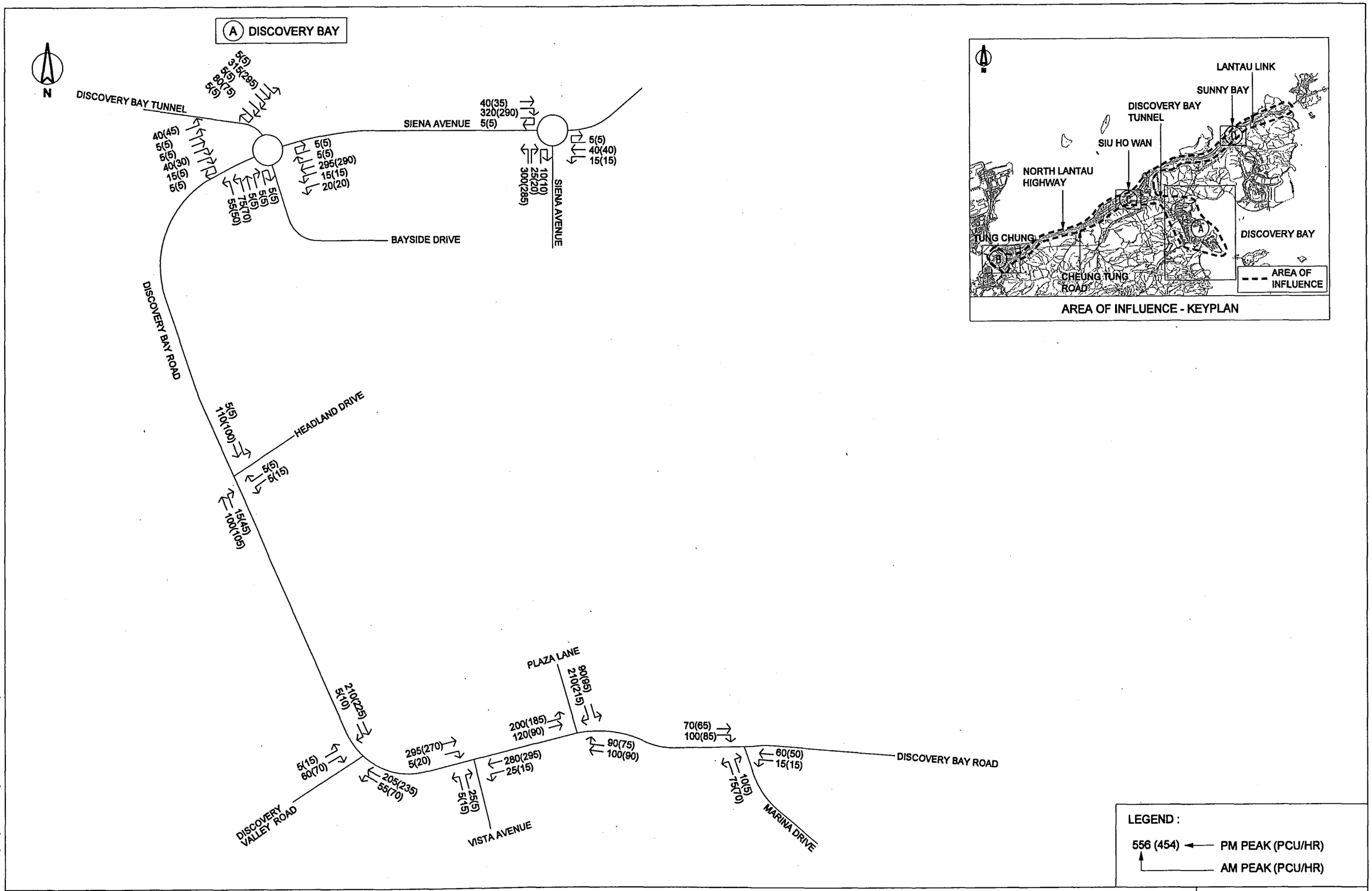
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B

FIGURE 4.6

Date	Scale	Drawing Title
NOV 15	N.T.S.	PROJECTED YEAR 2031 TRAFFIC FLOWS - REFERENCE SCENARIO (EXTERNAL ROAD NETWORK)
Drawn WTL	Job No. 236078	

ARUP

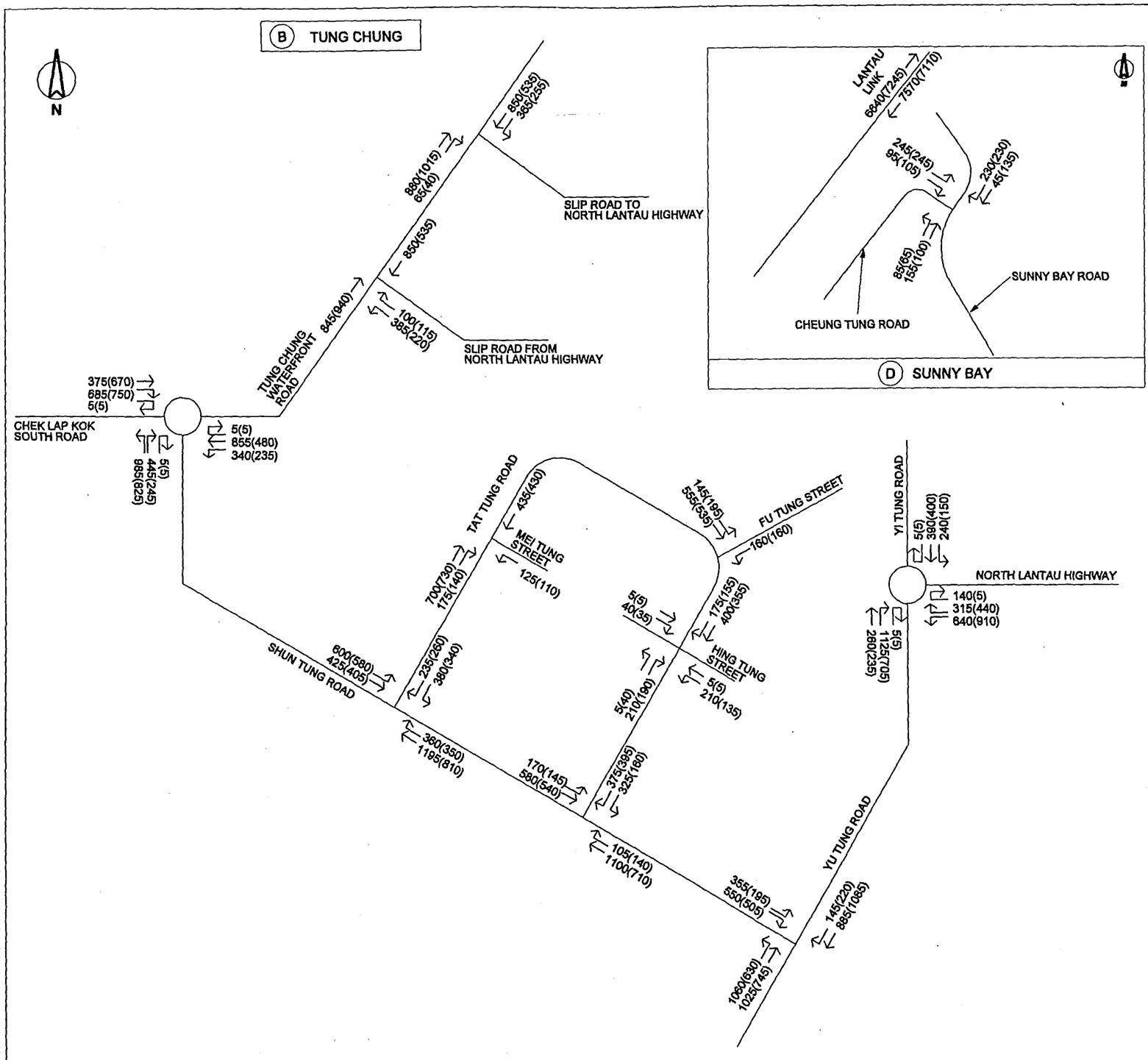
\\Mkgnfs69\Traffic\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\2005d30\08\FIGURE_4.6.dgn

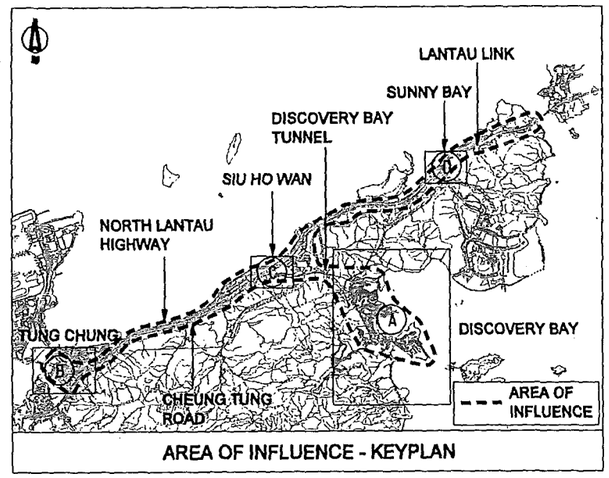


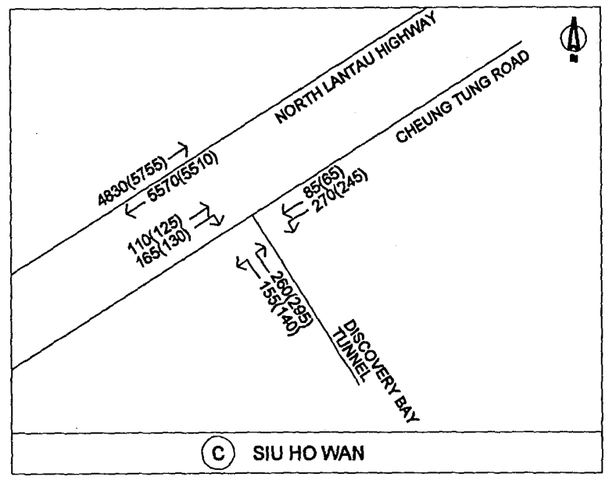
Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.7
Date: NOV 15	Scale: N.T.S.	ARUP
Drawn: WTL	Job No.: 236078	

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

M:\Drawing\230000\236078 (Discovery Bay TIA)\Drawing\2005\30\10B\FIGURE_4.7.dgn







LEGEND :

556 (454) ← PM PEAK (PCU/HR)

↑ AM PEAK (PCU/HR)

Job Title: OPTIMIZATION OF LAND USE IN DISCOVERY BAY - AREA 10B		FIGURE 4.8
Date: NOV 15	Scale: N.T.S.	ARUP
Drawn: WTL	Job No.: 236078	
Drawing Title: PROJECTED YEAR 2031 TRAFFIC FLOWS - DESIGN SCENARIO (EXTERNAL ROAD NETWORK)		

\\hkgnfs59\Traffic\Drawing\230000\236078 @Discovery Bay TIA\Drawing\205930\08\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
	2092	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	58
13:00	152	132
14:00	136	149
15:00	104	89
16:00	174	178
17:00	148	166
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	64	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	286
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	262
22:00	48	219
23:00	39	121

DB03P	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)

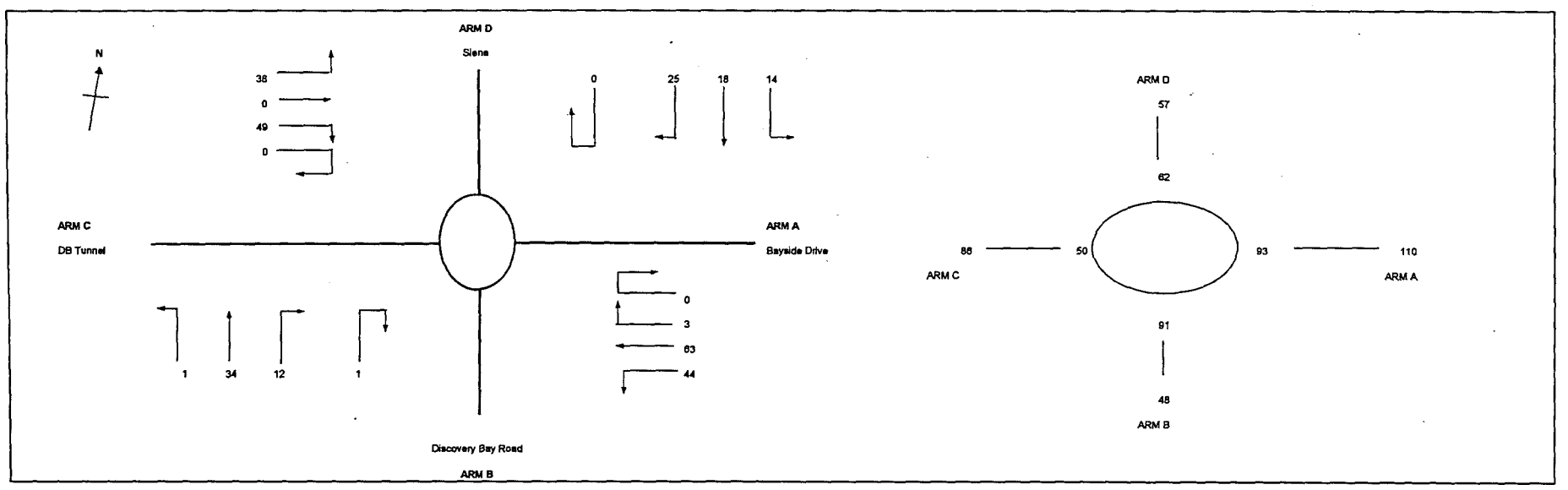
from Central Pier	Total ridership	Total *capacity*
	5437	*21290*
00:00	87	*793*
01:00	35	*495*
02:00	31	*298*
03:00	16	*298*
04:00		
05:00	15	*298*
06:00	20	*298*
07:00	117	*1485*
08:00	177	*1485*
09:00	88	*990*
10:00	114	*990*
11:00	127	*990*
12:00	119	*990*
13:00	176	*990*
14:00	249	*990*
15:00	371	*1485*
16:00	277	*990*
17:00	440	*990*
18:00	926	*1485*
19:00	563	*990*
20:00	503	*990*
21:00	418	*990*
22:00	364	*990*
23:00	204	*990*

from DB Pier	Total ridership	Total *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 (AM Peak)	DATE 30-Nov-15	FILENAME

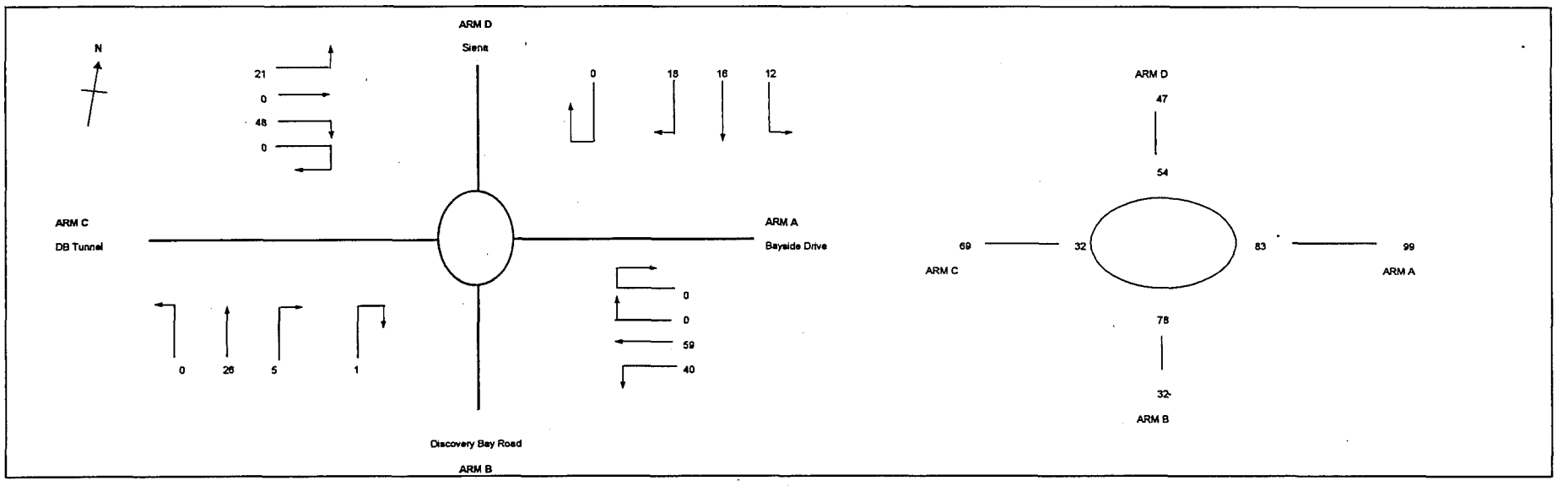


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.50	3.50	3.75	3.50
E	=	Entry width (m)	7.00	7.00	7.30	7.30
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00
R	=	Entry radius (m)	20.00	20.00	25.00	35.00
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00
Q	=	Entry flow (pcu/h)	110	48	88	57
Qc	=	Circulating flow across entry (pcu/h)	93	91	50	62
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	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)	1612	1655	1894	1911
DFC	=	Design flow/Capacity = Q/Qe	0.07	0.03	0.05	0.03

Total In Sum = 301 PCU

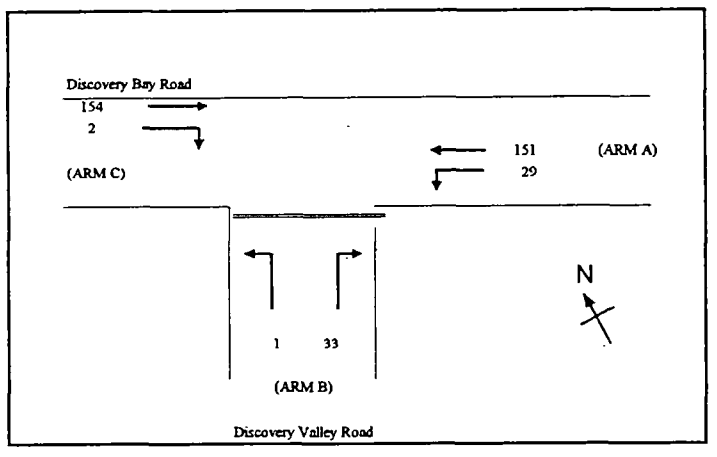
DFC of Critical Approach = 0.07

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2015 Observed Traffic Flows (PM Peak)	DATE 30-Nov-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)	89	32	69	47			
Qc	=	Circulating flow across entry (pcu/h)	83	78	32	54			
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	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)	1618	1683	1906	1916	Total In Sum =	246	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.02	0.04	0.02	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	=	2.029	(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	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

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

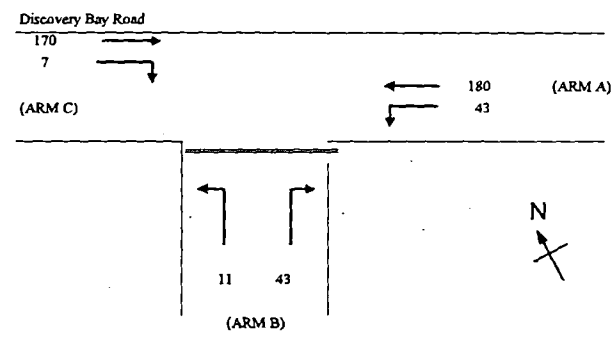
TOTAL FLOW = 371.2285714 (PCU/HR)

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	=	169.5	(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	=	0.986
Y	=	0.603

THE CAPACITY OF MOVEMENT :

Q b-a	=	548
Q b-c	=	711
Q c-b	=	686
Q b-ac	=	573.8

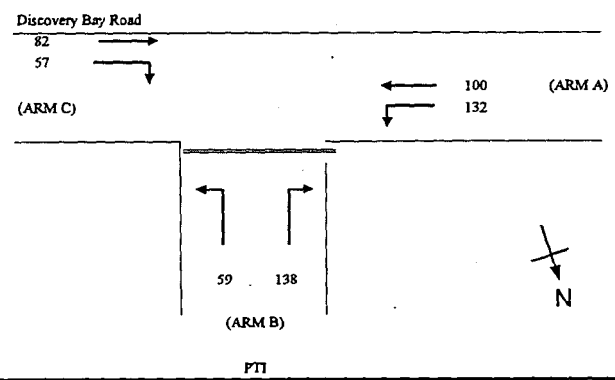
TOTAL FLOW = 453.7616466 (PCU/HR)

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 : 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	=	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	=	0.621

THE CAPACITY OF MOVEMENT :

Q b-a	=	528
Q b-c	=	688
Q c-b	=	701
Q b-ac	=	567.6

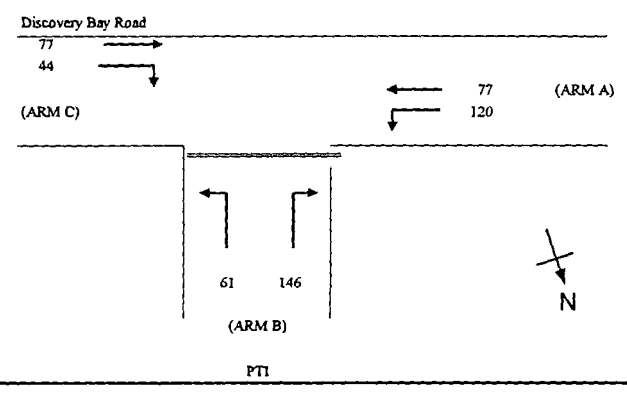
TOTAL FLOW = 568 (PCU/HR)

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 : 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	=	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

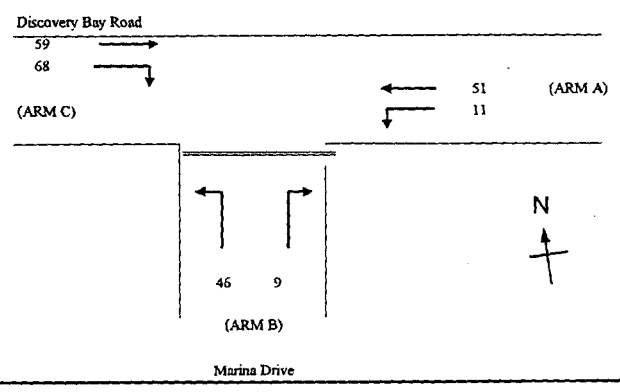
TOTAL FLOW = 524.3 (PCU/HR)

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 : 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	=	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	=	59.34	(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

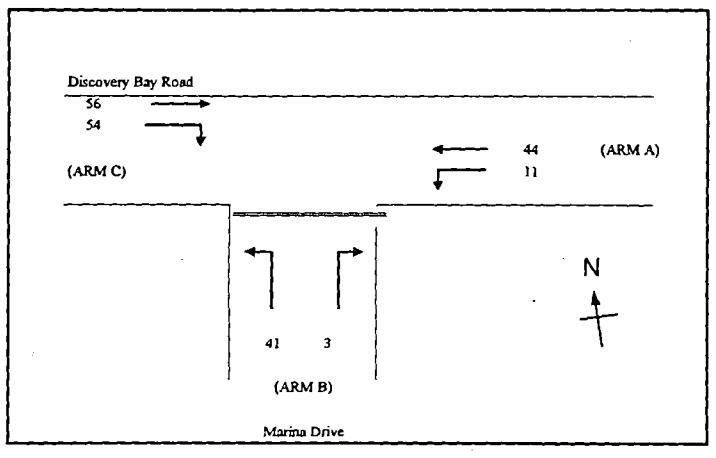
TOTAL FLOW = 243.87 (PCU/HR)

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

		PROJECT NO: 236078	DESIGNED BY:
J4 - DB Road / Marina Drive	Year 2015 Observed 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	=	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	=	0.933
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

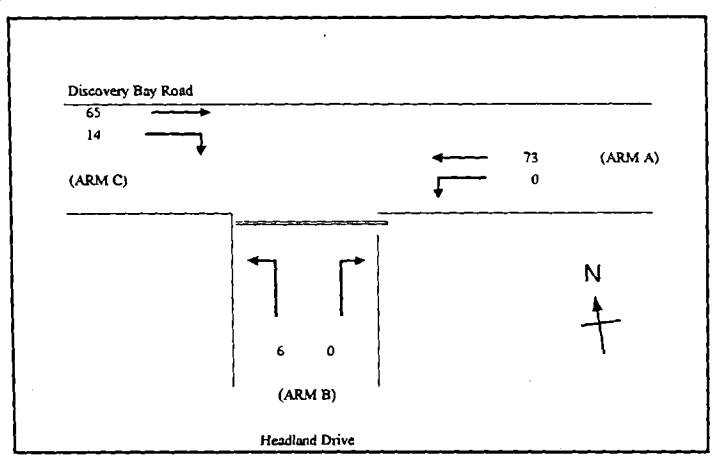
TOTAL FLOW = 208.65 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0058
DFC b-c	=	0.0596
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 : 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	=	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	=	6	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	468
Q b-c	=	620
Q c-b	=	689
Q b-ac	=	620

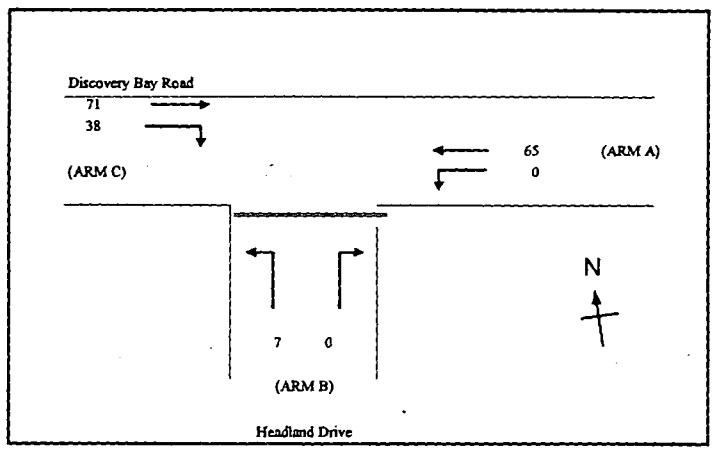
TOTAL FLOW = 158.2285714 (PCU/HR)

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 : 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 =	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	

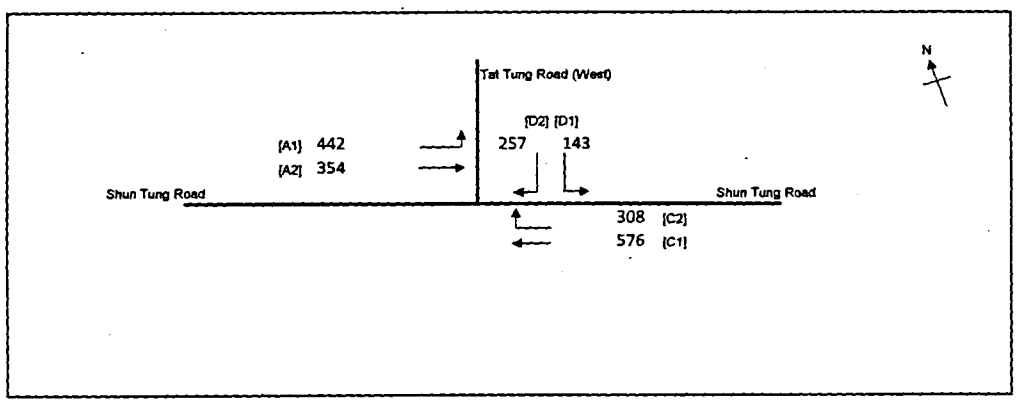
TOTAL FLOW = 181.0835341 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

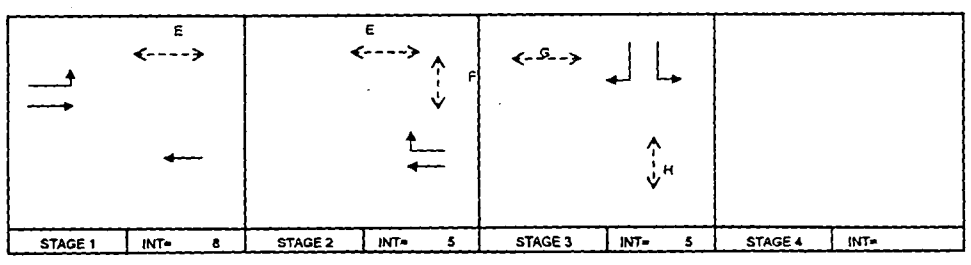
DFC b-a	=	0.0000
DFC b-c	=	0.0119
DFC c-b	=	0.0548
DFC b-ac	=	0.0119

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 : 2-Dec-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		=	2079.645 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)	=	36.4 sec
Ymax	= 1-L/C	=	0.833
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	41.7 %

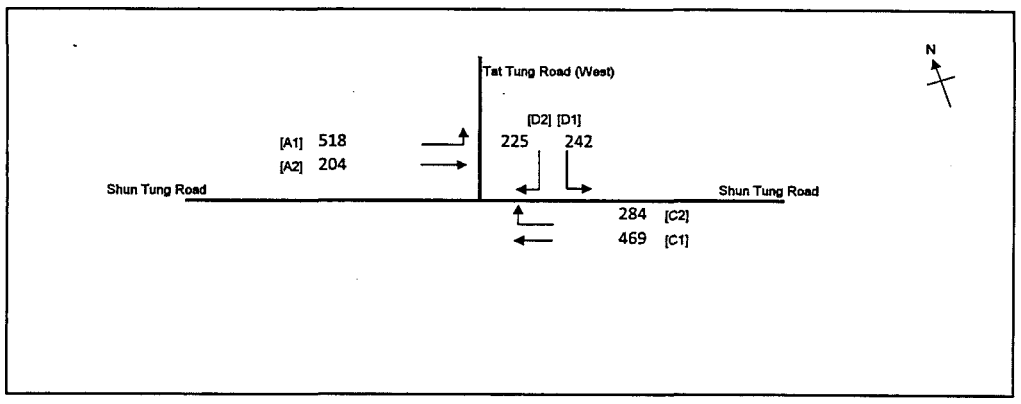


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	59	1	8	OK
F	8	5	1	7	18	1	7	OK
G	8	5	6	7	9	6	7	OK
H	11	5	2	9	11	2	9	OK

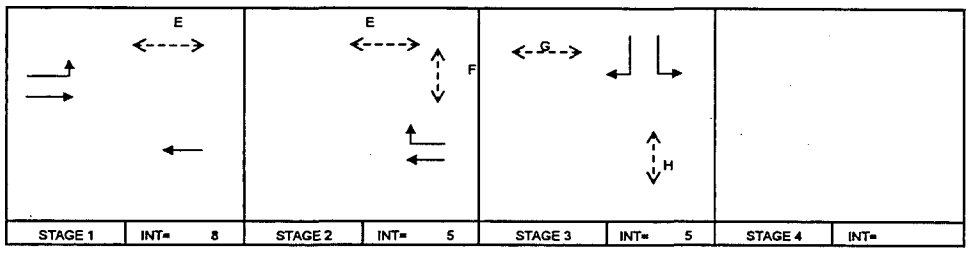
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				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	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.555
Loss time		L =	15 sec
Total Flow		=	1941.854 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)	= (0.9*Ymax-Y)/Y*100%	=	35.2 %

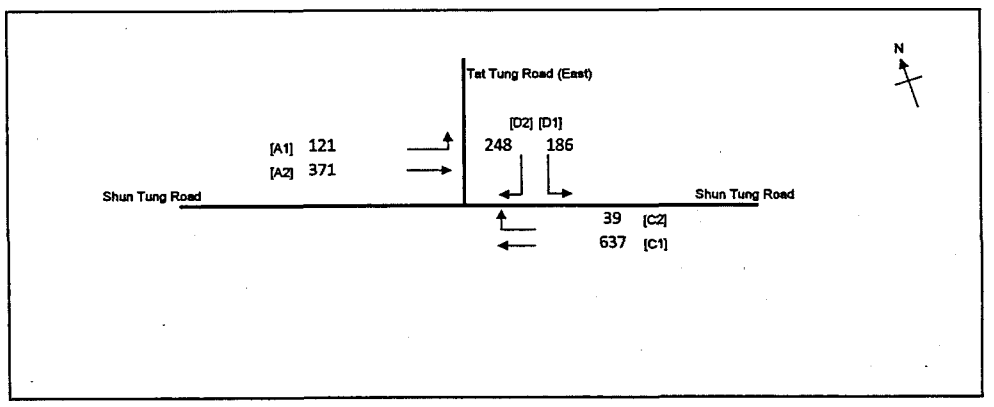


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	61	1	8	OK
F	8	5	1	7	15	1	7	OK
G	8	5	6	7	8	6	7	OK
H	11	5	2	9	10	2	9	OK

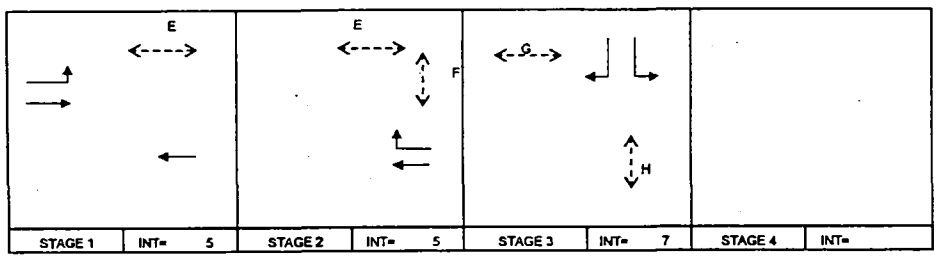
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1985	518			518	1.00	1786			1786	0.290	0.290		39	39	0.688	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	0.189	11
C2	2	3.50	C	1	30			2105			284	284	1.00	2005			2005	0.142	0.142		19	19	0.686	34
D1	3	3.50	D	1	15		N	1985	220			220	1.00	1786			1786	0.123	0.123		17	17	0.685	27
D1,D2	3	3.50	D	1	30			2105	22		225	247	1.00	2005			2005	0.123			17	17	0.686	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 : 2-Dec-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 =	0.273
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%	=	166.6 %
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 %

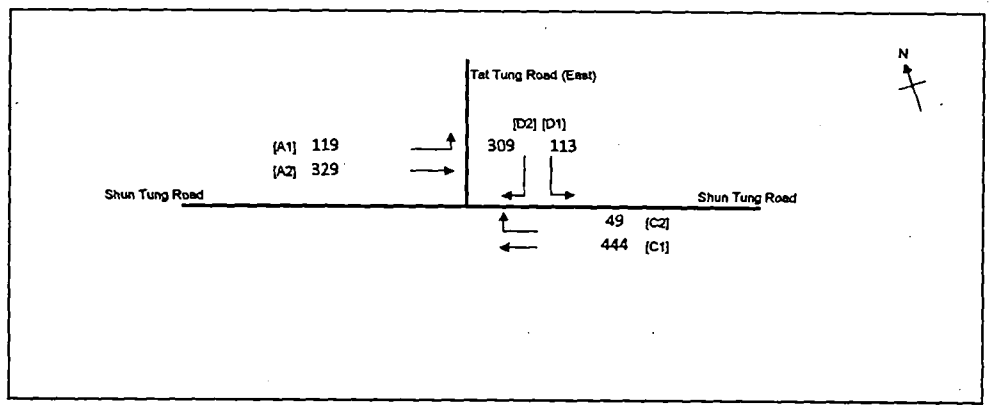


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	43	1	8	OK
F	8	5	7	7	4	7	7	not OK
G	8	5	7	7	24	7	7	OK
H	10	5	2	8	28	2	8	OK

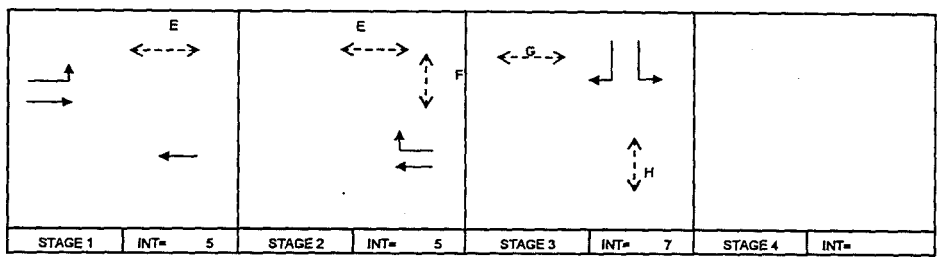
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1985	121	110		231	0.52	1867			1867	0.124	0.124		30	30	0.368	23
A2	1	3.50	A	1				2105		281		281	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			38	47	0.298	23
C2	2	3.50	C	1	30			2105			39	39	1.00	2005			2005	0.019	0.019	9	5	14	0.128	5
D1	3	3.50	D	1	15		N	1985	188			188	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	0.367	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 : 2-Dec-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 =	0.301
Loss time		L =	27 sec
Total Flow		=	1382.581 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 %

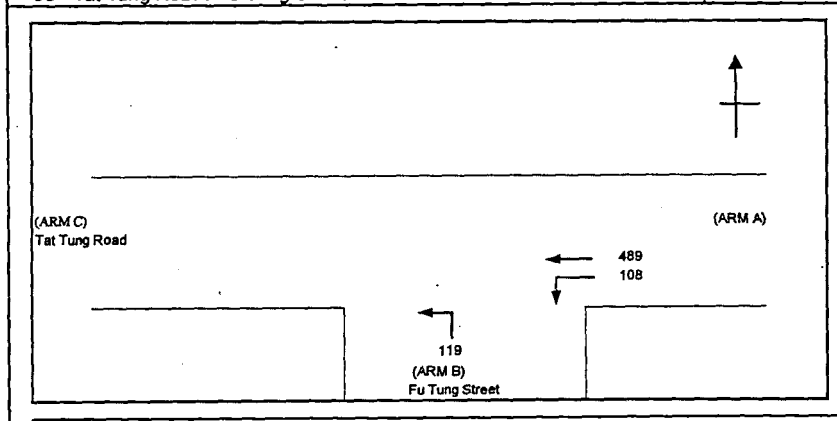


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	41	1	8	OK
F	8	5	7	7	8	7	7	OK
G	8	5	7	7	28	7	7	OK
H	10	5	2	8	30	2	8	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	119	95		214	0.56	1861			1861	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	8
D1	3	3.50	D	1	15		N	1965	113			113	1.00	1786			1786	0.063	0.161		13	34	0.188	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 : Dec 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	=	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	=	0.7621
E	=	0.6451
F	=	0.5860
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

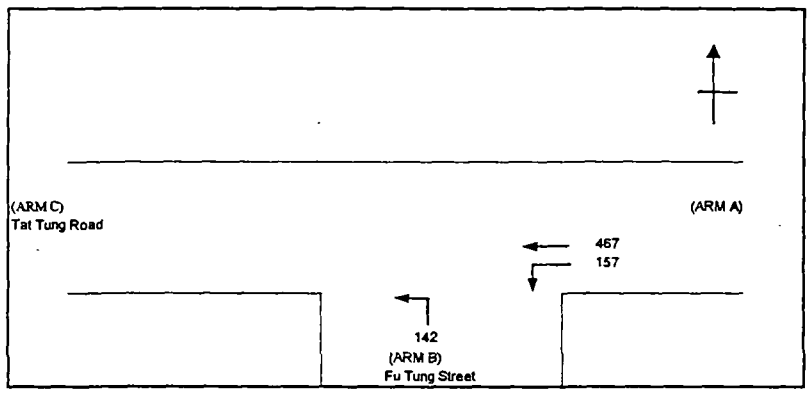
TOTAL FLOW = 716 (PCU/HR)

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 : Dec 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	=	467	(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	=	142	(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	=	369
Q b-c	=	388
Q c-b	=	338
Qb-ac	=	388

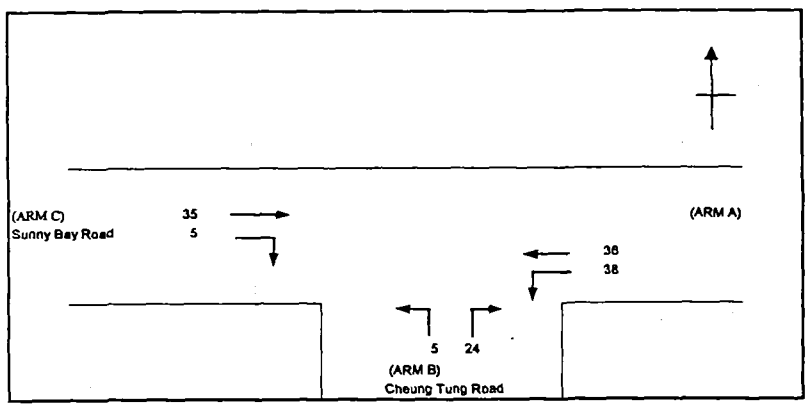
TOTAL FLOW = 766 (PCU/HR)

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 : Dec 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	=	666
Q c-b	=	708
Qb-ac	=	598

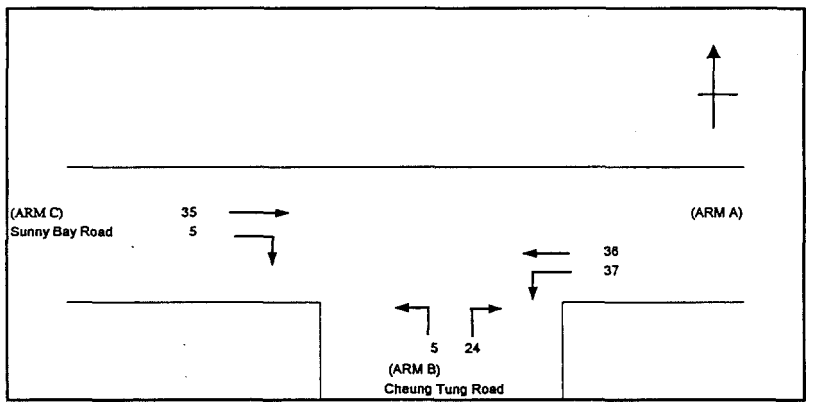
TOTAL FLOW = 143 (PCU/HR)

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 : Dec 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	=	36	(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	=	667
Q c-b	=	709
Qb-ac	=	599

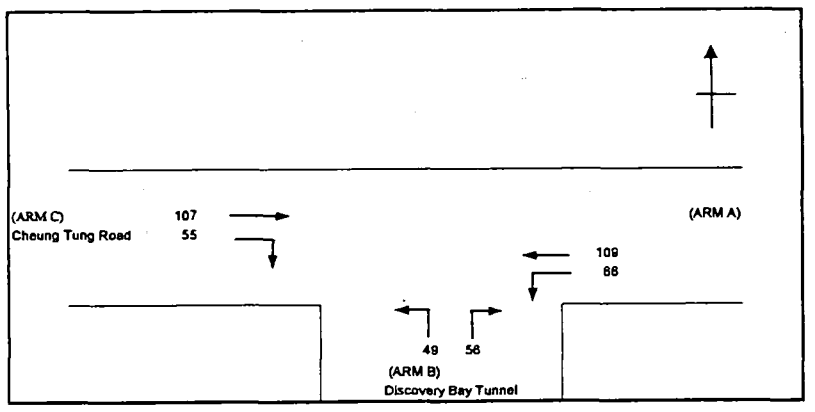
TOTAL FLOW = 142 (PCU/HR)

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 : Dec 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	=	86	(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	=	0.4646

THE CAPACITY OF MOVEMENT :

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

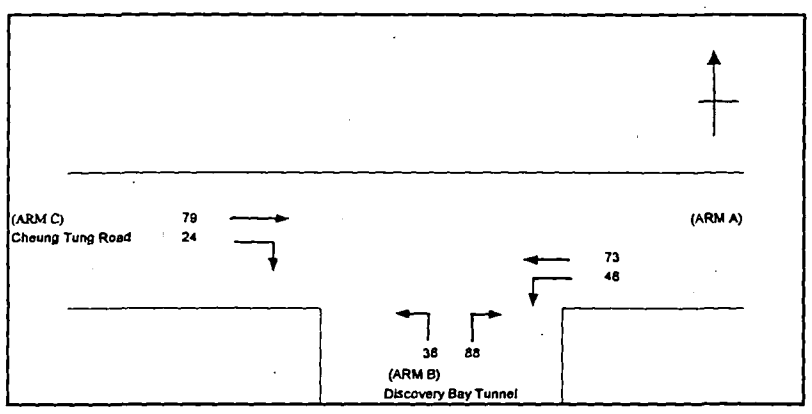
TOTAL FLOW = 442 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1045
DFC b-c	=	0.0656
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 : Dec 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	=	48	(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	=	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	=	88	(pcu/hr)
q b-c	=	36	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9406
Y	=	0.7309
P	=	0.2881

THE CAPACITY OF MOVEMENT :

Q b-a	=	583
Q b-c	=	754
Q c-b	=	671
Qb-ac	=	607

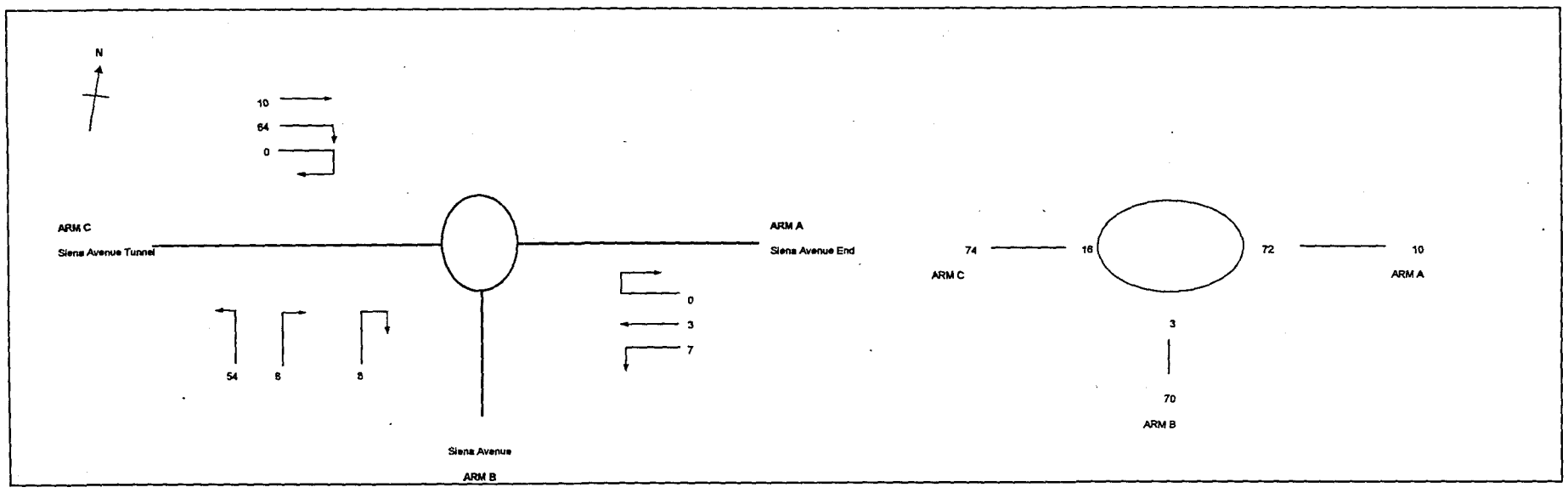
TOTAL FLOW = 345 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1558
DFC b-c	=	0.0471
DFC c-b	=	0.0361
DFC b-ac	=	0.2029

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 2-Dec-15	FILENAME

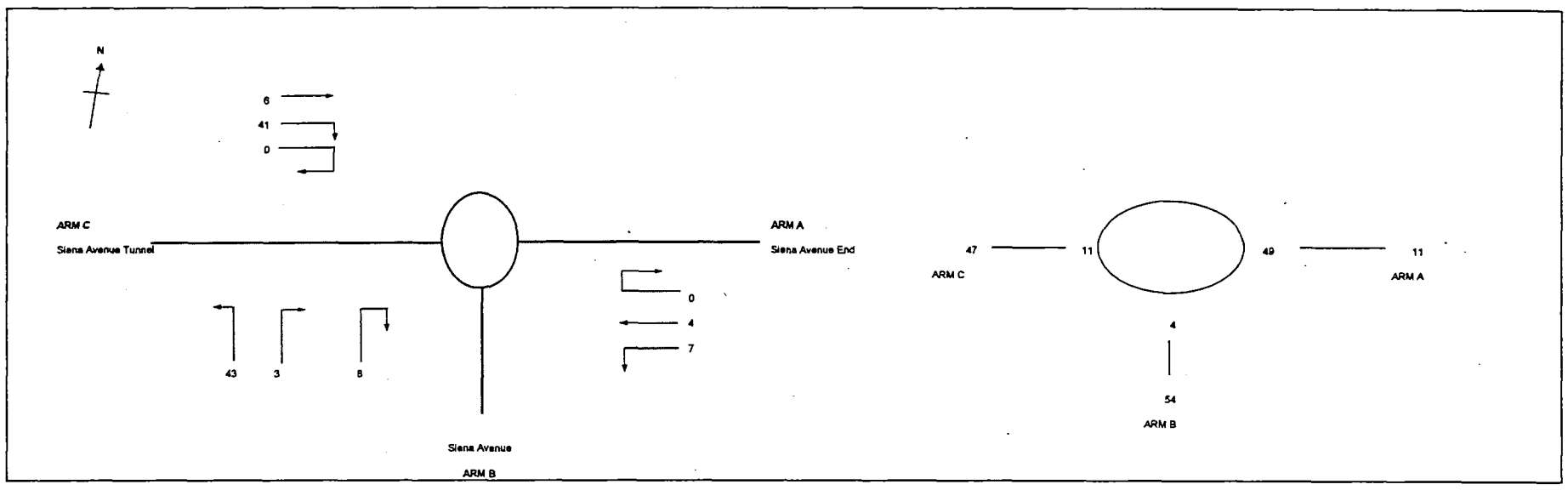


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	10	70	74
Qc	=	Circulating flow across entry (pcu/h)	72	3	16
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	4.67
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	0.64	0.81
Qe	=	K(F-Fc*Qc)	1007	1506	1283
DFC	=	Design flow/Capacity = Q/Qe	0.01	0.05	0.06

Total In Sum = 154 PCU

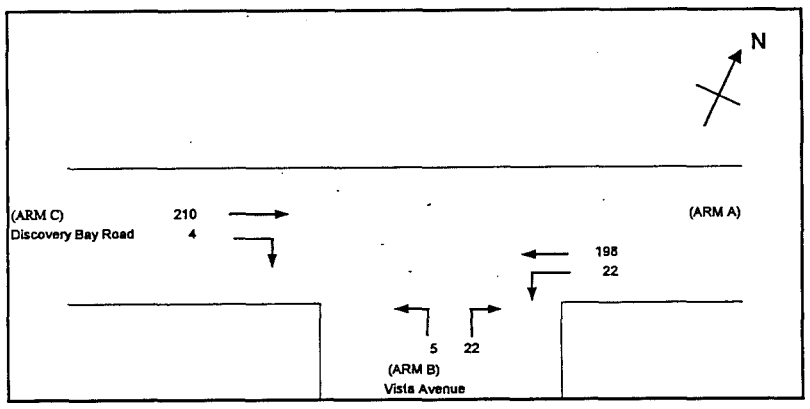
DFC of Critical Approach = 0.06

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2015 Observed Traffic Flows (PM Peak)	DATE 2-Dec-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	0.93	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	0.64	0.61			
Qe	=	K(F-Fc*Qc)	1019	1508	1285	Total in Sum =	112	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.01	0.04	0.04	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 : Dec 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	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

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

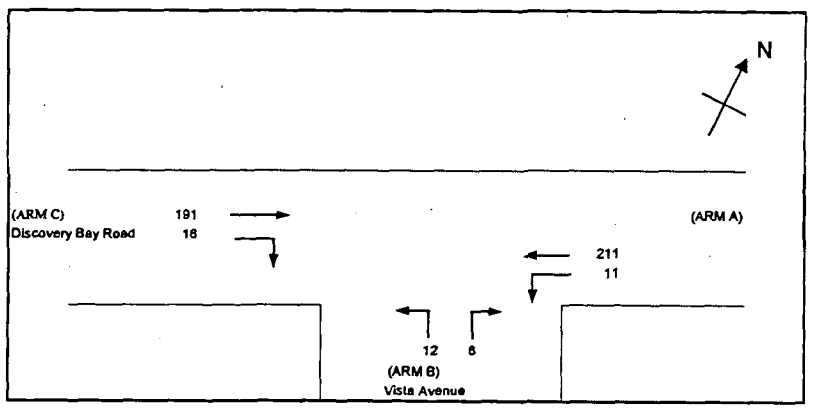
TOTAL FLOW = 481 (PCU/HR)

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		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2015 Observed Traffic Flows (PM Peak)	DATE : Dec 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	=	11	(pcu/hr)
q a-c	=	211	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	191	(pcu/hr)
q c-b	=	16	(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	=	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	=	681
Q c-b	=	771
Qb-ac	=	616

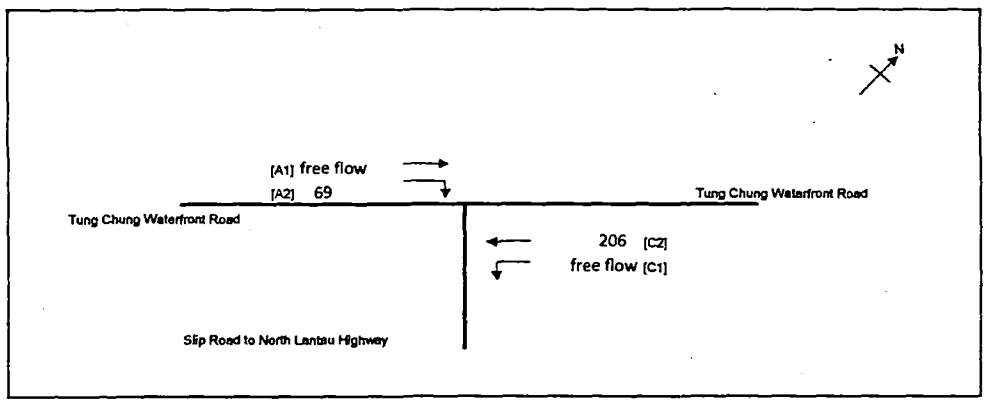
TOTAL FLOW = 448 (PCU/HR)

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		PROJECT NO:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2015 Oberved Traffic Flows (AM Peak)	DATE : 2-Dec-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		=	275 pcu
Co	= (1.5*L+5)/(1-Y)	=	18.8 sec
Cm	= L/(1-Y)	=	8.7 sec
Yult		=	0.840
R.C.ult	= (Yult-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%	=	817.8 %

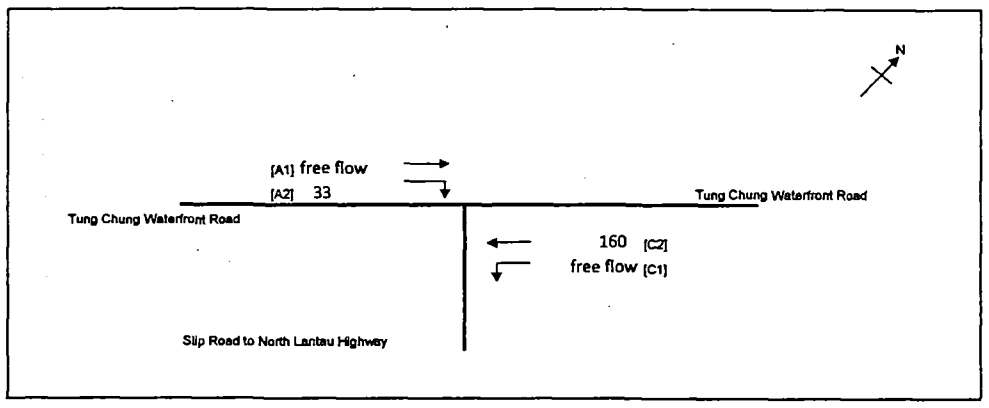
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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	Straight pcu/h	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.
																				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	0.089	5

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 : 2-Dec-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	
Loss time	L =	8	sec
Total Flow	=	193	pcu
Co = (1.5*L+5)/(1-Y)	=	18.0	sec
Cm = L/(1-Y)	=	8.5	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	%

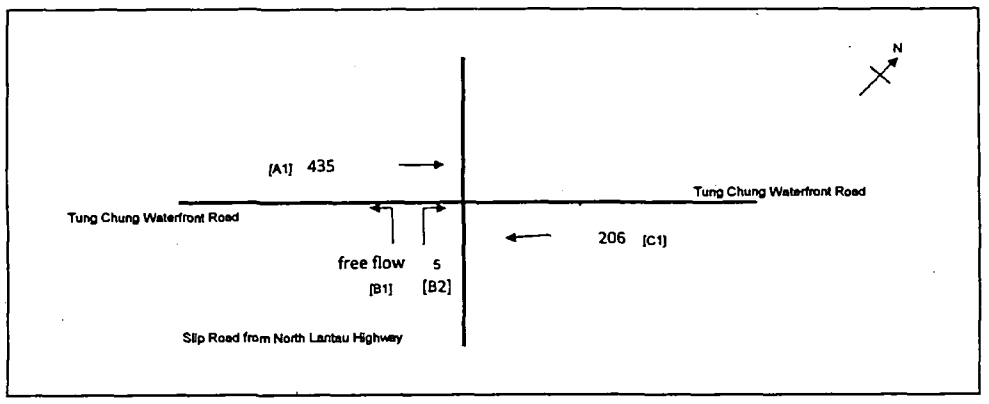
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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	Straight pcu/h	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.
																				8				
A2	1	3.50	A	1	15			2105			33	33	1.00	1914			1914	0.017	0.017		18	17	0.061	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 : 2-Dec-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 =	0.106	
Loss time	L =	10	sec
Total Flow	=	646.1	pcu
Co = (1.5*L+5)/(1-Y)	=	22.4	sec
Cm = L/(1-Y)	=	11.2	sec
Yult	=	0.825	
R.C.ult = (Yult-Y)/Y*100%	=	678.4	%
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%	=	607.6	%

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

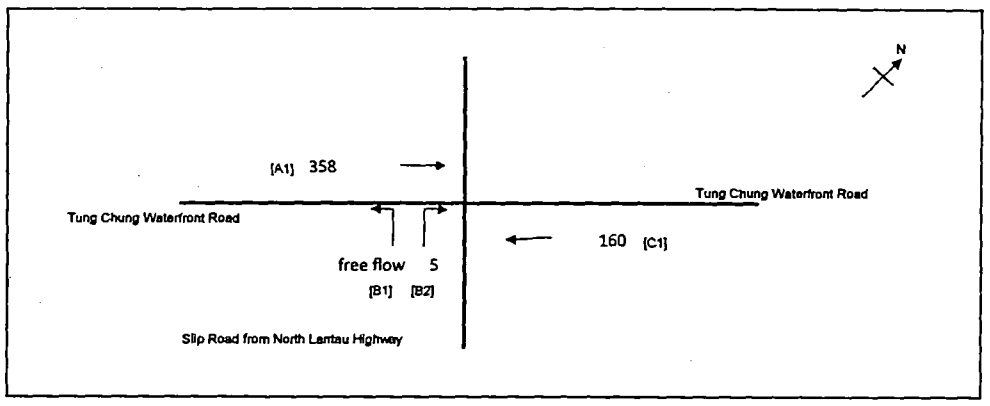
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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.
																				10				
A1	1	3.50	A	2				4210		435		435	0.00	4210			4210	0.103	0.103		49	38	0.172	9
B2	2	3.50	B	1	15			2105			5	5	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

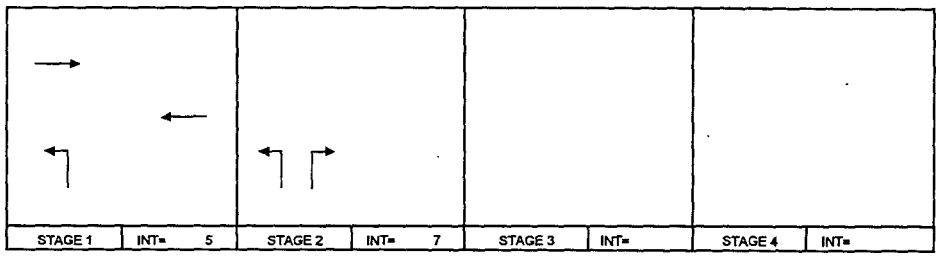
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

TRAFFIC SIGNAL CALCULATION

Discovery Bay		PROJECT NO:	236078
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.086
Loss time	L =	10 sec
Total Flow	=	523.1 pcu
Co = (1.5*L+5)/(1-Y)	=	21.9 sec
Cm = L/(1-Y)	=	11.0 sec
Yult	=	0.825
R.C.ult = (Yult-Y)/Y*100%	=	840.7 %
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=

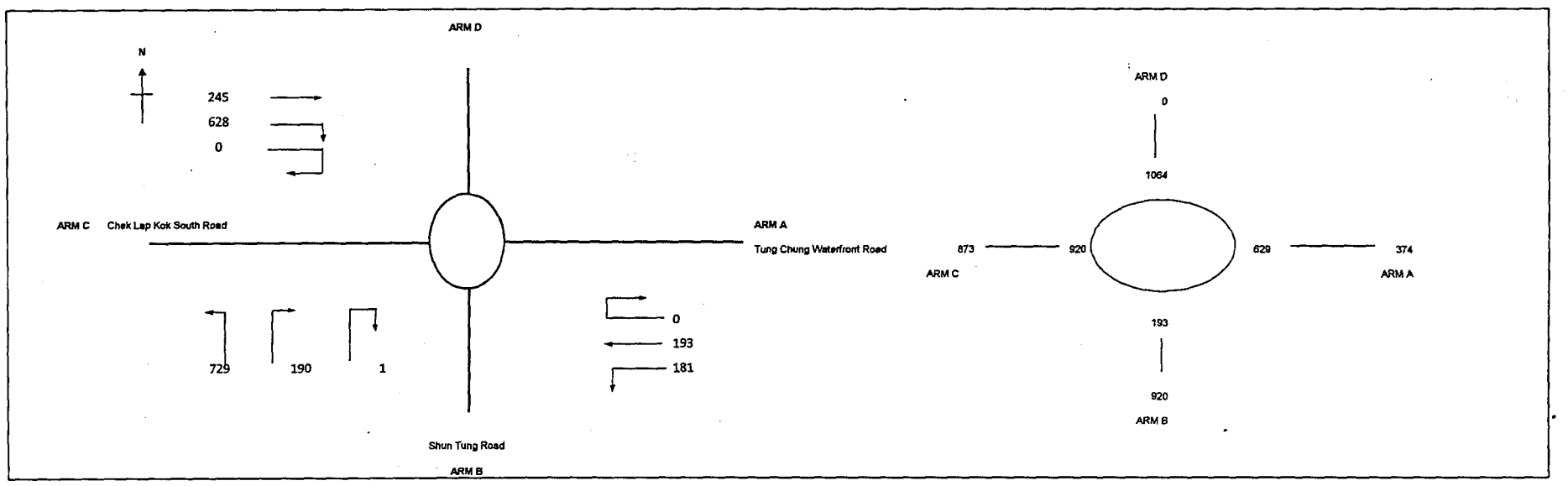
Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

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 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.
																				10				
A1	1	3.50	A	2				4210		358		358	0.00	4210			4210	0.085	0.085		48	38	0.142	7
B2	2	3.50	B	1	15			2105			5	5	1.00	1914			1914	0.003	0.003		2	12	0.013	0
C1	1	3.50	A	2				4210		160		160	0.00	4210			4210	0.038			22	38	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 2-Dec-15	FILENAME

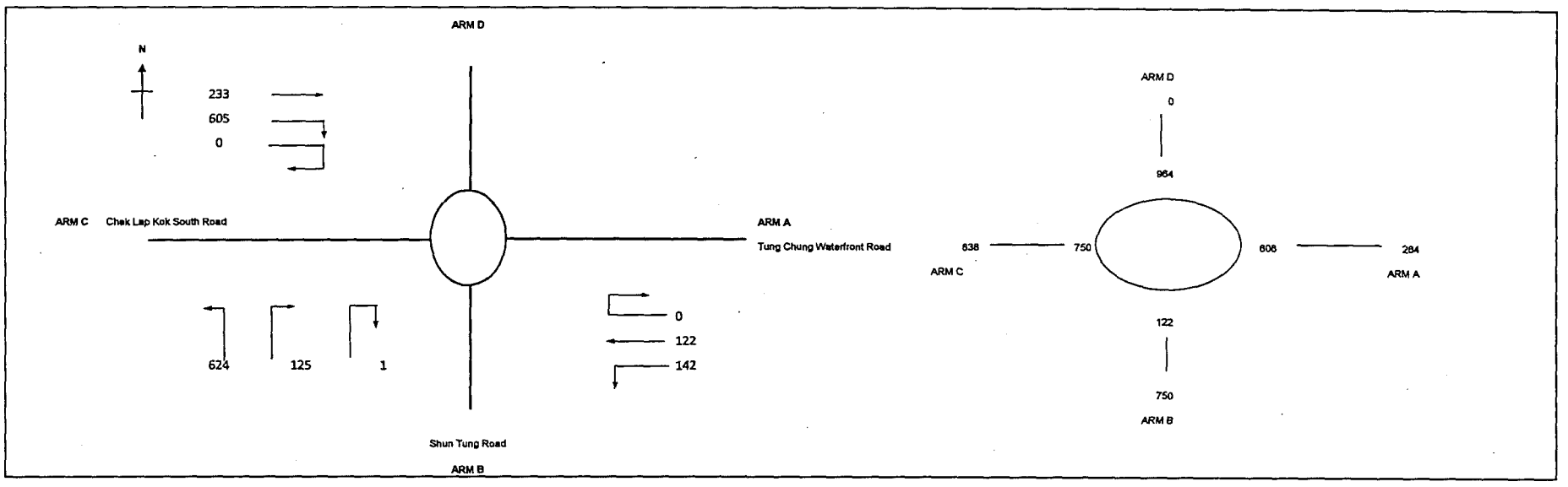


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	374	920	873
Qc	=	Circulating flow across entry (pcu/h)	629	193	920
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	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)	2071	2211	1782
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.42	0.49

Total in Sum = 2167 PCU

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 2-Dec-15	FILENAME

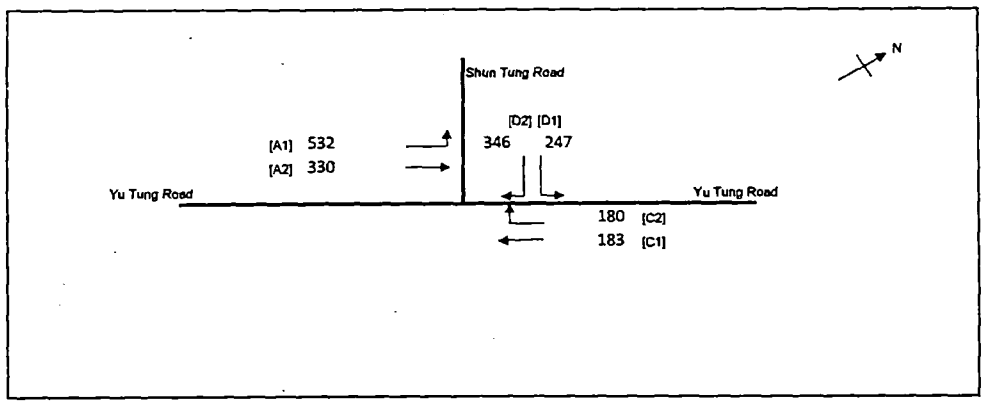


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	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	0.96	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)	2087	2258	1896
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.33	0.44

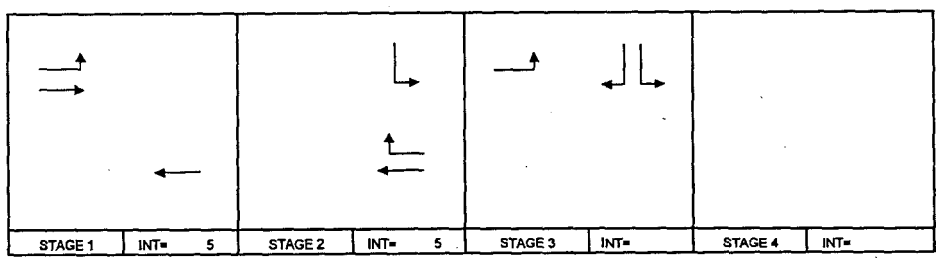
Total In Sum = 1852 PCU

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 : 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 =	0.388
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 %



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

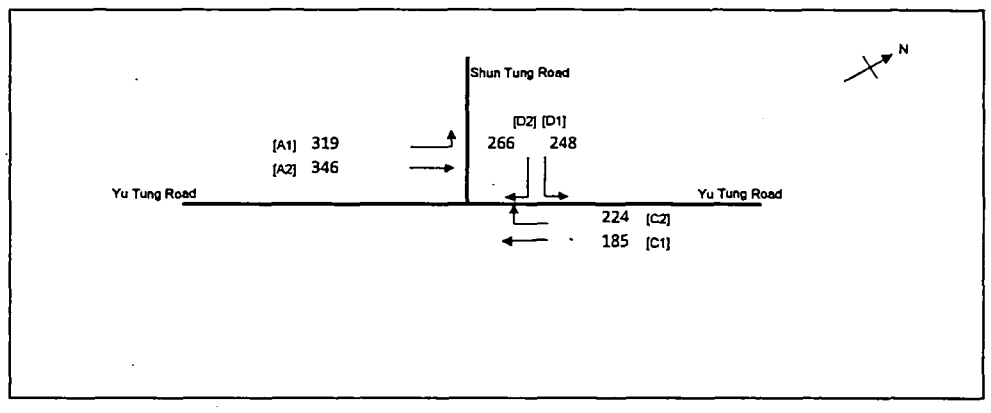
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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.
																				8				
A1	1,3	3.50	B	1	15		N	1985	532			532	1.00	1786			1786	0.298	0.298		48	43	0.485	24
A2	1	3.50	A	2				4210		330		330	0.00	4210			4210	0.078			13	15	0.366	15
C1	1,2	3.50	F	2			N	4070		183		183	0.00	4070			4070	0.045			7	28	0.112	6
C2	2	3.50	E	1	30			2105			180	180	1.00	2005			2005	0.090	0.090		14	10	0.829	18
D1	2,3	3.50	D	1	15		N	1985	247			247	1.00	1786			1786	0.138			22	41	0.238	12
D2	3	3.50	C	2	30			4210			346	346	1.00	4010			4010	0.086			14	30	0.201	12

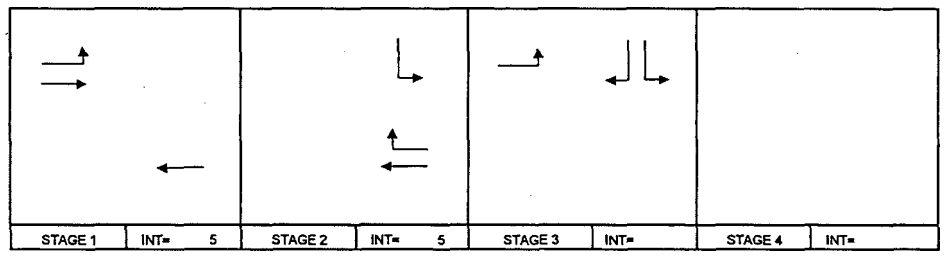
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

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 : 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 =	0.290
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 %



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

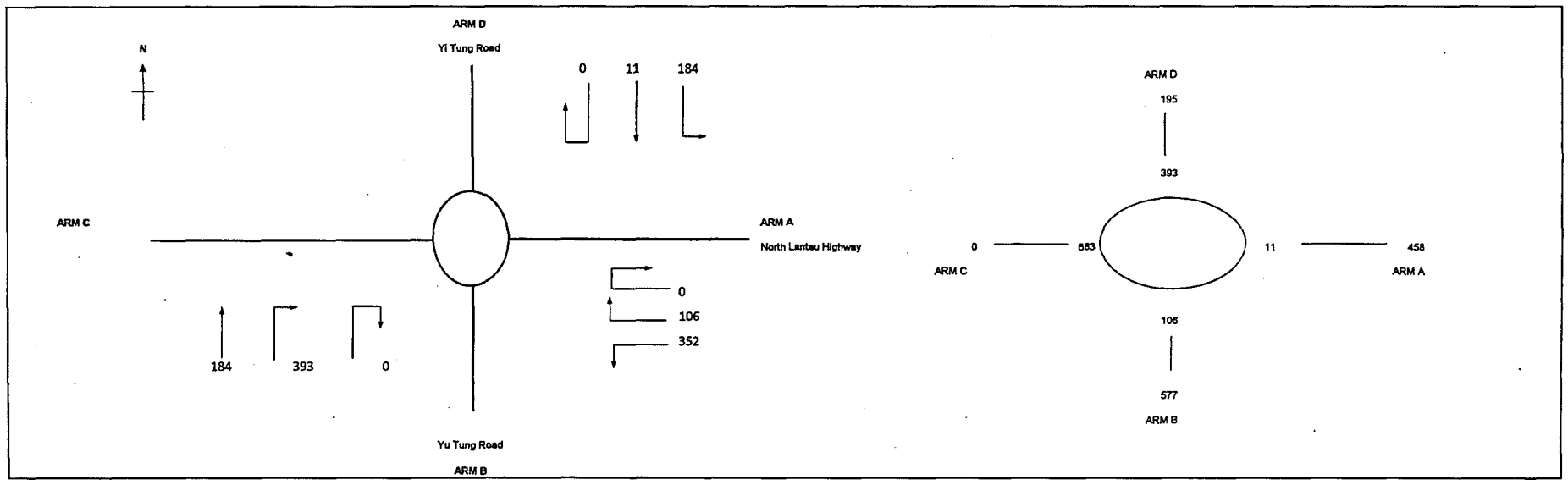
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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.
																				8				
A1	1,3	3.50	B	1	15		N	1965	319			319	1.00	1786			1786	0.179	0.179		38	43	0.291	14
A2	1	3.50	A	2				4210		346		346	0.00	4210			4210	0.082			18	15	0.384	16
C1	1,2	3.50	F	2			N	4070		185		185	0.00	4070			4070	0.045			10	28	0.114	8
C2	2	3.50	E	1	30			2105			224	224	1.00	2005			2005	0.112	0.112		24	10	0.782	22
D1	2,3	3.50	D	1	15		N	1965	248			248	1.00	1786			1786	0.139			30	41	0.237	12
D2	3	3.50	C	2	30			4210			266	266	1.00	4010			4010	0.066			14	30	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 2-Dec-15	FILENAME

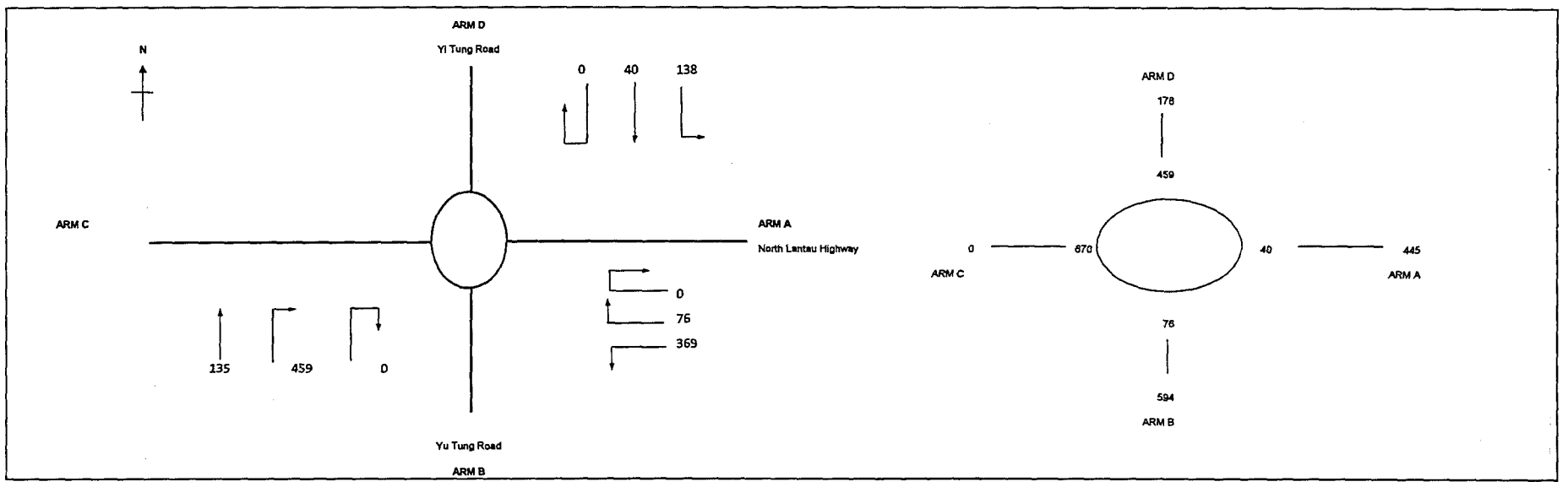


ARM			A	B	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	14.00	15.00	14.00
L	=	Effective length of flare (m)	40.00	70.00	30.00
R	=	Entry radius (m)	80.00	40.00	80.00
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00
A	=	Entry angle (degree)	35.00	40.00	35.00
Q	=	Entry flow (pcu/h)	458	577	195
Qc	=	Circulating flow across entry (pcu/h)	11	106	393
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	12.86	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)	3540	3777	3117
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.15	0.06

Total In Sum = 1230 PCU

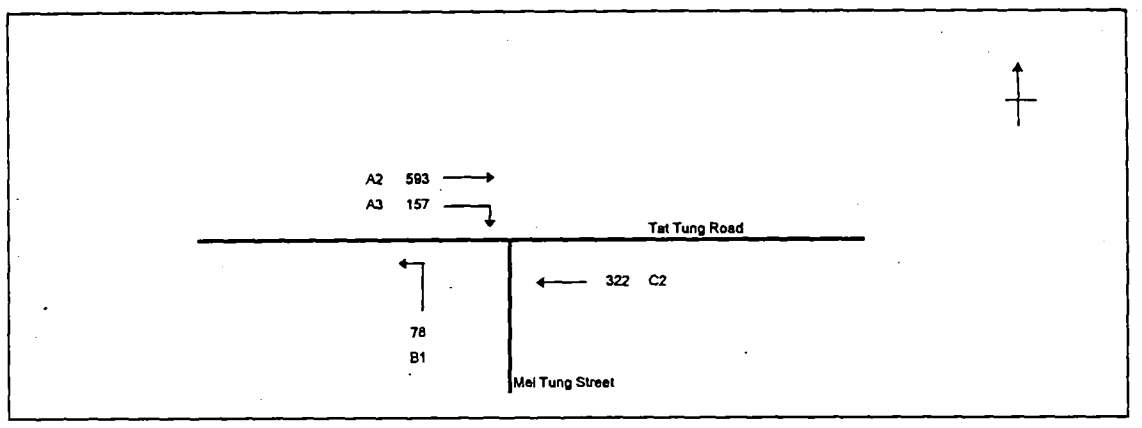
DFC of Critical Approach = 0.15

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern interchange	Year 2015 Observed Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME

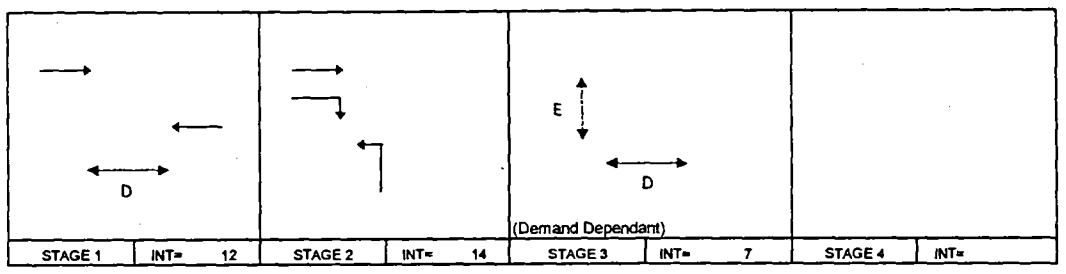


ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	60.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degrees)	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	0.28	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	12.86	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)	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 : 2-Dec-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
Yult		=	0.518
R.C.ult	= (Yult-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%	=	89.6 % (Optimized)



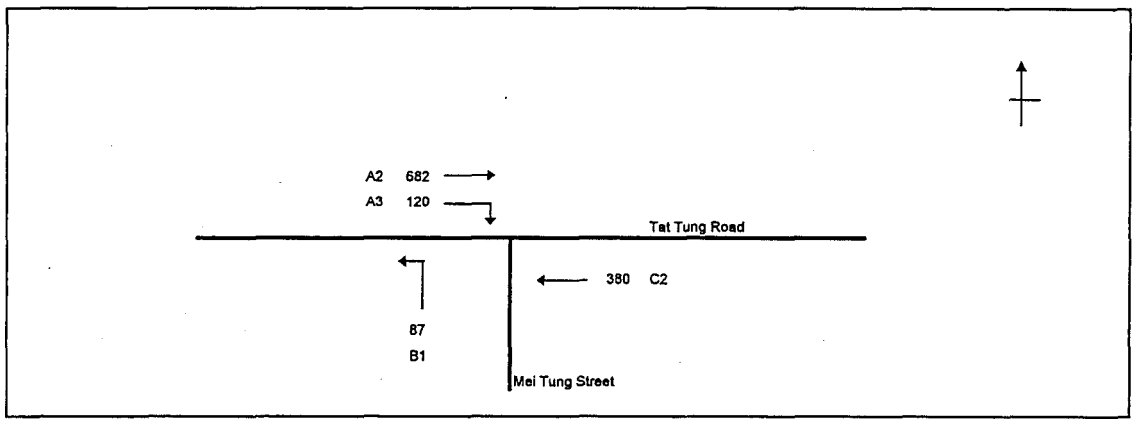
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

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

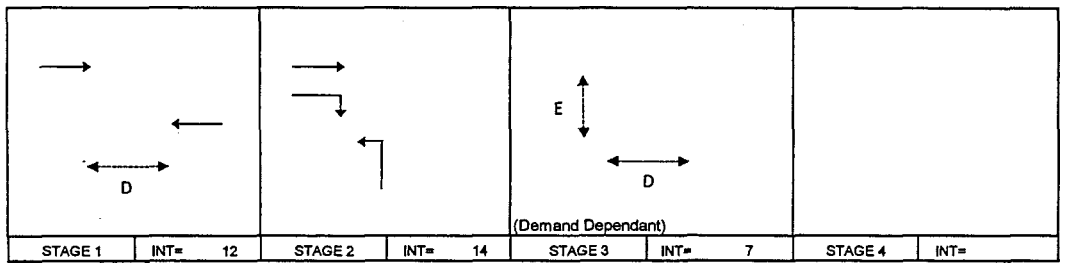
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		532		532	0.00	1945			1945	0.273			69	69	0.475	0
A2,A3	2	3.30	A	1	30			2085		61	157	218	0.72	2012			2012	0.108	0.108		27	69	0.188	19
B1	2	3.20	B	2	15		N	4010	78			78	1.00	3645			2918	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: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2015 Observed 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 =	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		=	0.518
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)

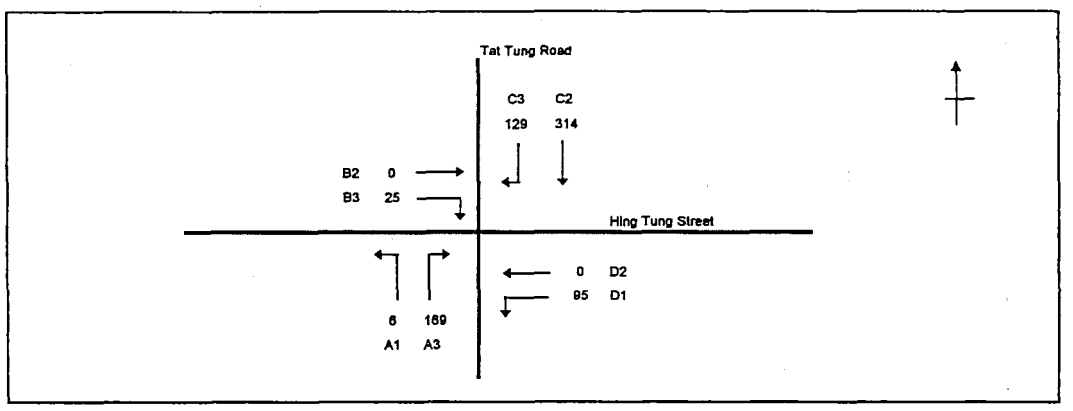


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

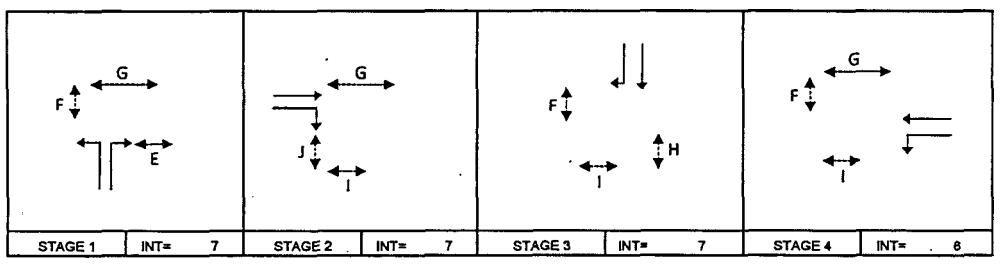
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		588		588	0.00	1945			1945	0.301			69	69	0.523	0
A2,A3	2	3.30	A	1	30			2085		96	120	216	0.55	2029			2029	0.106	0.106		24	69	0.185	18
B1	2	3.20	B	2	15		N	4010	87			87	1.00	3845			2916	0.030			7	7	0.523	8
C2	1	3.40	C	1			N	1955		380		380	0.00	1955			1955	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: 236078	
J18 - Tat Tung Road / Hing Tung Street	Year 2015 Observed Traffic Flows (AM Peak)	DATE : 2-Dec-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)	=	107.8 sec
Cm	= L/(1-Y)	=	68.0 sec
Yult		=	0.458
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)



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	31	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	54	2	6	OK
J	6.6	5	6	6	5	6	6	OK

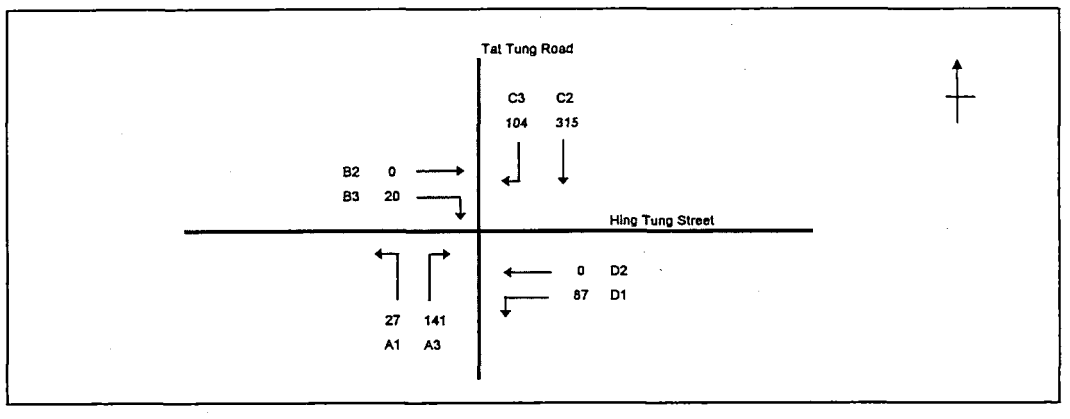
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1965	6			6	1.00	1785			1785	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	0.261	23
B2,B3	2	3.00	B	1	30		N	1915		0	11	11	1.00	1824			1459	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	3.90	C	1	25		N	2005		226		226	0.00	2005			2005	0.112			52	11	1.227	41
C2,C3	3	3.90	C	1	25		N	2005		88	129	217	0.60	1936			1936	0.112			52	11	1.226	40
D1,D2	4	3.50	D	1	40		N	2005	75	0		95	1.00	1935			1935	0.049	0.049		23	23	0.251	15
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

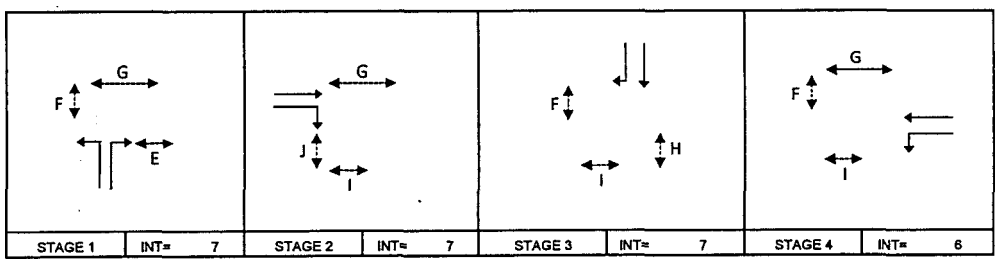
Appendix C

2026 Reference and Design Case Junction Calculation Sheets

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J18 - Tat Tung Road / Hing Tung Street	Year 2015 Observed Traffic Flows (PM Peak)	DATE : 2-Dec-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		=	887 pcu
Co	= (1.5*L+5)/(1-Y)	=	85.4 sec
Cm	= L/(1-Y)	=	52.8 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)



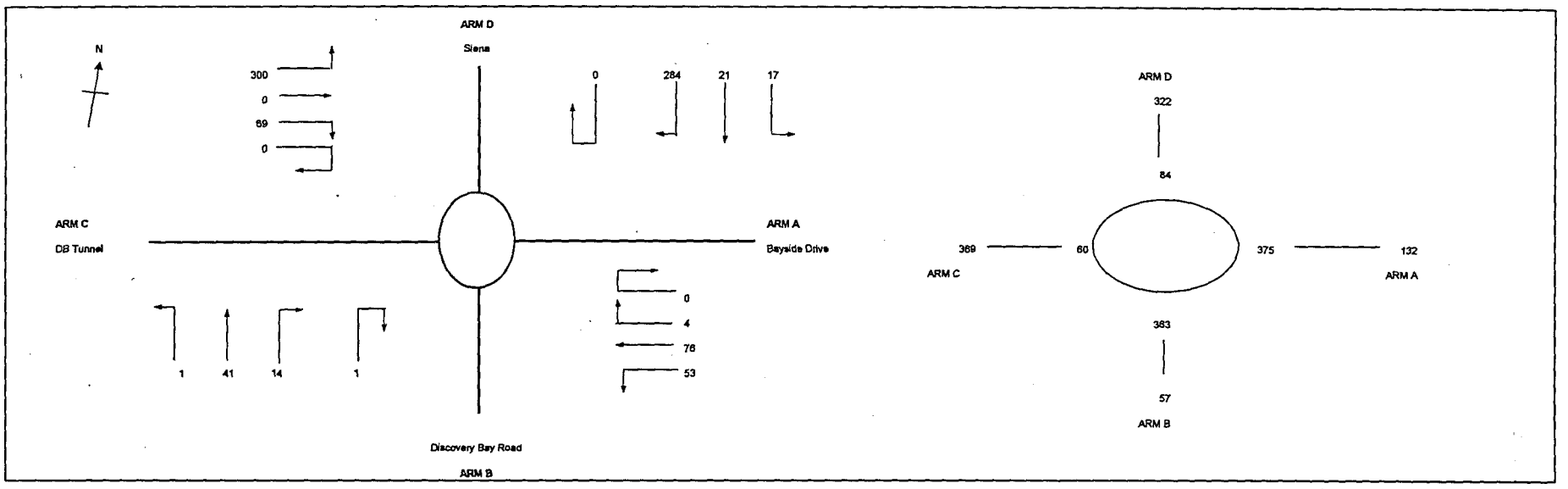
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	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	62	2	5	OK
H	8.3	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 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.
																				24				
A1	1	3.50	A	1	15		N	1965	27			27	1.00	1786			1786	0.015	0.070		5	25	0.072	0
A1,A3	1	3.50	A	1	40			2105	0		141	141	1.00	2029			2029	0.070			25	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	0.067	2
B3	2	3.00	B	1	30			2055			11	11	1.00	1957			1566	0.007			3	11	0.077	2
C2	3	3.90	C	1	25		N	2005		213		213	0.00	2005			2005	0.106	0.106		38	38	0.336	29
C2,C3	3	3.90	C	1	25		N	2005		102	104	206	0.50	1946			1946	0.106			38	38	0.334	28
D1,D2	4	3.90	D	1	40		N	2005	87	0		87	1.00	1933			1933	0.045	0.045		16	16	0.336	15
PED	2																			17				

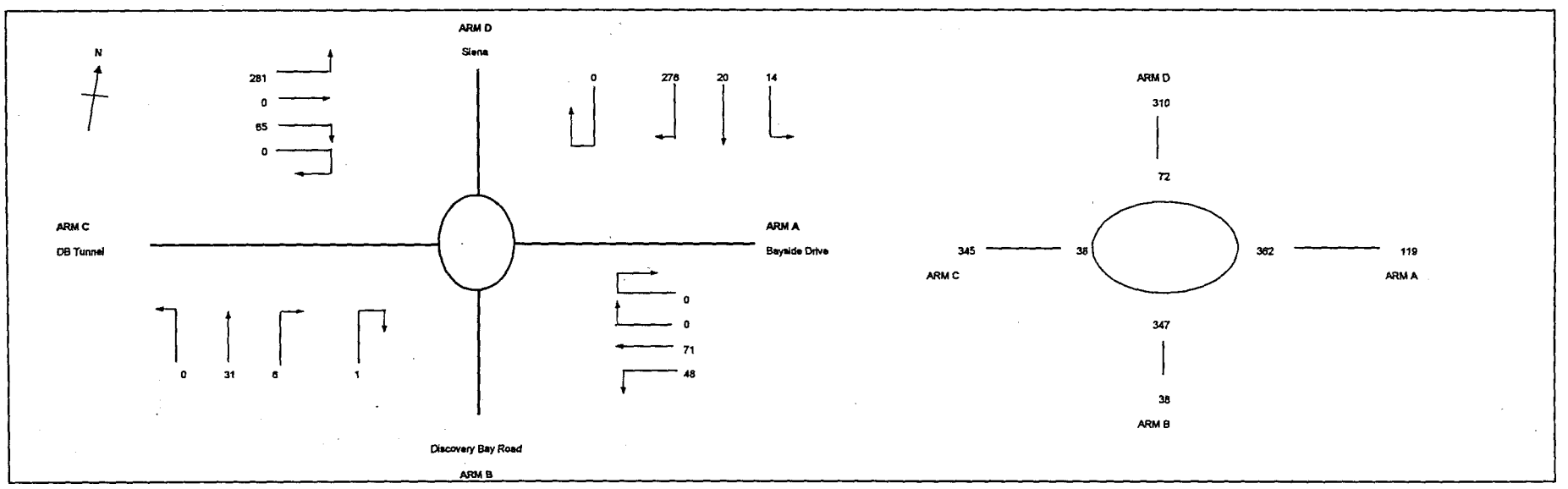
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Reference Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



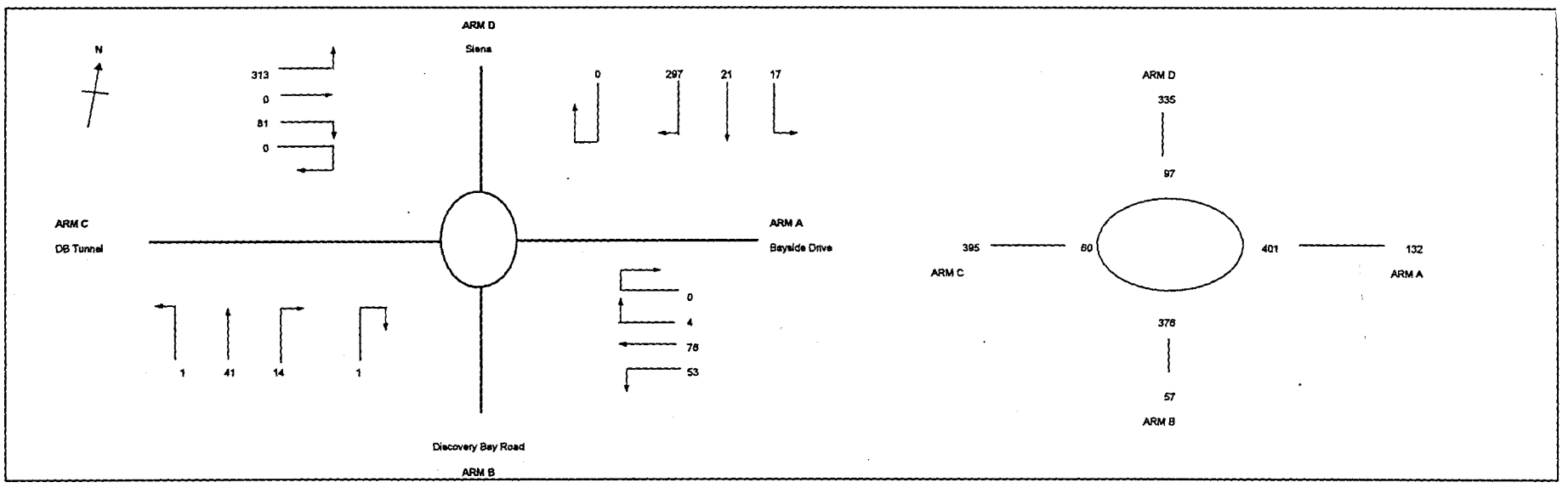
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	132	57	369	322			
Qc	=	Circulating flow across entry (pcu/h)	375	383	60	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	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)	1442	1490	1887	1896	**Total in Sum =**	**881**	**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 30-Nov-15	FILENAME



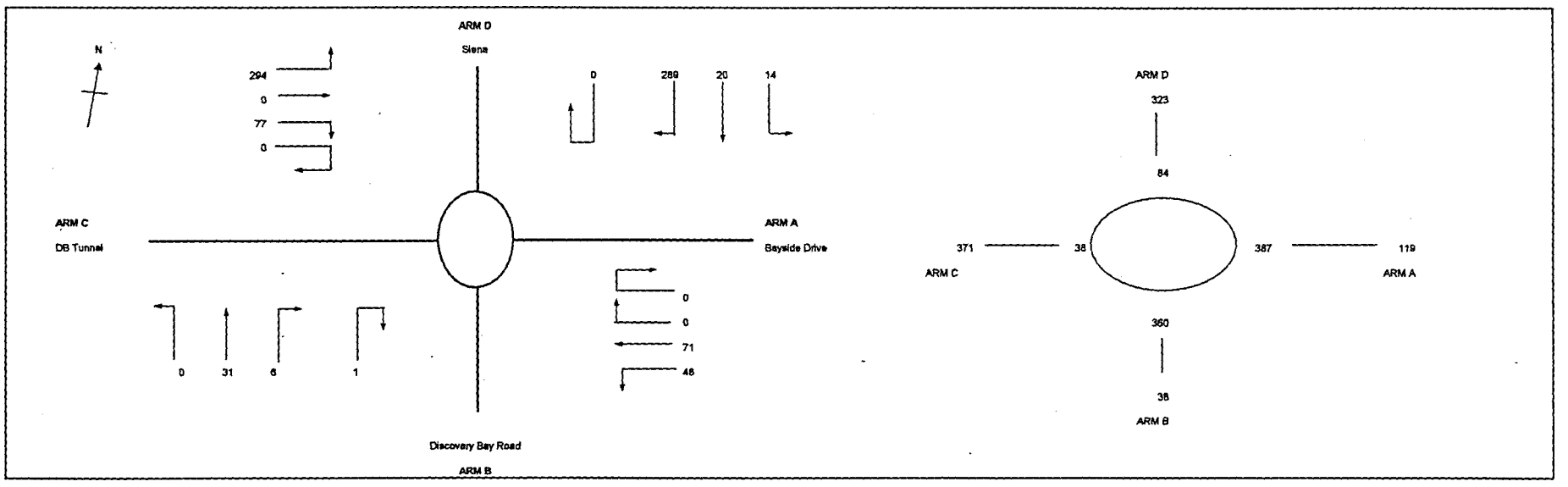
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	119	38	345	310			
Qc	=	Circulating flow across entry (pcu/h)	362	347	38	72			
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	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)	1450	1500	1902	1904	**Total in Sum =**	**813**	**PCU**
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.18	0.16	**DFC of Critical Approach =**	**0.18**	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2026 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



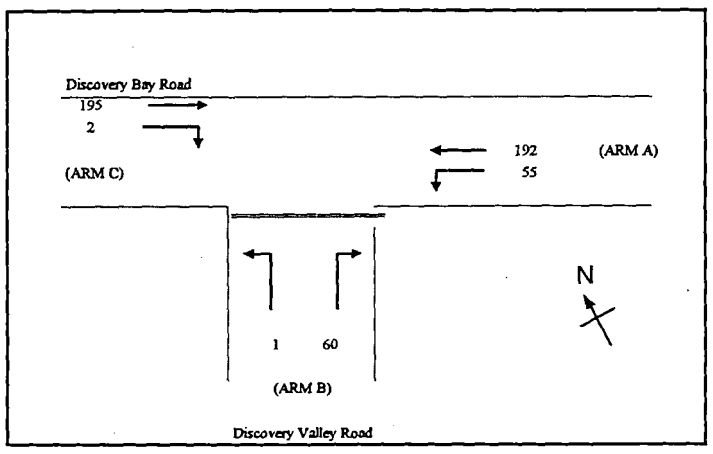
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
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*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)	1426	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 2026 Design Traffic Flows (PM Peak)	DATE 30-Nov-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	323			
Qc	=	Circulating flow across entry (pcu/h)	387	360	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	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)	1435	1492	1902	1898	**Total In Sum =**	**851**	**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 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	=	55	(pcu/hr)
q a-c	=	192	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	195.2	(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	=	543
Q b-c	=	707
Q c-b	=	681
Q b-ac	=	545.5

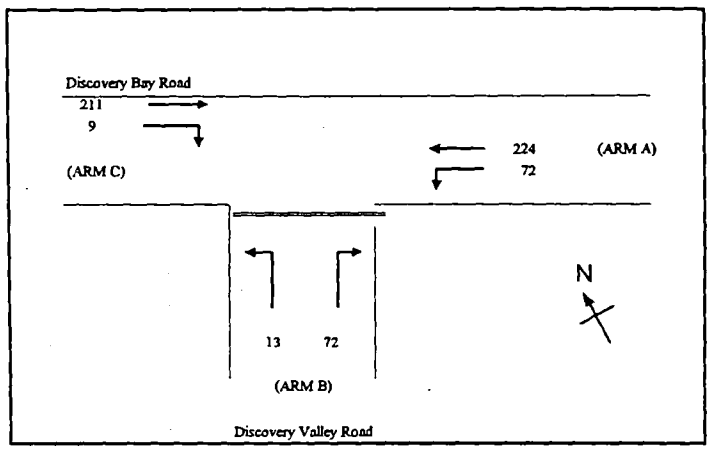
TOTAL FLOW = 505.8666484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1109
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.1126

CRITICAL DFC = 0.113

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	=	72	(pcu/hr)
q a-c	=	224	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	211.1	(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	=	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	=	530
Q b-c	=	698
Q c-b	=	671
Q b-ac	=	549.8

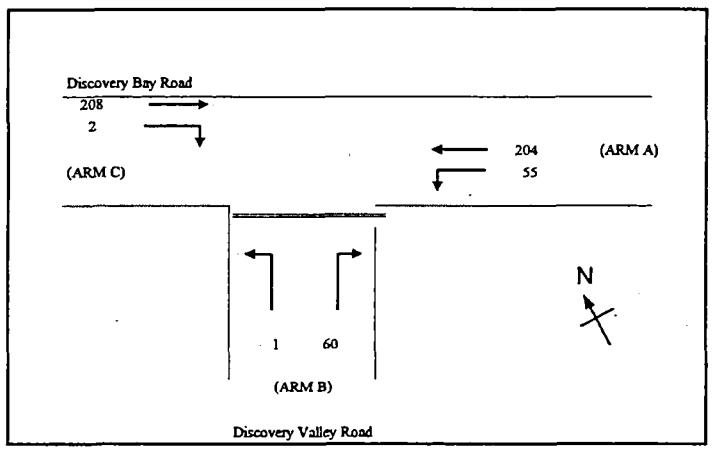
TOTAL FLOW = 599.9935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1356
DFC b-c	=	0.0181
DFC c-b	=	0.0132
DFC b-ac	=	0.1537

CRITICAL DFC = 0.154

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	=	(1-0.0345W)

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	=	2.436	(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

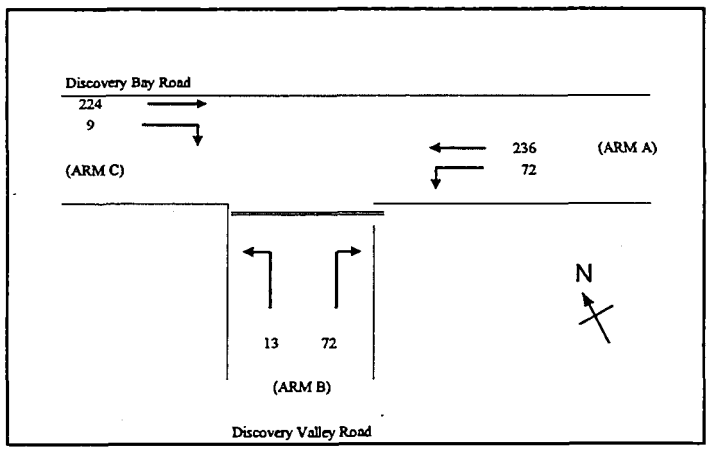
TOTAL FLOW = 530.8666484 (PCU/HR)

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	=	(1-0.0345W)

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

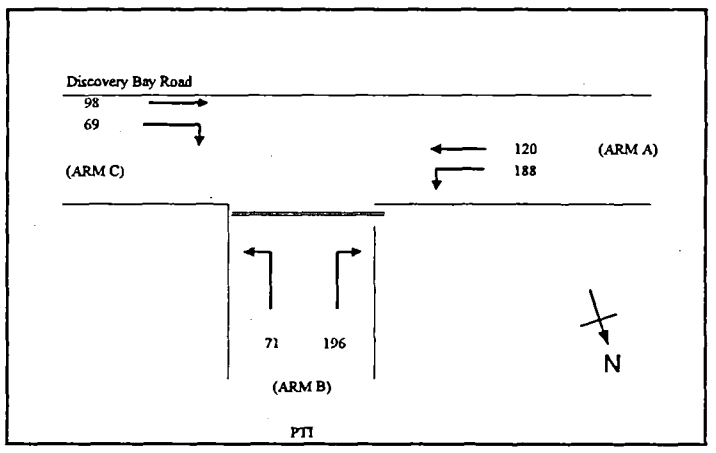
TOTAL FLOW = 624.9935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1366
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 : 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	=	188	(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	=	68.7	(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	=	196	(pcu/hr)
q b-c	=	71	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	679
Q c-b	=	684
Q b-ac	=	549.6

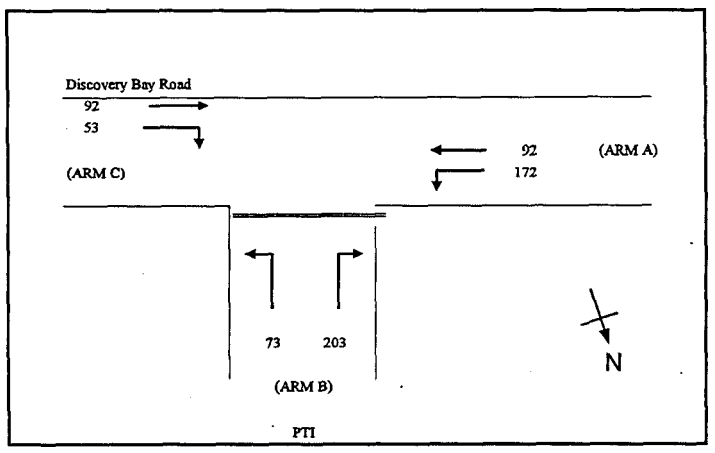
TOTAL FLOW = 742.2003363 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3806
DFC b-c	=	0.1045
DFC c-b	=	0.1004
DFC b-ac	=	0.4851

CRITICAL DFC = 0.485

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 : 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	=	172	(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	=	52.85	(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	=	203	(pcu/hr)
q b-c	=	73	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	527
Q b-c	=	686
Q c-b	=	694
Q b-ac	=	561.5

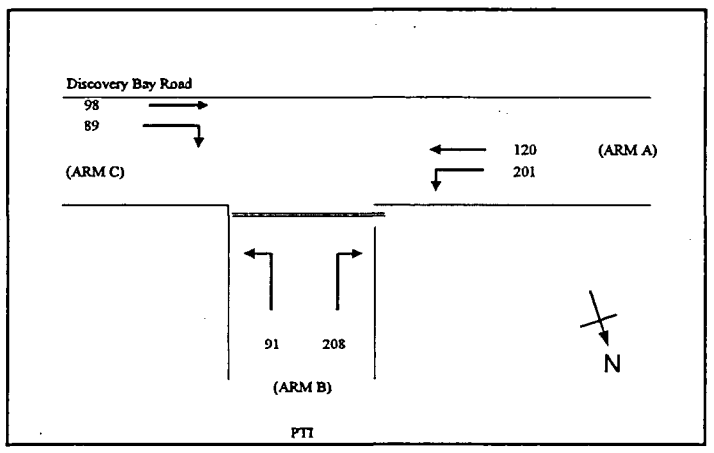
TOTAL FLOW = 684.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3852
DFC b-c	=	0.1068
DFC c-b	=	0.0761
DFC b-ac	=	0.4920

CRITICAL DFC = 0.492

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 : 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	=	681
Q b-ac	=	548.3

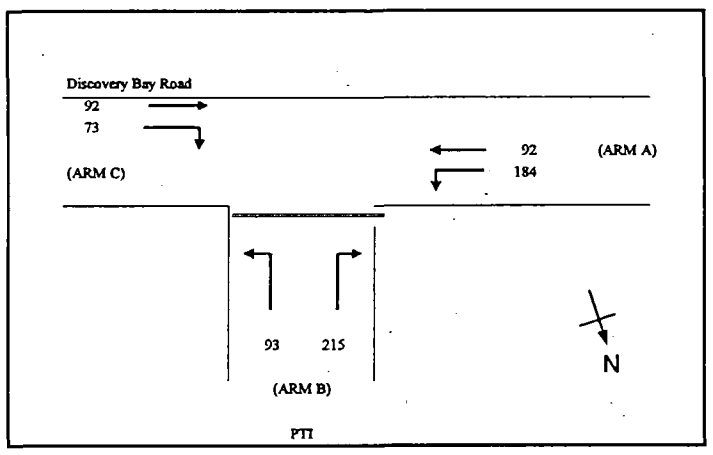
TOTAL FLOW = 807.2003363 (PCU/HR)

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 : 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	=	0.621

THE CAPACITY OF MOVEMENT :

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

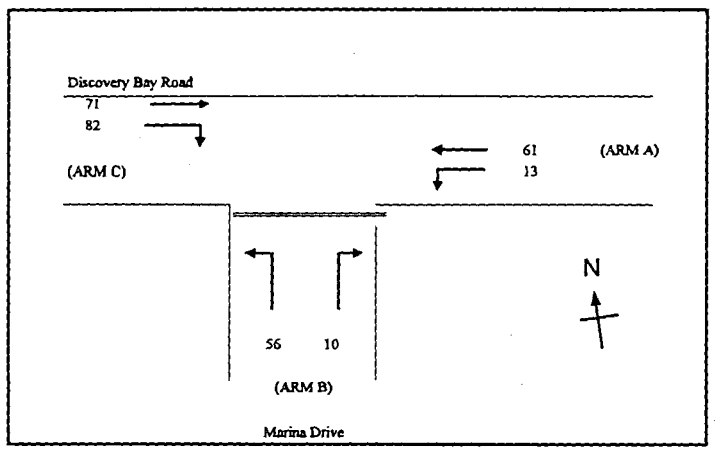
TOTAL FLOW = 749.7141485 (PCU/HR)

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 : 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	=	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	=	81.79	(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	=	56	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	646.5

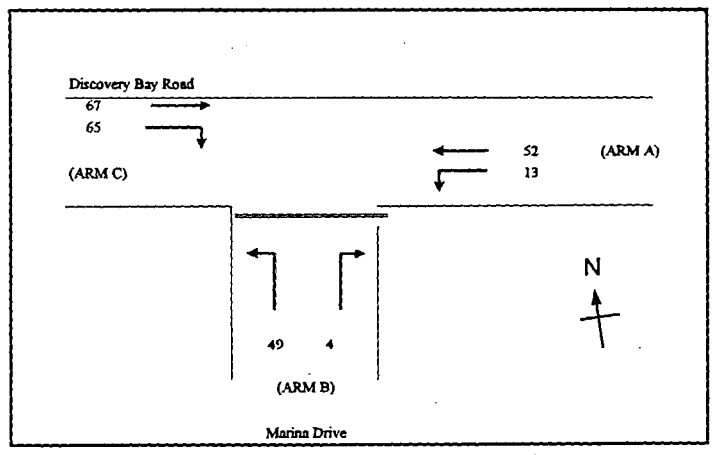
TOTAL FLOW = 292.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0201
DFC b-c	=	0.0818
DFC c-b	=	0.1164
DFC b-ac	=	0.1019

CRITICAL DFC = 0.116

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 : 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	=	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	=	65.26	(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	=	49	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	522
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	866.6

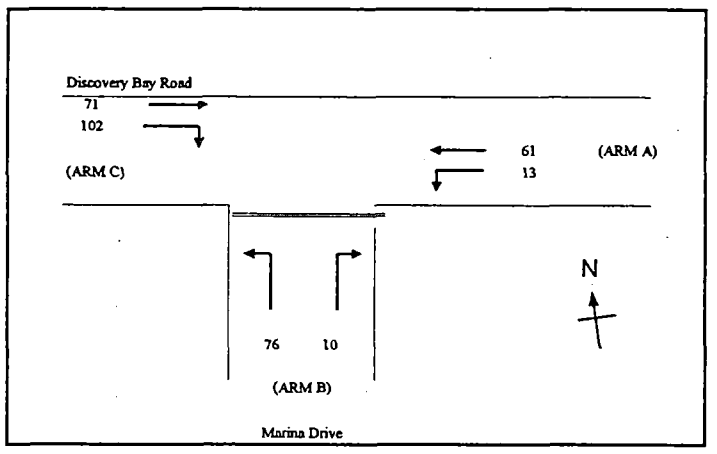
TOTAL FLOW = 250.6005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0071
DFC b-c	=	0.0718
DFC c-b	=	0.0926
DFC b-ac	=	0.0789

CRITICAL DFC = 0.093

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 : 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	=	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

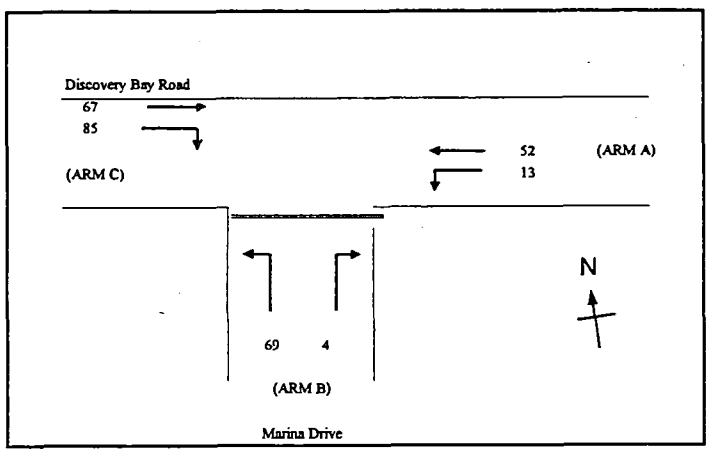
TOTAL FLOW = 332.9017535 (PCU/HR)

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 2026 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	=	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

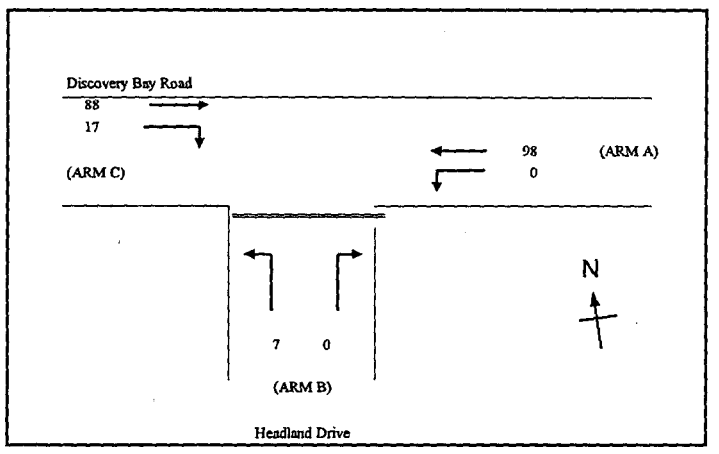
TOTAL FLOW = 290.6005285 (PCU/HR)

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 2026 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	=	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	=	87.97	(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	=	459
Q b-c	=	614
Q c-b	=	683
Q b-ac	=	614

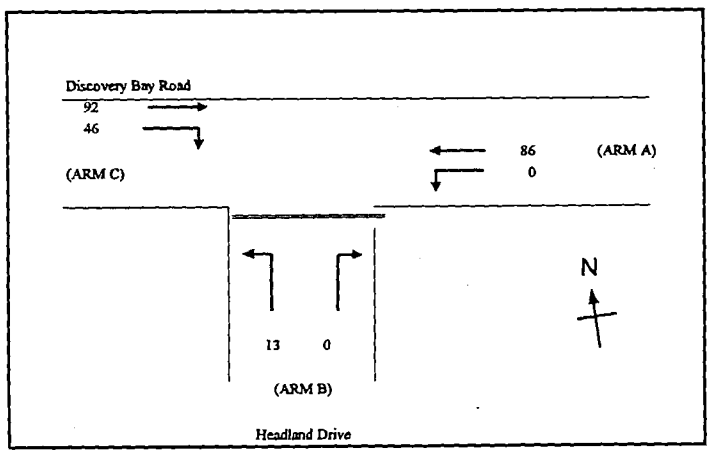
TOTAL FLOW = 210.0415223 (PCU/HR)

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 : 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	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	86	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	92.22	(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	=	453
Q b-c	=	617
Q c-b	=	686
Q b-ac	=	617

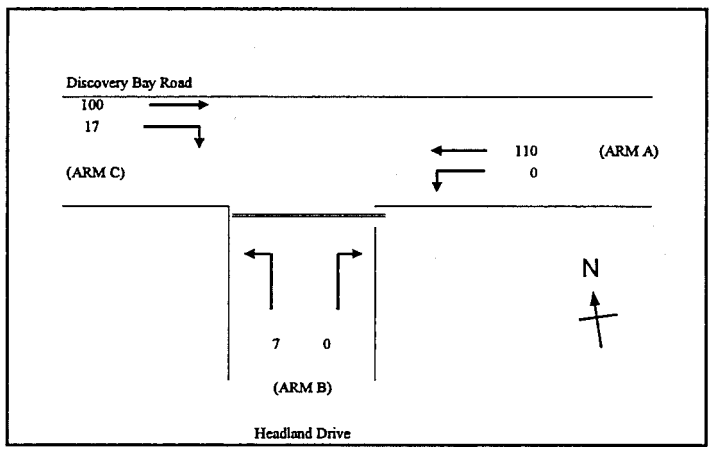
TOTAL FLOW = 236.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0211
DFC c-b	=	0.0664
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 : 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	=	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	=	17.08	(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

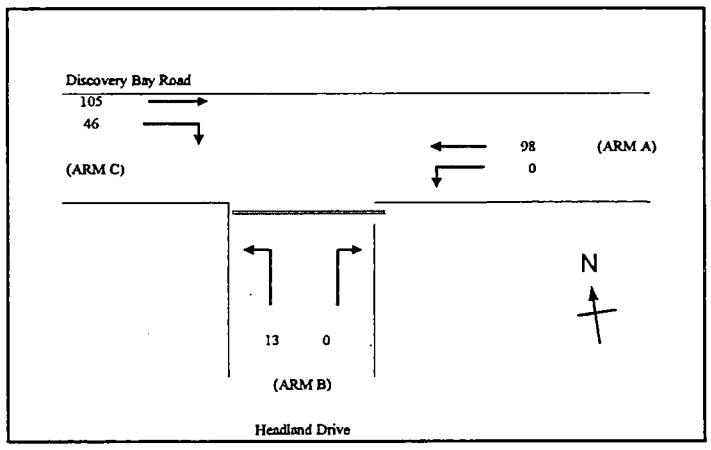
TOTAL FLOW = 235.0415223 (PCU/HR)

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 : 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	=	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	=	614
Q c-b	=	683
Q b-ac	=	614

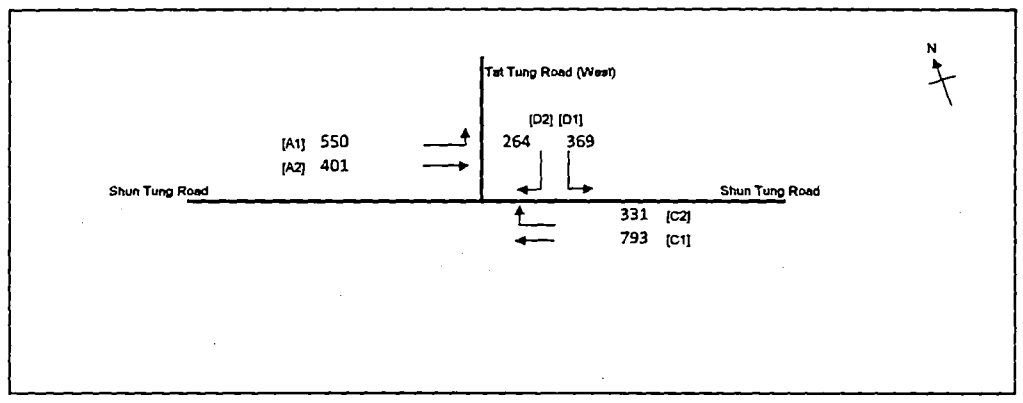
TOTAL FLOW = 261.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

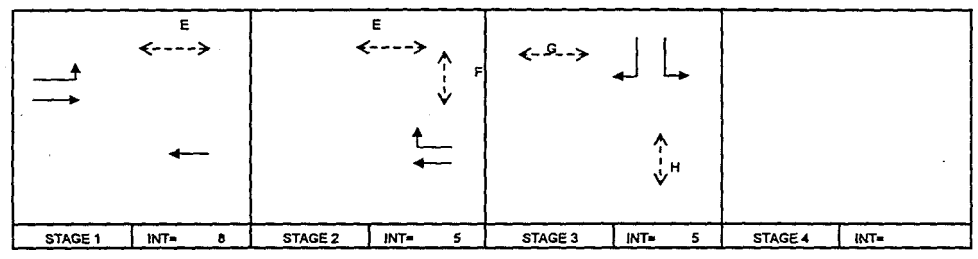
DFC b-a	=	0.0000
DFC b-c	=	0.0212
DFC c-b	=	0.0666
DFC b-ac	=	0.0212

CRITICAL DFC = 0.067

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 238078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 2-Dec-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 =	0.840
Loss time		L =	15 sec
Total Flow		=	2707.809 pcu
Co	= (1.5*L+5)/(1-Y)	=	78.4 sec
Cm	= L/(1-Y)	=	41.7 sec
Yult		=	0.788
R.C.ult	= (Yult-Y)/Y*100%	=	23.0 %
Cp	= 0.9*L/(0.9-Y)	=	52.0 sec
Ymax	= 1-L/C	=	0.833
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	17.1 %



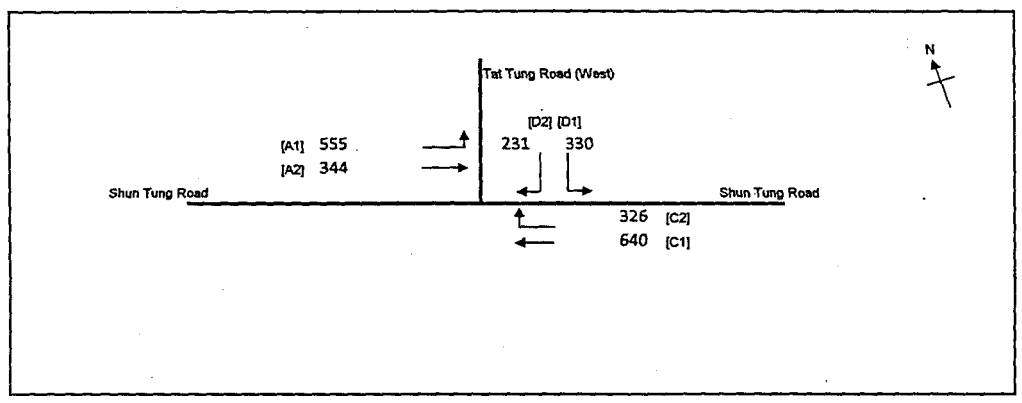
STAGE 1	INT= 8	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT=

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

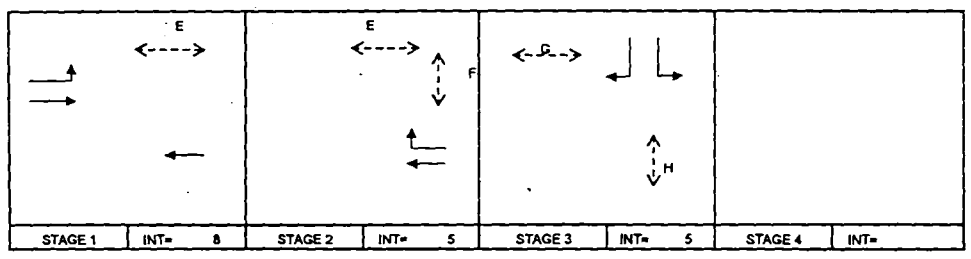
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	550			550	1.00	1786			1786	0.308	0.308		36	36	0.768	49
A2	1	3.50	A	1				2105		401		401	0.00	2105			2105	0.190			22	36	0.476	38
C1	1,2	3.50	B	2			N	4070		793		793	0.00	4070			4070	0.195			23	58	0.300	21
C2	2	3.50	C	1	30			2105			331	331	1.00	2005			2005	0.165	0.165		19	19	0.768	39
D1	3	3.50	D	1	15		N	1965	299			299	1.00	1786			1786	0.167	0.167		20	20	0.768	35
D1,D2	3	3.50	D	1	30			2105	70		264	334	1.00	2005			2005	0.167			20	20	0.765	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: 238078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.622
Loss time		L =	15 sec
Total Flow		=	2425.809 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.7 sec
Cm	= L/(1-Y)	=	39.6 sec
Yult		=	0.788
R.C.ult	= (Yult-Y)/Y*100%	=	26.7 %
Cp	= 0.9*L/(0.9-Y)	=	48.5 sec
Ymax	= 1-L/C	=	0.833
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	20.7 %



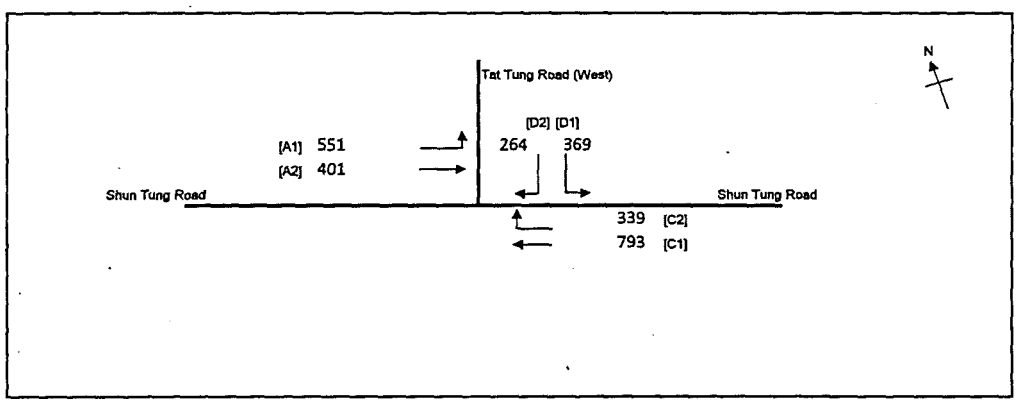
STAGE 1	INT= 8	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT=

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

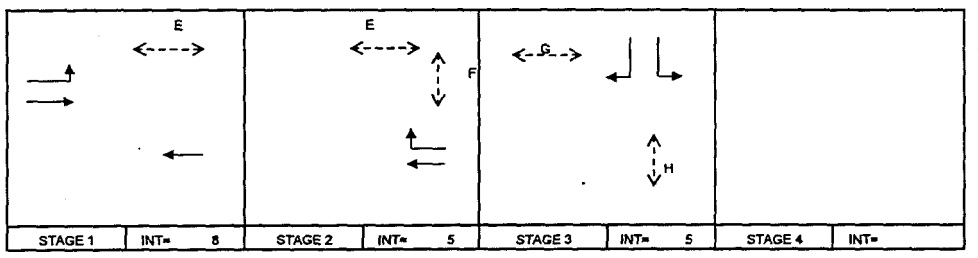
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	555			555	1.00	1786			1786	0.310	0.310		37	37	0.746	49
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			19	60	0.235	18
C2	2	3.50	C	1	30			2105			326	326	1.00	2005			2005	0.163	0.163		20	20	0.746	38
D1	3	3.50	D	1	15		N	1965	285			285	1.00	1786			1786	0.148	0.148		18	18	0.746	32
D1,D2	3	3.50	D	1	30			2105	65		231	296	1.00	2005			2005	0.148			18	18	0.742	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 * 8m

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 238078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Design Traffic Flows (AM Peak)	DATE : 2-Dec-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%	=	16.3	%

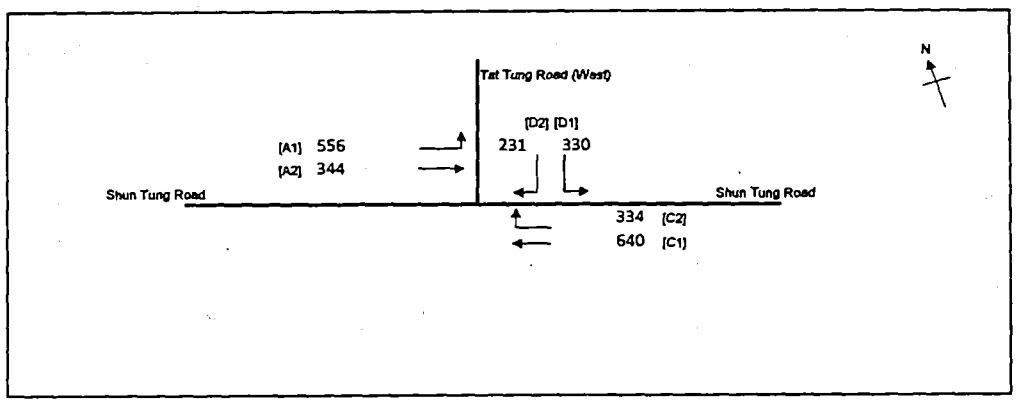


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	58	1	8	OK
F	8	5	1	7	16	1	7	OK
G	8	5	6	7	10	6	7	OK
H	11	5	2	9	12	2	9	OK

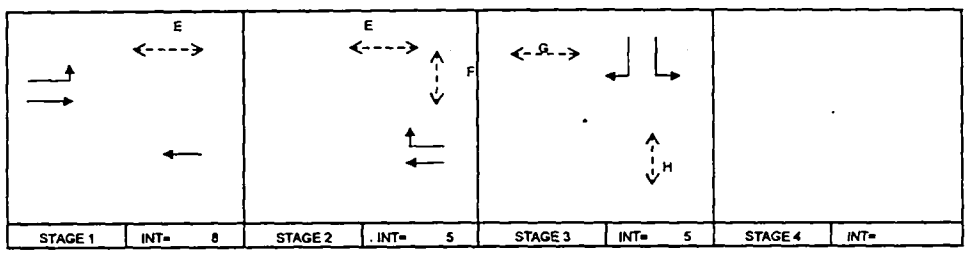
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	551			551	1.00	1786			1786	0.308	0.308		36	36	0.774	50
A2	1	3.50	A	1				2105		401		401	0.00	2105			2105	0.190			22	36	0.478	36
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	298			298	1.00	1786			1786	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: 238078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 2026 Design Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.626	
Loss time	L =	15	sec
Total Flow	=	2435.082	pcu
Co = (1.5*L+5)/(1-Y)	=	73.6	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%	=	19.8	%



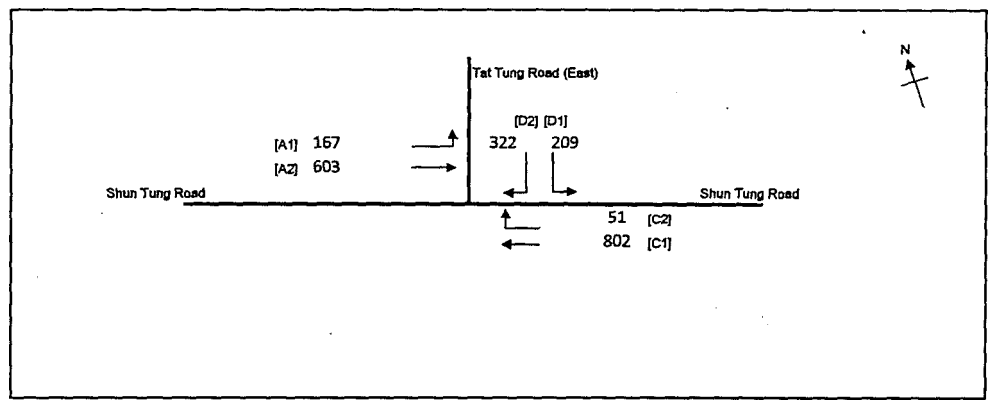
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	59	1	8	OK
F	8	5	1	7	16	1	7	OK
G	8	5	6	7	9	6	7	OK
H	11	5	2	9	11	2	9	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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	1965	556			556	1.00	1786			1786	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		640		640	0.00	4070			4070	0.157			19	60	0.235	18
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	285			285	1.00	1786			1786	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

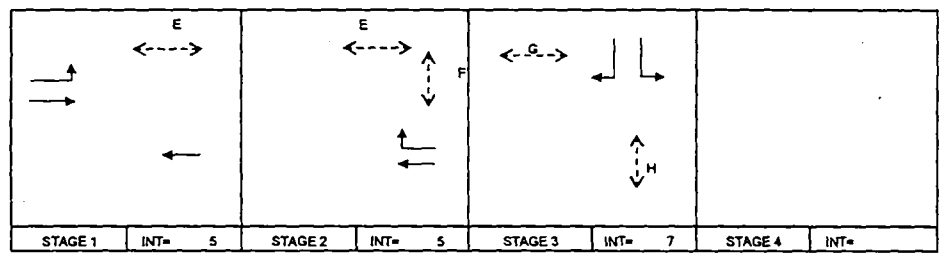
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Reference Traffic Flows (AM Peak)	DATE : 2-Dec-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 =	26 sec
Total Flow		=	2153.206 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%	=	82.2 %
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%	=	85.4 %



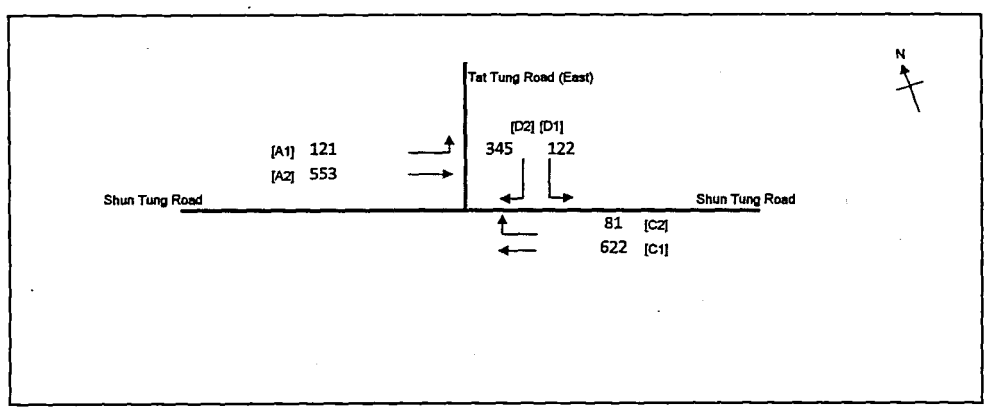
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	47	1	8	OK
F	8	5	7	7	6	7	7	OK
G	8	5	7	7	20	7	7	OK
H	10	5	2	8	24	2	8	OK

Move-ment	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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
																				14				
A1,A2	1	3.50	A	1	15		N	1965	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	0.544	39
C1	1,2	3.50	B	2			N	4070		802		802	0.00	4070			4070	0.197			33	51	0.346	28
C2	2	3.50	C	1	30			2105			51	51	1.00	2005			2005	0.025	0.025	12	4	16	0.141	8
D1	3	3.50	D	1	15		N	1965	209			209	1.00	1786			1786	0.117	0.188		19	28	0.379	22
D1,D2	3	3.50	D	1	15			2105	0		322	322	1.00	1914			1914	0.188			28	28	0.544	33

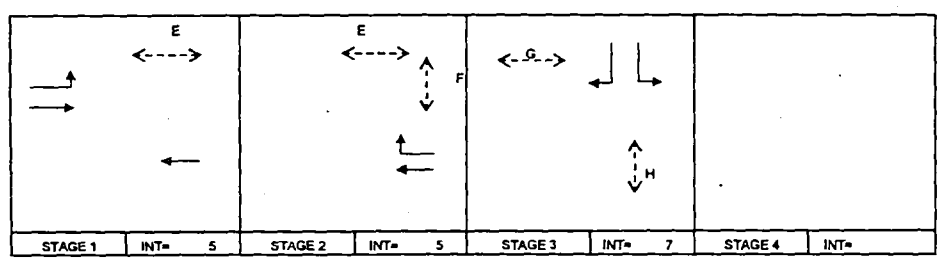
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

Discovery Bay		PROJECT NO: 236078	
J7 - Shun Tung Road / Tat Tung Road (East)	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.389
Loss time		L =	26 sec
Total Flow		=	1843.206 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.0 sec
Cm	= L/(1-Y)	=	42.6 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	81.2 %
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%	=	84.5 %

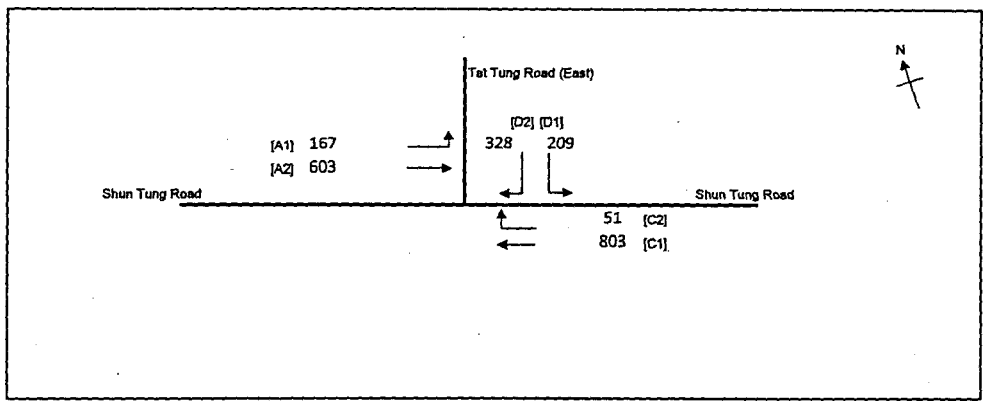


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	46	1	8	OK
F	8	5	7	7	9	7	7	OK
G	8	5	7	7	22	7	7	OK
H	10	5	2	8	26	2	8	OK

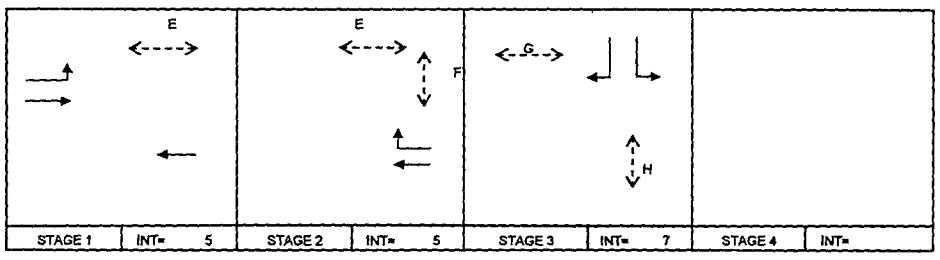
Move-ment	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1965	121	198		319	0.38	1893			1893	0.168	0.169		28	28	0.547	33
A2	1	3.50	A	1				2105		355		355	0.00	2105			2105	0.169			28	28	0.547	37
C1	1,2	3.50	B	2			N	4070		622		622	0.00	4070			4070	0.153			25	49	0.278	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	1965	122			122	1.00	1786			1786	0.068	0.180		11	30	0.208	12
D1,D2	3	3.50	D	1	15			2105	0		345	345	1.00	1914			1914	0.180			30	30	0.547	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 : 2-Dec-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 =	0.391
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 %



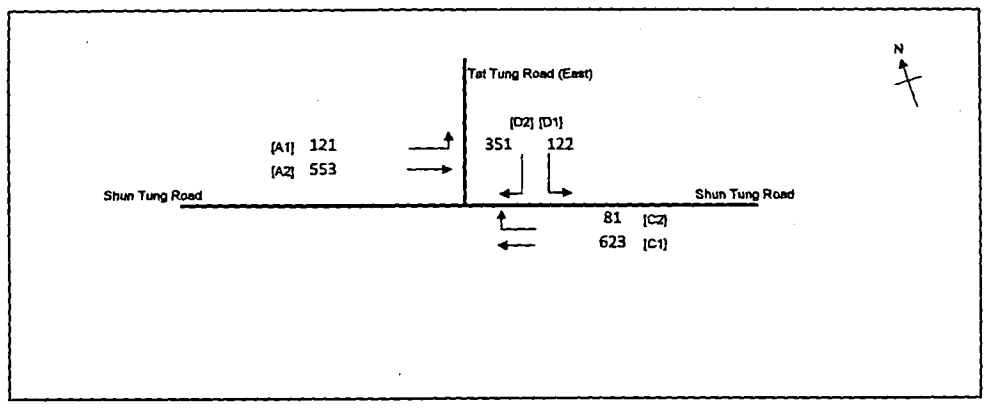
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
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

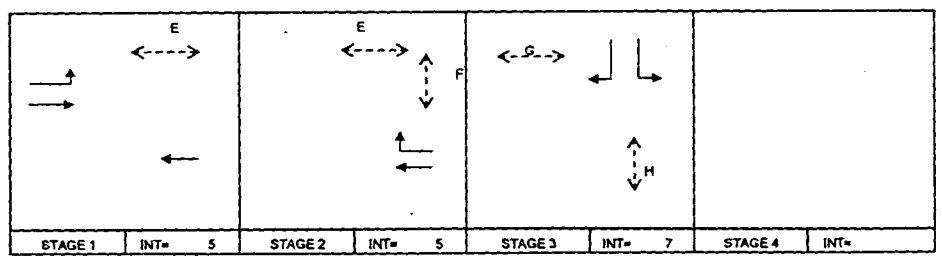
Movement	Stage	Lane Width m	Phase	No. of lane	Radius m	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m
																				14				
A1,A2	1	3.50	A	1	15		N	1965	167	195		362	0.46	1878			1878	0.193	0.194		32	32	0.546	35
A2	1	3.50	A	1				2105		408		408	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	18	0.142	8
D1	3	3.50	D	1	15		N	1965	209			209	1.00	1786			1786	0.117	0.171		19	28	0.375	22
D1,D2	3	3.50	D	1	15			2105	0		328	328	1.00	1914			1914	0.171			28	28	0.549	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 : 2-Dec-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 %



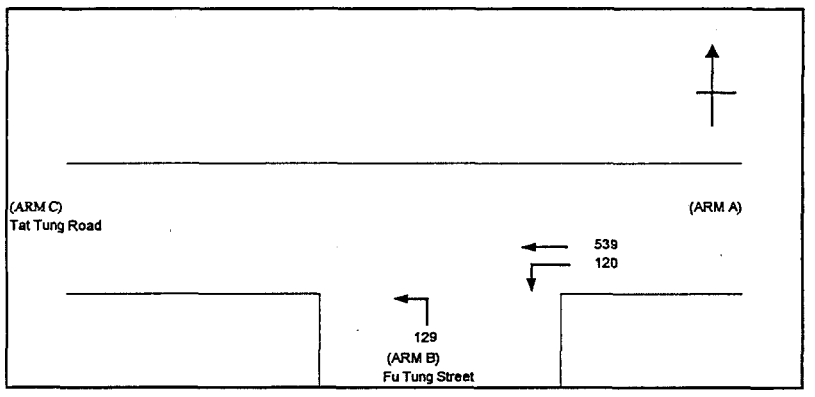
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
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 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
																				14				
A1,A2	1	3.50	A	1	15		N	1965	121	189		320	0.38	1893			1893	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		623		623	0.00	4070			4070	0.153			25	49	0.280	21
C2	2	3.50	C	1	30			2105			81	81	1.00	2005			2005	0.040	0.040	12	7	19	0.196	10
D1	3	3.50	D	1	15		N	1965	122			122	1.00	1786			1786	0.068	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 : Dec 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	=	120	(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	=	129	(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	=	379
Q c-b	=	332
Qb-ac	=	379

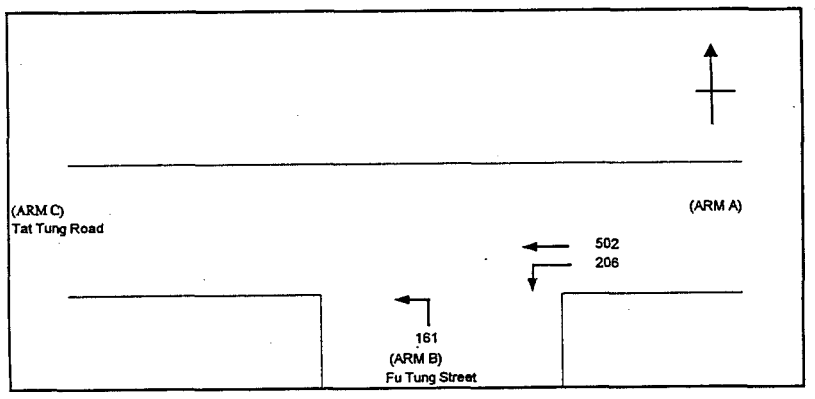
TOTAL FLOW = 788 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3399
DFC c-b	=	0.0000
DFC b-ac	=	0.3399

CRITICAL DFC = 0.34

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 : Dec 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	=	206	(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	=	161	(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	=	325
Qb-ac	=	379

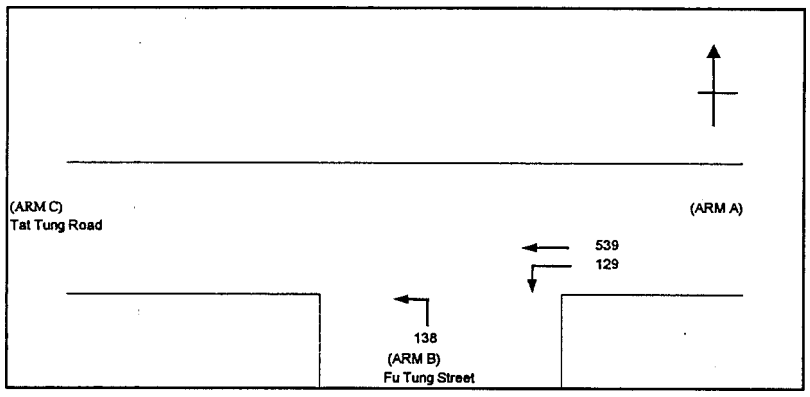
TOTAL FLOW = 869 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4243
DFC c-b	=	0.0000
DFC b-ac	=	0.4243

CRITICAL DFC = 0.42

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 : Dec 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

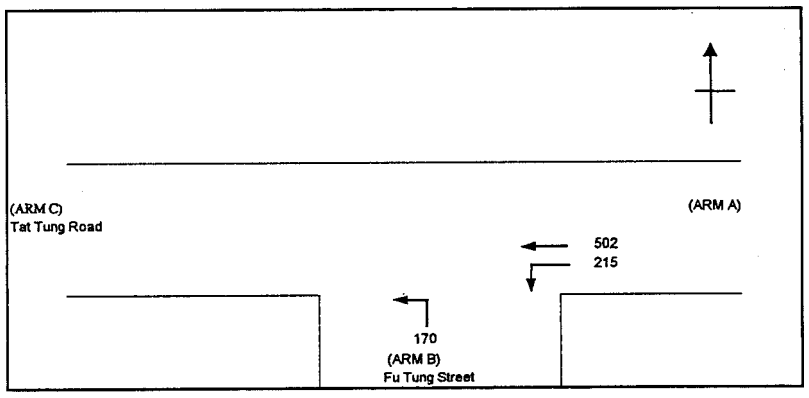
TOTAL FLOW = 806 (PCU/HR)

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 : Dec 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

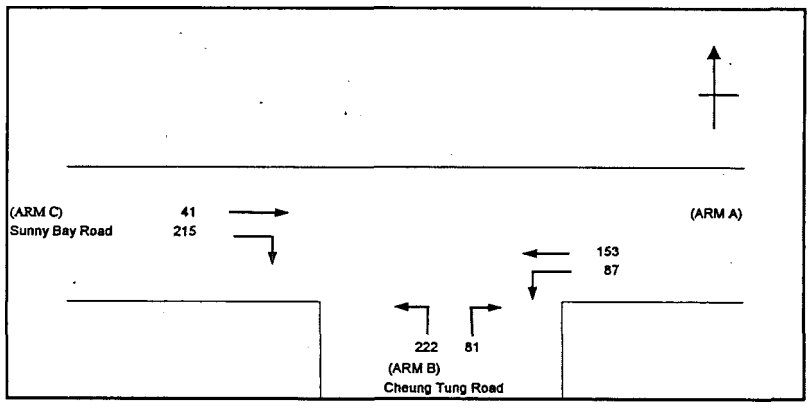
TOTAL FLOW = 887 (PCU/HR)

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 : Dec 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	=	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	=	215	(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	=	61	(pcu/hr)
q b-c	=	222	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7323

THE CAPACITY OF MOVEMENT :

Q b-a	=	515
Q b-c	=	664
Q c-b	=	660
Qb-ac	=	618

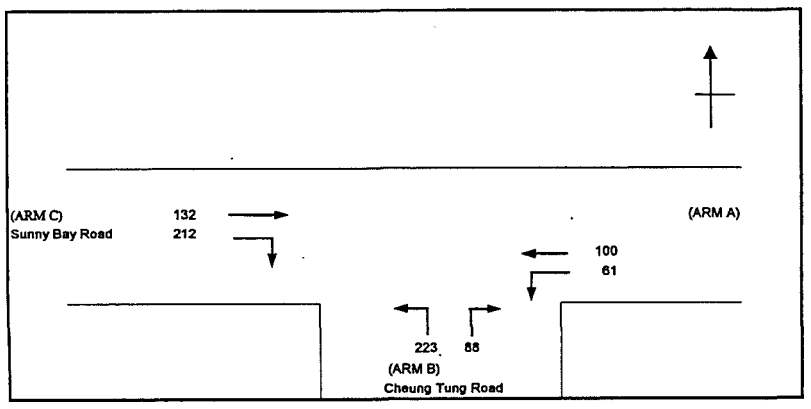
TOTAL FLOW = 798 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1573
DFC b-c	=	0.3338
DFC c-b	=	0.3156
DFC b-ac	=	0.4910

CRITICAL DFC = 0.49

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J9 - Sunny Bay Road / Cheung Tung Road	Year 2026 Reference Traffic Flows (PM Peak)	DATE : Dec 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	=	61	(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	=	212	(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	=	223	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.7171

THE CAPACITY OF MOVEMENT :

Q b-a	=	517
Q b-c	=	674
Q c-b	=	694
Qb-ac	=	621

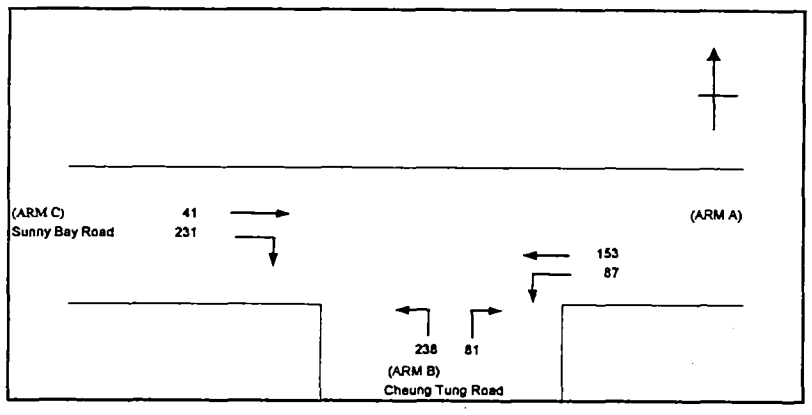
TOTAL FLOW = 816 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1702
DFC b-c	=	0.3310
DFC c-b	=	0.3056
DFC b-ac	=	0.5012

CRITICAL DFC = 0.50

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 : Dec 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	=	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	=	0.9678
Y	=	0.4825
P	=	0.7458

THE CAPACITY OF MOVEMENT :

Q b-a	=	512
Q b-c	=	664
Q c-b	=	680
Qb-ac	=	617

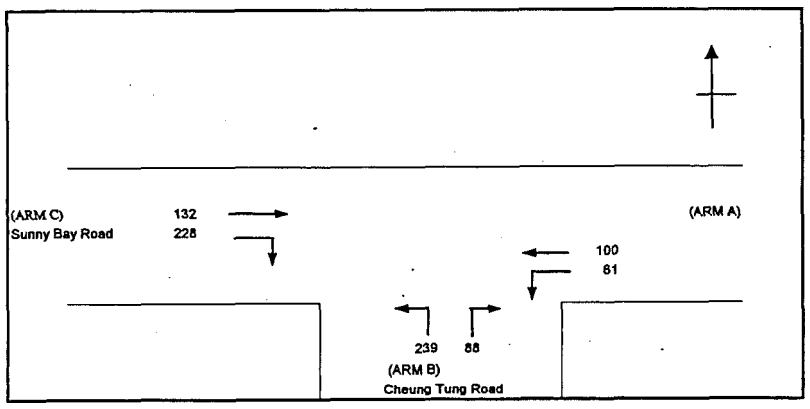
TOTAL FLOW = 830 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1582
DFC b-c	=	0.3579
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 : Dec 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	=	61	(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	=	0.9678
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

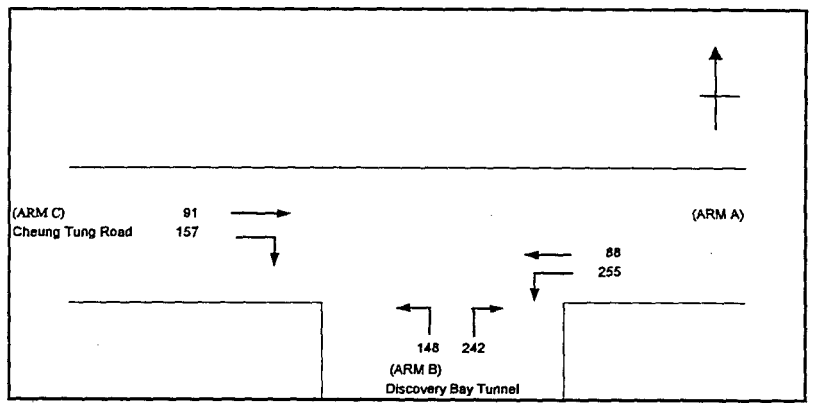
TOTAL FLOW = 848 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1715
DFC b-c	=	0.3548
DFC c-b	=	0.3288
DFC b-ac	=	0.5264

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 : Dec 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	=	255	(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	=	157	(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	=	242	(pcu/hr)
q b-c	=	148	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3796

THE CAPACITY OF MOVEMENT :

Q b-a	=	487
Q b-c	=	727
Q c-b	=	615
Qb-ac	=	557

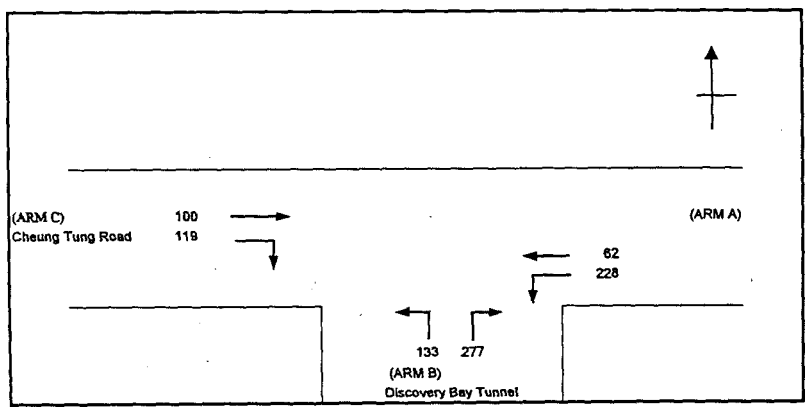
TOTAL FLOW = 980 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4961
DFC b-c	=	0.2033
DFC c-b	=	0.2550
DFC b-ac	=	0.6994

CRITICAL DFC = 0.70

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 : Dec 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	=	228	(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	=	119	(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	=	277	(pcu/hr)
q b-c	=	133	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3240

THE CAPACITY OF MOVEMENT :

Q b-a	=	509
Q b-c	=	737
Q c-b	=	828
Qb-ac	=	586

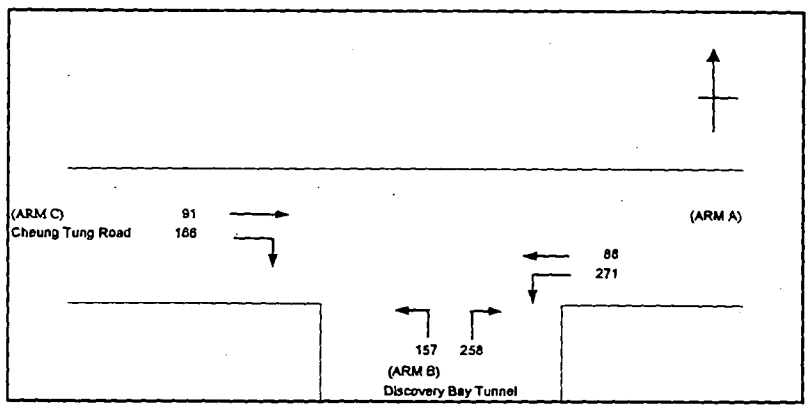
TOTAL FLOW = 919 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5444
DFC b-c	=	0.1802
DFC c-b	=	0.1892
DFC b-ac	=	0.7246

CRITICAL DFC = 0.72

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 : Dec 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	=	91	(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	=	482
Q b-c	=	725
Q c-b	=	611
Qb-ac	=	552

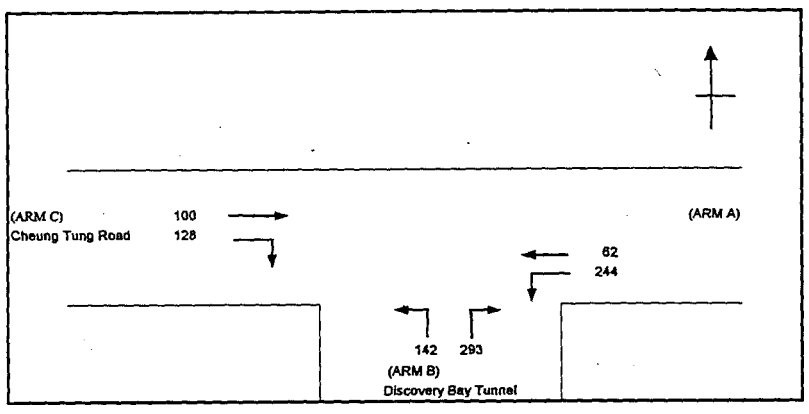
TOTAL FLOW = 1030 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5346
DFC b-c	=	0.2167
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 : Dec 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)
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	=	0.9408
Y	=	0.7309
P	=	0.3284

THE CAPACITY OF MOVEMENT :

Q b-a	=	504
Q b-c	=	735
Q c-b	=	624
Qb-ac	=	582

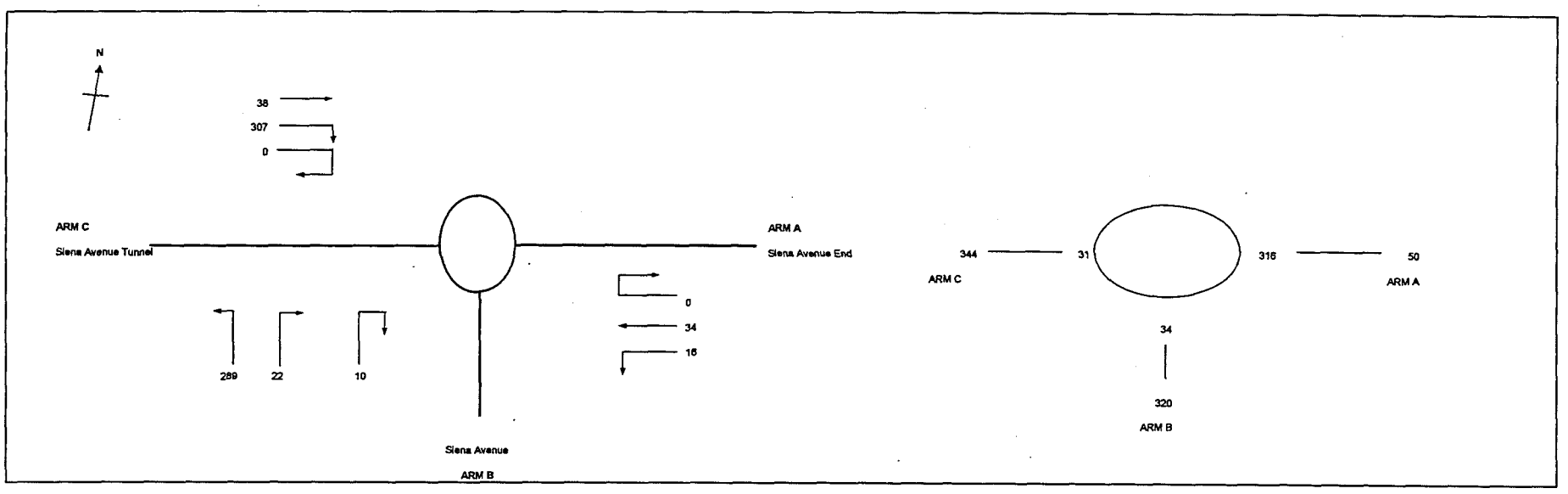
TOTAL FLOW = 969 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5817
DFC b-c	=	0.1933
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 2-Dec-15	FILENAME

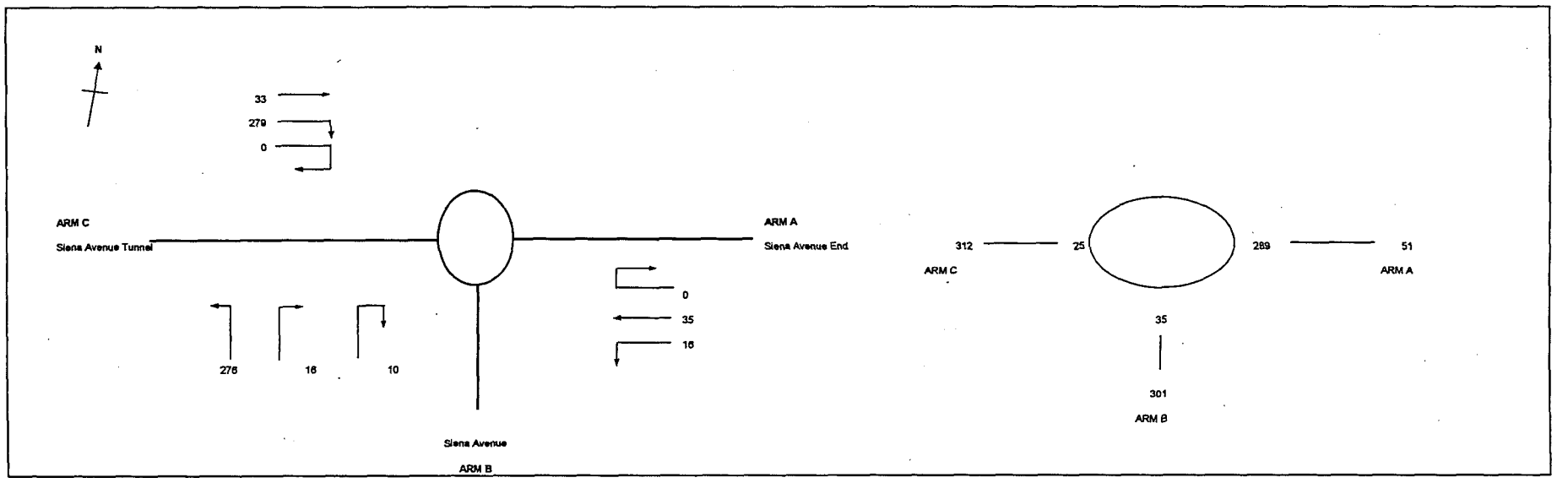


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	50	320	344
Qc	=	Circulating flow across entry (pcu/h)	316	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	0.64	0.61
Qe	=	K(F-Fc*Qc)	888	1488	1274
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.22	0.27

Total In Sum = **714** **PCU**

DFC of Critical Approach = **0.27**

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME

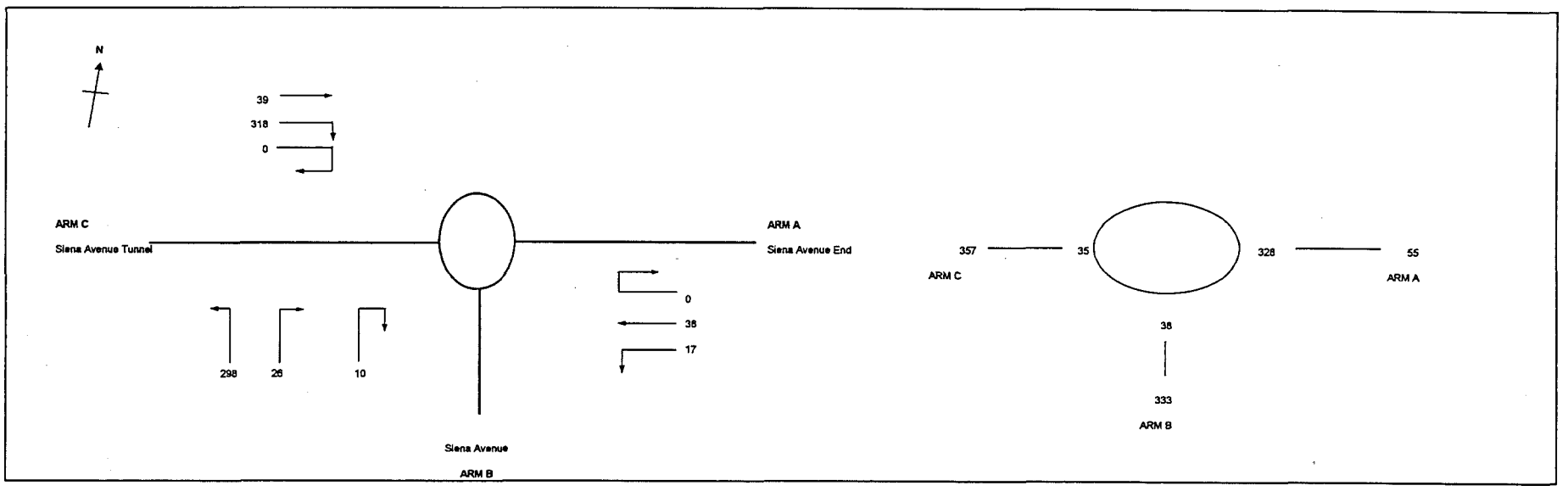


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	51	301	312
Qc	=	Circulating flow across entry (pcu/h)	289	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	0.64	0.61
Qe	=	K(F-Fc*Qc)	902	1487	1278
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.20	0.24

Total In Sum = **664** **PCU**

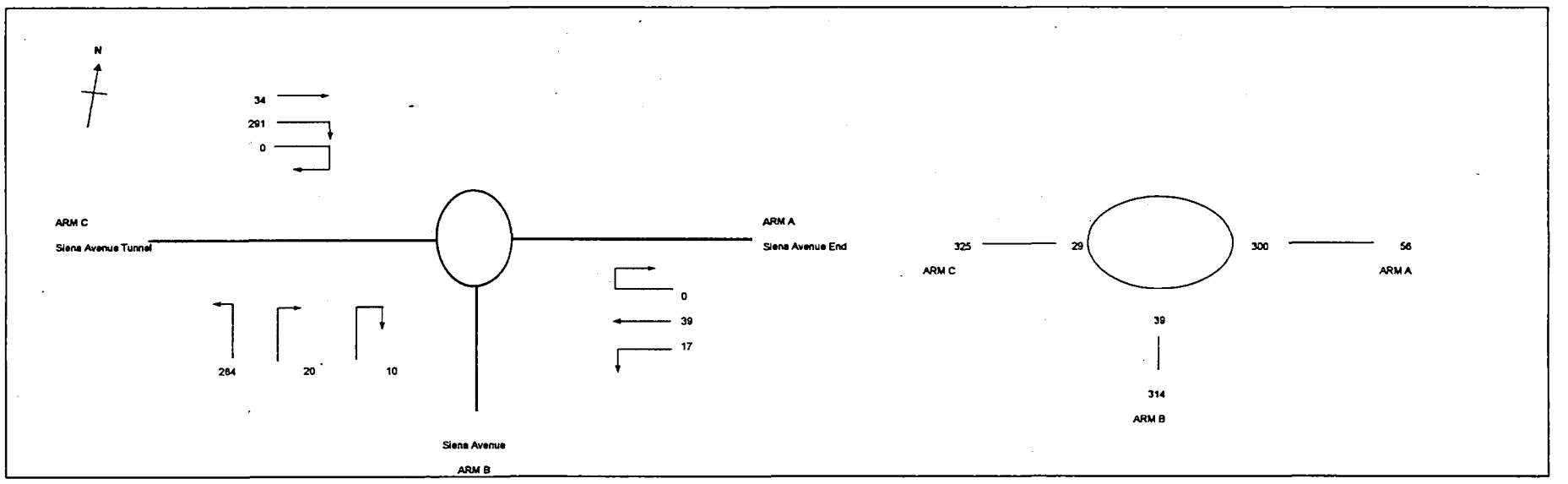
DFC of Critical Approach = **0.24**

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2026 Design Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME



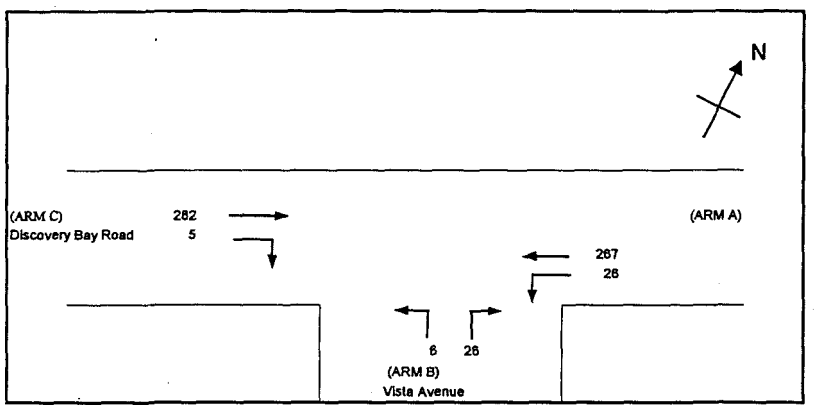
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	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	0.16	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			
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 2026 Design Traffic Flows (PM Peak)	DATE 2-Dec-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:								
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			
Fc	=	0.21*Td(1+0.2*X2)	0.55	0.64	0.61			
Qe	=	K(F-Fc*Qc)	896	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 2026 Reference Traffic Flows (AM Peak)	DATE : Dec 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	=	267	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	282	(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	=	26	(pcu/hr)
q b-c	=	6	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	495
Q b-c	=	667
Q c-b	=	754
Qb-ac	=	520

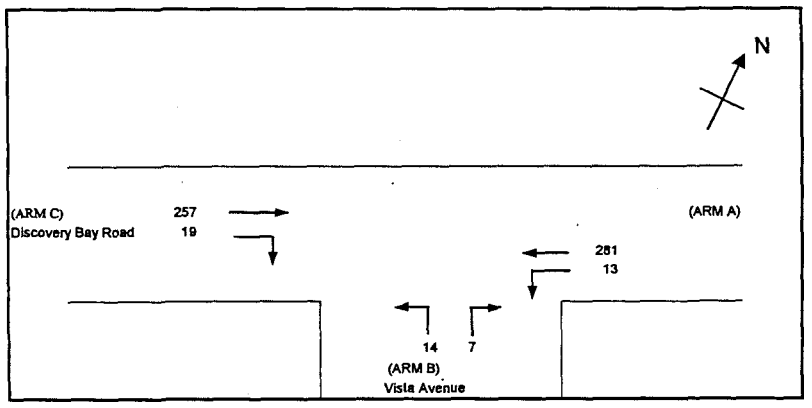
TOTAL FLOW = 613 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0534
DFC b-c	=	0.0090
DFC c-b	=	0.0064
DFC b-ac	=	0.0624

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 : Dec 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	=	281	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	257	(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	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.6731

THE CAPACITY OF MOVEMENT :

Q b-a	=	493
Q b-c	=	665
Q c-b	=	753
Qb-ac	=	597

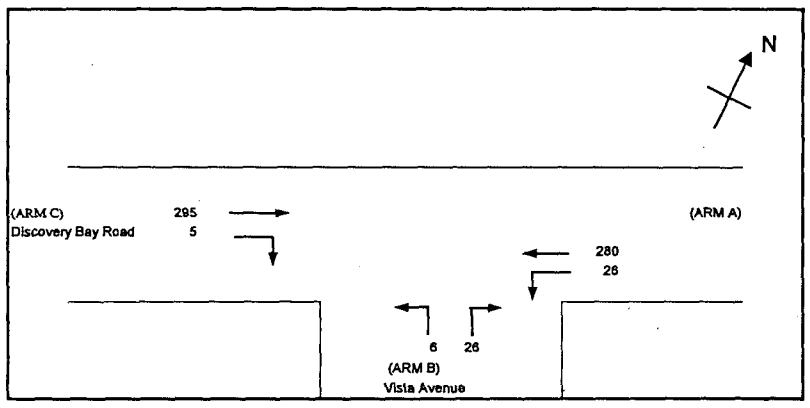
TOTAL FLOW = 592 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0142
DFC b-c	=	0.0217
DFC c-b	=	0.0255
DFC b-ac	=	0.0359

CRITICAL DFC = 0.04

OVE ARUP & PARTNERS	PRIORITY JUNCTION CALCULATION		
Discovery Bay		Project No. : 236078	
J12 - DB Road / Vista Avenue	Year 2026 Design Traffic Flows (AM Peak)	DATE : Dec 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	=	280	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(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	=	26	(pcu/hr)
q b-c	=	6	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	491
Q b-c	=	664
Q c-b	=	751
Qb-ac	=	516

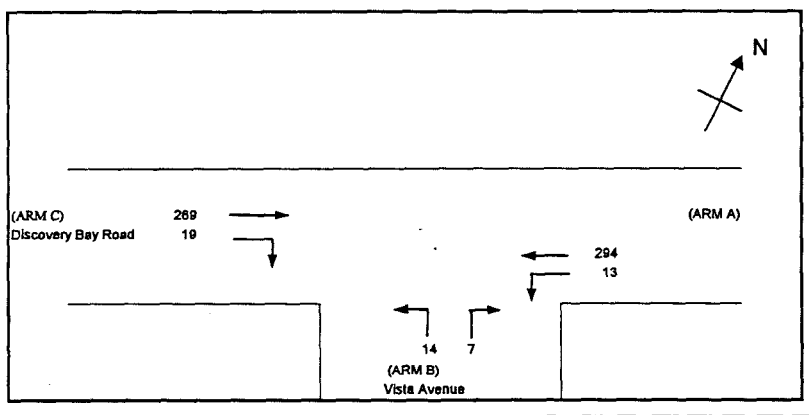
TOTAL FLOW = 638 (PCU/HR)

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 2026 Design Traffic Flows (PM Peak)	DATE : Dec 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)
Vr c-b	=	60	(metres)
q c-a	=	289	(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	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.6731

THE CAPACITY OF MOVEMENT :

Q b-a	=	488
Q b-c	=	662
Q c-b	=	750
Qb-ac	=	593

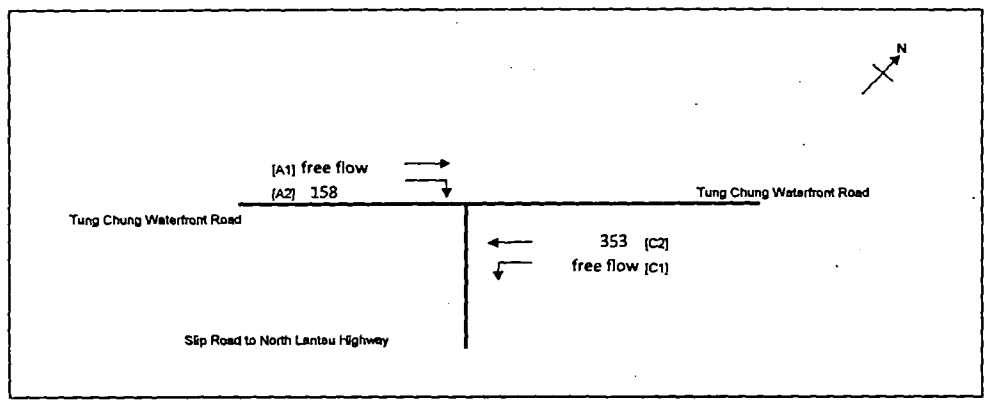
TOTAL FLOW = 617 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

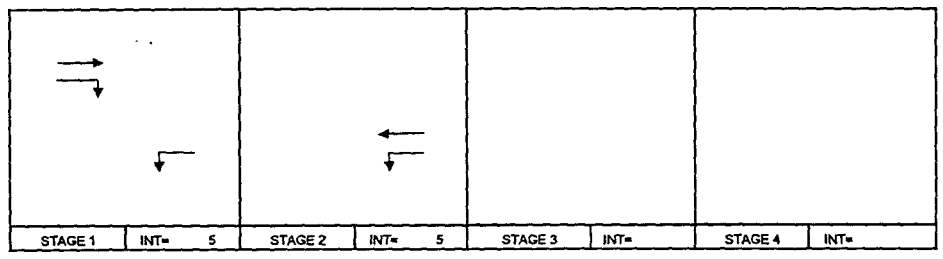
DFC b-a	=	0.0143
DFC b-c	=	0.0218
DFC c-b	=	0.0256
DFC b-ac	=	0.0361

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 2026 Reference Traffic Flows (AM Peak)	DATE : 2-Dec-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
Loss 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		=	0.840
R.C.ult	= (Yult-Y)/Y*100%	=	404.8 %
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%	=	368.7 %

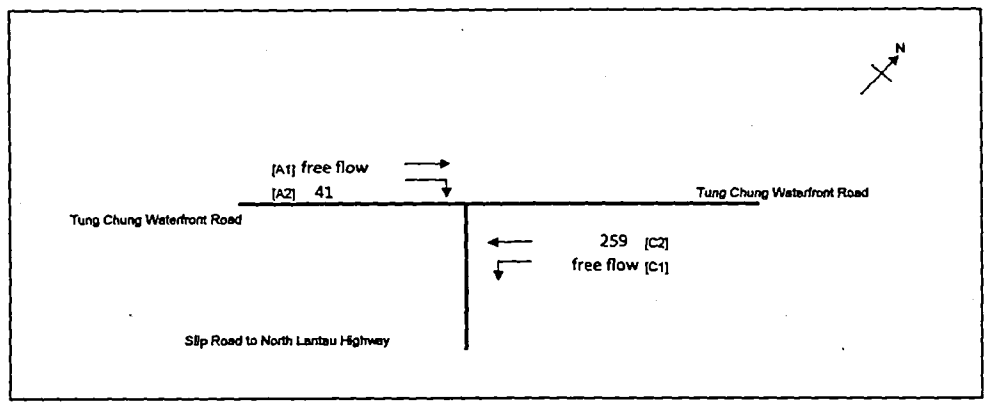


Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

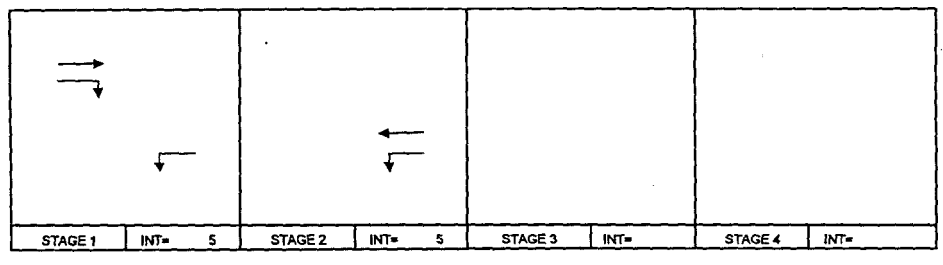
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				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		353		353	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:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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		=	300 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%	=	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%	=	840.4 %

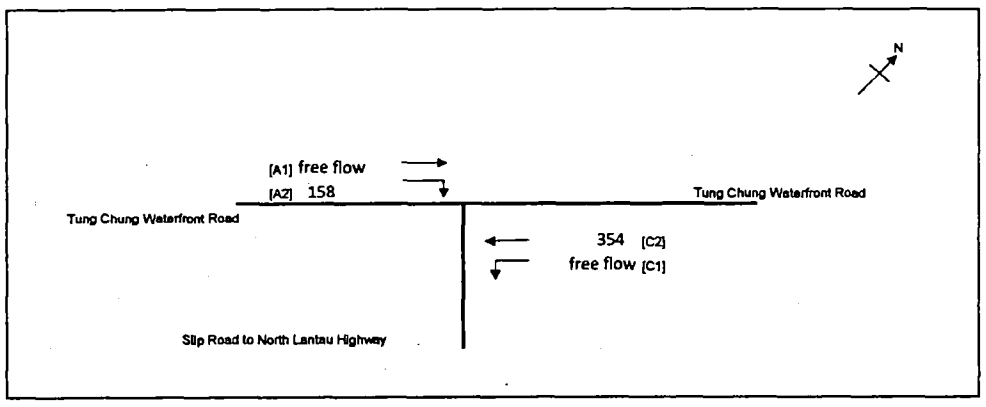


Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

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 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.
																				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 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 2026 Design Traffic Flows (AM Peak)	DATE : 2-Dec-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)	=	9.6 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 %

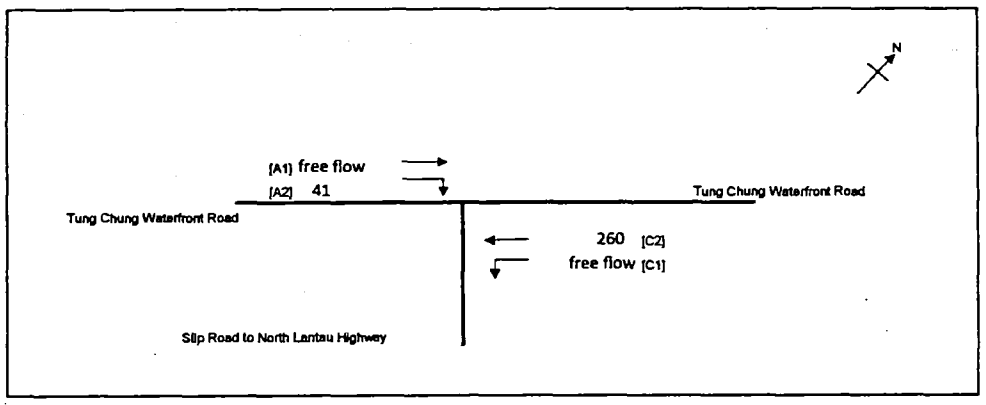
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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 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.
																				8				
A2	1	3.50	A	1	15			2105			158	158	1.00	1914			1914	0.083	0.083		26	26	0.192	9
C2	2	3.50	B	2				4210		354		354	0.00	4210			4210	0.084	0.084		26	26	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:	236078
J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway	Year 2026 Design Traffic Flows (PM Peak)	DATE : 2-Dec-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 %

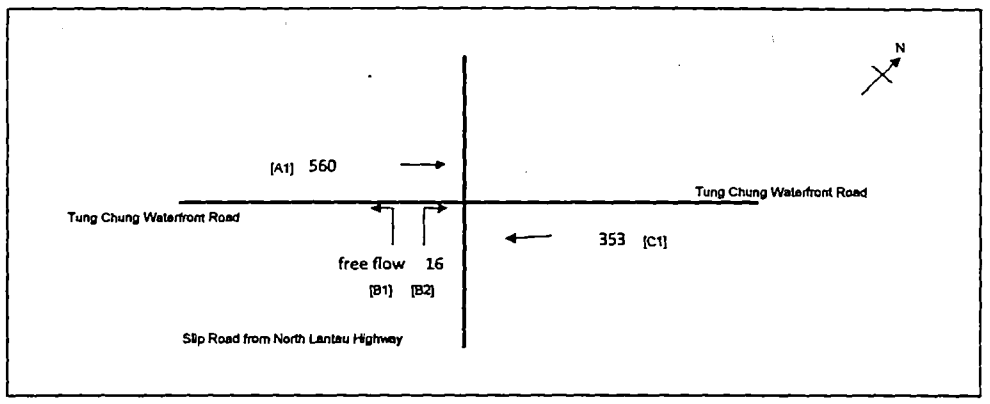
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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 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.
																				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		260		260	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 QUEUING LENGTH = AVERAGE QUEUE * 6m

J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Reference Traffic Flows (AM Peak)	PROJECT NO:	236078
		DATE : 2-Dec-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
Loss time	L =	10 sec
Total Flow	=	929 pcu
Co = (1.5*L+5)/(1-Y)	=	23.3 sec
Cm = L/(1-Y)	=	11.8 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 %

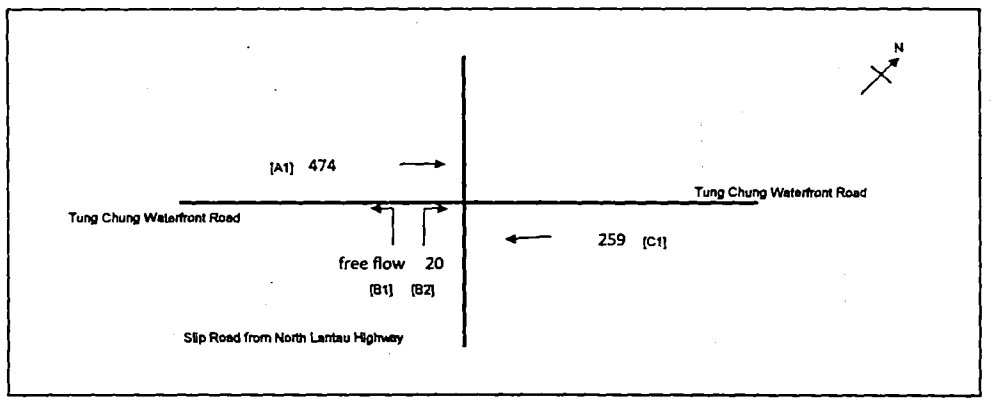
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

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 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.
																				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
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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
Loss 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 %

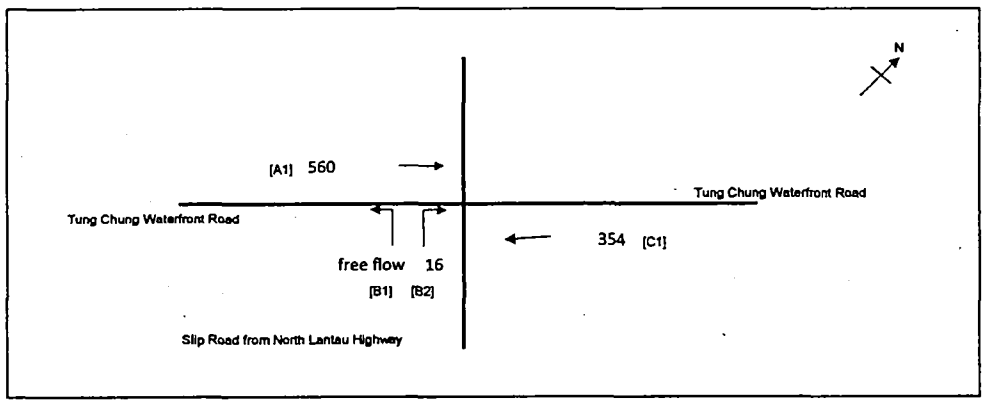
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

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				

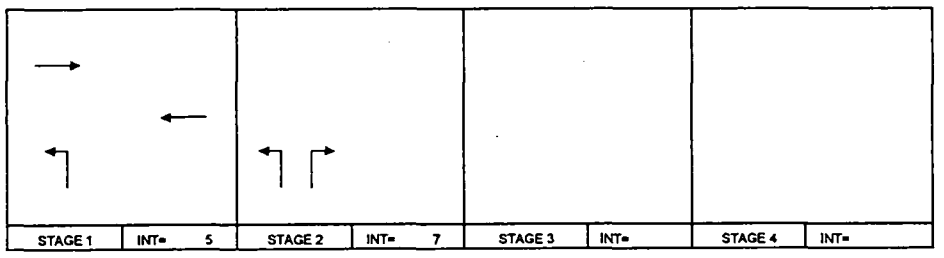
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				10				
A1	1	3.50	A	2				4210		474		474	0.00	4210			4210	0.113	0.113		48	48	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	48	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
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Design Traffic Flows (AM Peak)	DATE : 2-Dec-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
Loss 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 %

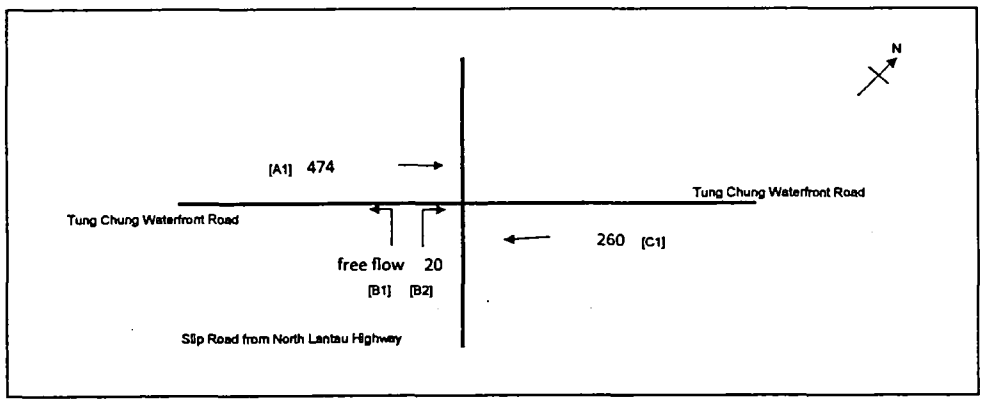


Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

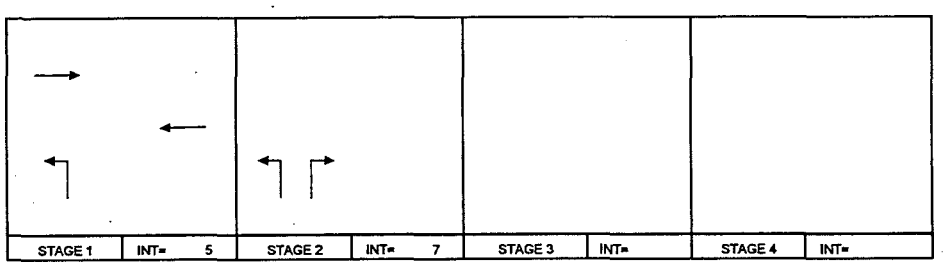
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				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		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
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2026 Design Traffic Flows (PM Peak)	DATE : 2-Dec-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
Loss 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)	=	11.6 sec
Ymax	= 1-L/C	=	0.833
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	509.8 %

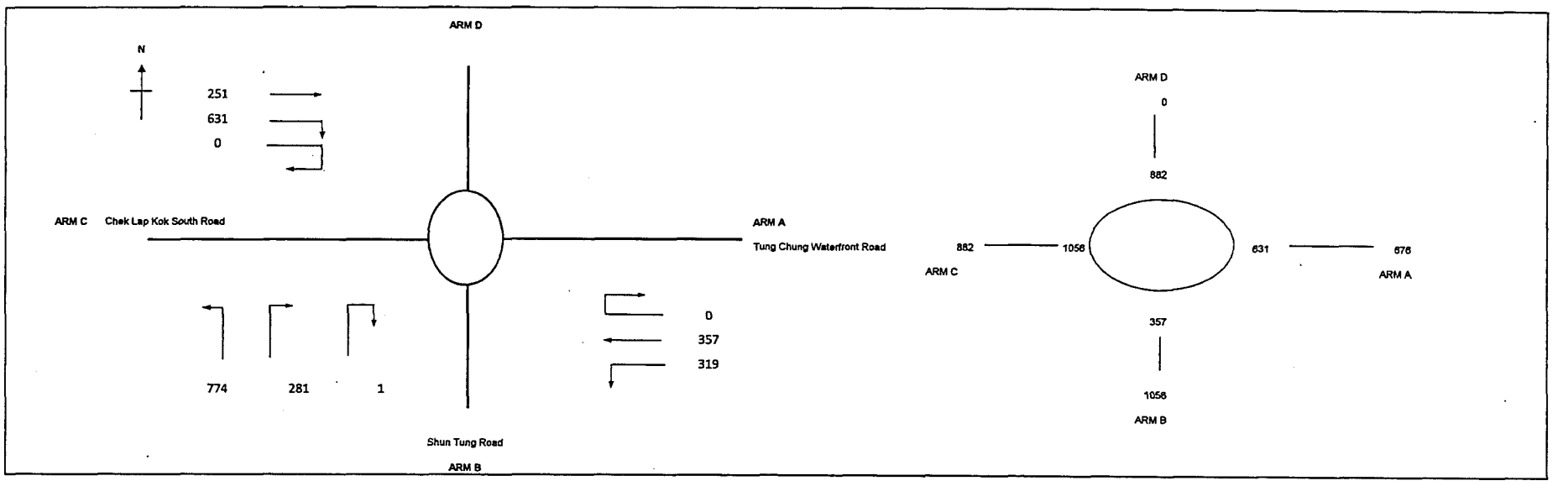


Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

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 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.
																				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.	238078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Reference Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME

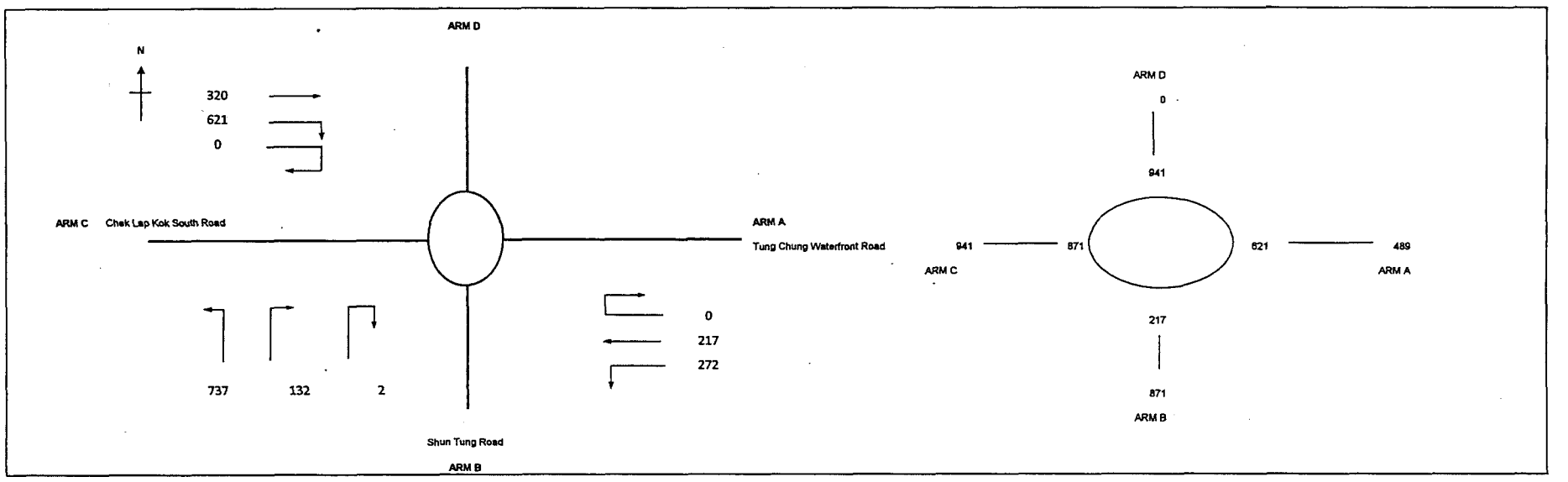


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	676	1056	882
Qc	=	Circulating flow across entry (pcu/h)	631	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	0.96	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)	2069	2103	1690
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.50	0.52

Total In Sum = 2614 PCU

DFC of Critical Approach = 0.52

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	238078
J14 - Chek Lap Kok South Road Roundabout	Year 2026 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENpmE

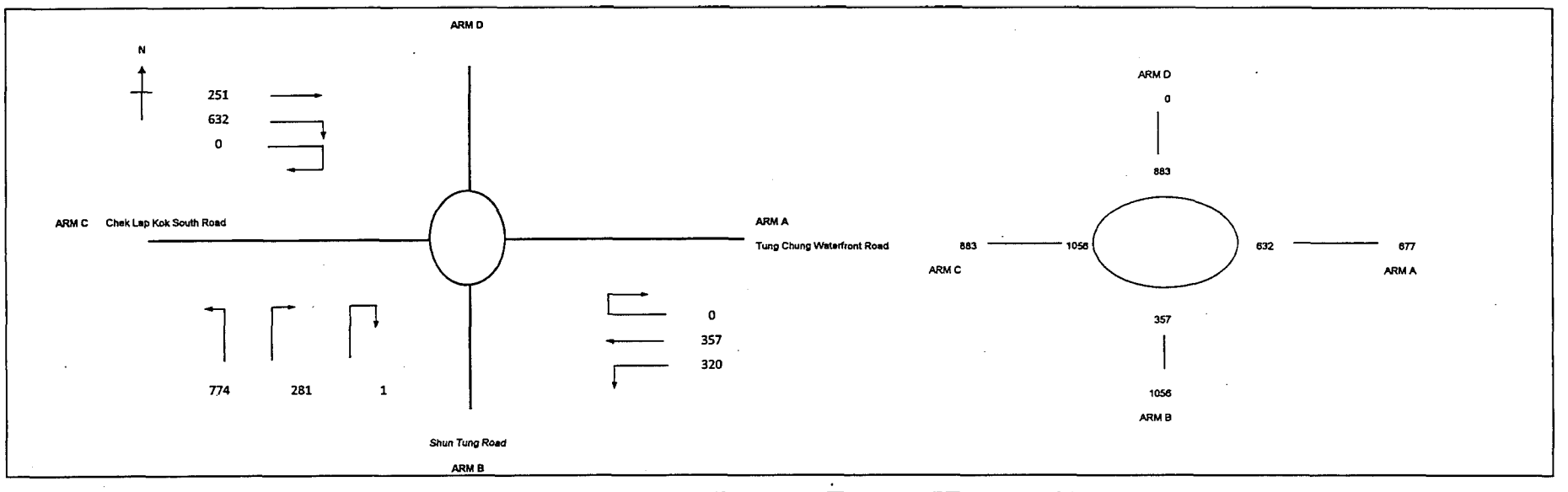


ARM			A	B	C
INPUT PARpmETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle dipmeter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	489	671	941
Qc	=	Circulating flow across entry (pcu/h)	621	217	671
OUTPUT PARpmETERS:					
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	0.96	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)	2076	2195	1815
DFC	=	Design flow/Capacity = Q/Qe	0.24	0.40	0.52

Total In Sum = 2301 PCU

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 2-Dec-15	FILENAME

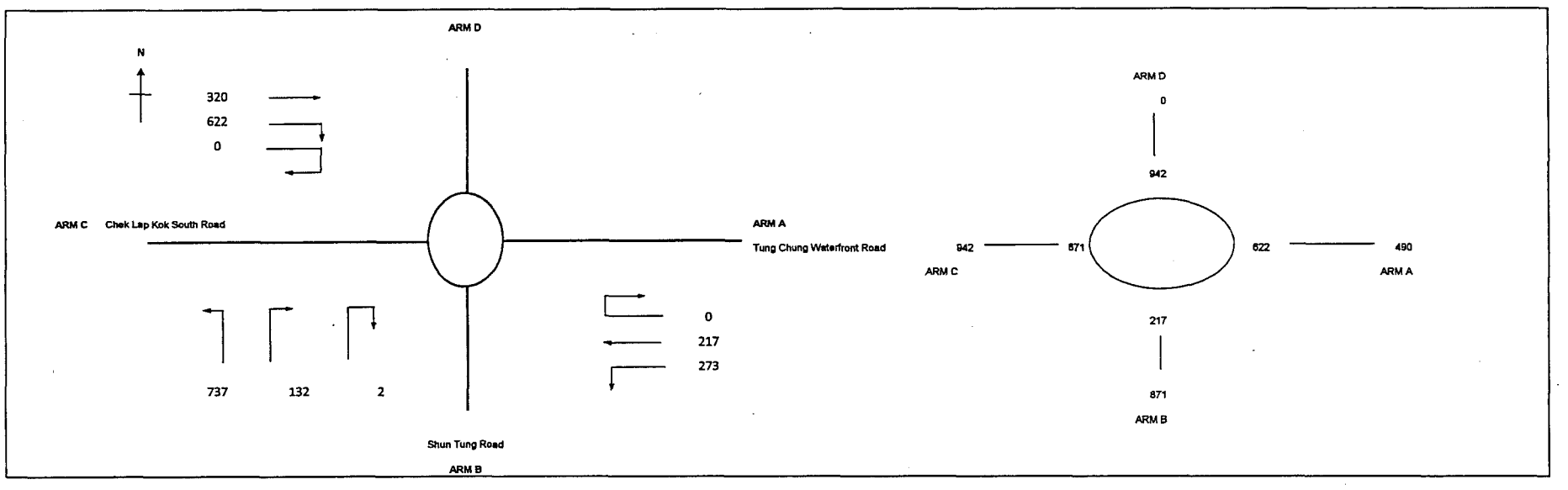


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	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	0.96	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)	2068	2103	1690
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.50	0.52

Total In Sum = 2616 PCU

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 (PM Peak)	DATE 2-Dec-15	FILENpmE

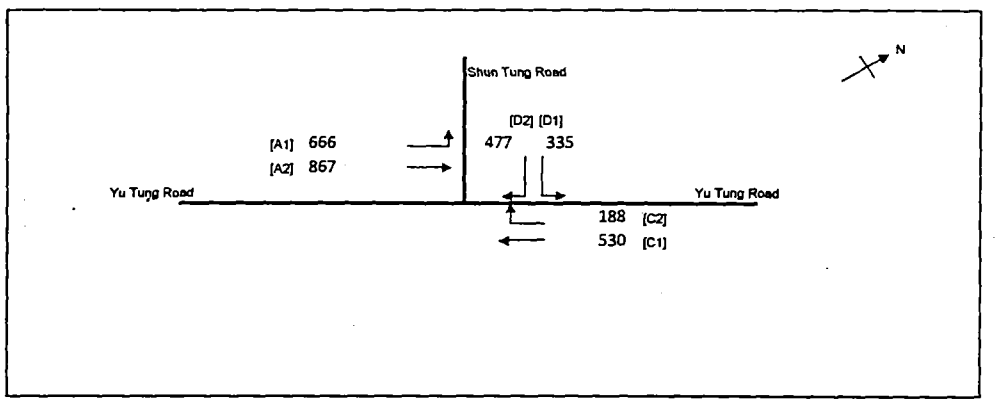


ARM			A	B	C
INPUT PARpmETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle dipmeter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	490	871	942
Qc	=	Circulating flow across entry (pcu/h)	622	217	871
OUTPUT PARpmETERS:					
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	0.96	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
DFC	=	Design flow/Capacity = Q/Qe	0.24	0.40	0.52

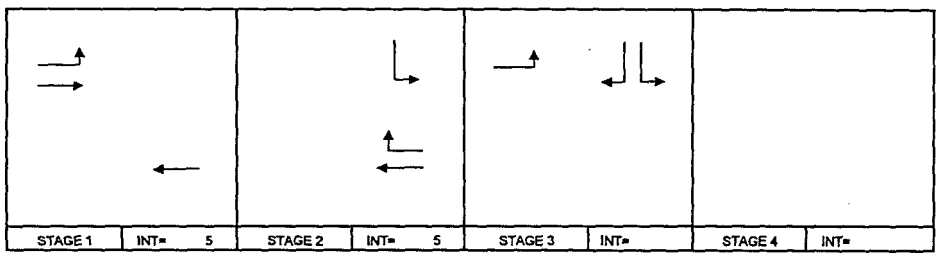
Total In Sum = 2303 PCU

DFC of Critical Approach = 0.52

Discovery Bay		PROJECT NO:	238078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 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 =	0.467
Loss time		L =	8 sec
Total Flow		=	3083 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)	=	16.6 sec
Ymax	= 1-L/C	=	0.888
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	70.8 %

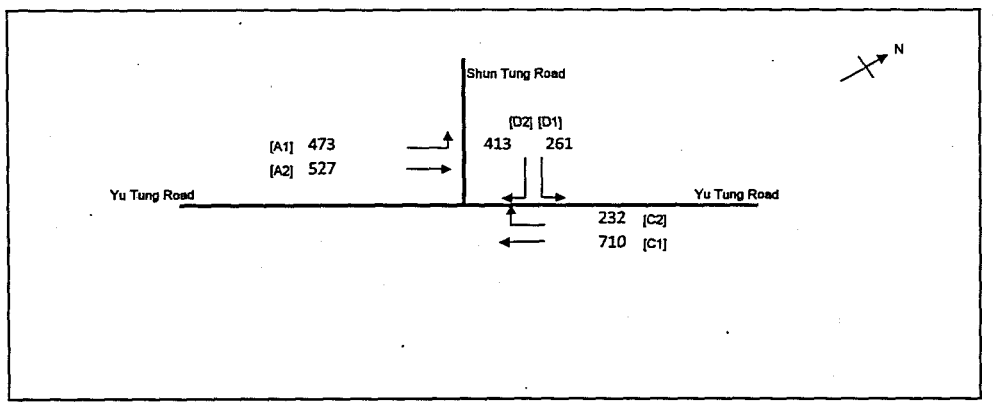


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

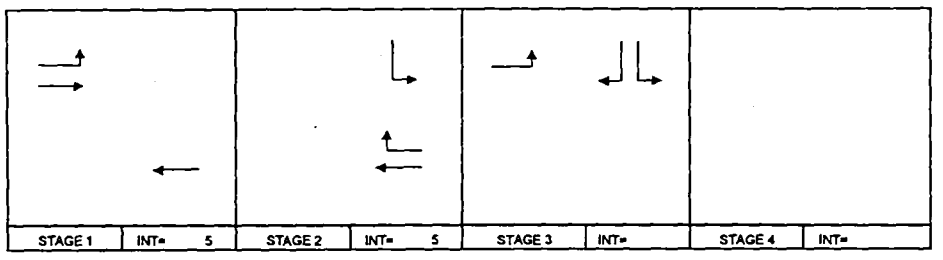
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	666			666	1.00	1786			1786	0.373	0.373		50	50	0.527	23
A2	1	3.50	A	2				4210		867		867	0.00	4210			4210	0.206			27	27	0.527	31
C1	1,2	3.50	F	2			N	4070		530		530	0.00	4070			4070	0.130			17	45	0.203	11
C2	2	3.50	E	1	30			2105			188	188	1.00	2005			2005	0.094	0.094		12	12	0.527	16
D1	2,3	3.50	D	1	15		N	1965	335			335	1.00	1786			1786	0.188			25	38	0.368	19
D2	3	3.50	C	2	30			4210			477	477	1.00	4010			4010	0.119			16	18	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:	238078
J15 - Yu Tung Road / Shun Tung Road	Year 2026 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-15	FILENPME :



No. of stages per cycle		N =	3
No. of stage using for calculation		N =	2
Cycle time		C =	70 sec
Sum(y)		Y =	0.381
Loss time		L =	8 sec
Total Flow		=	2816 pcu
Co	= (1.5*L+5)/(1-Y)	=	27.4 sec
Cm	= L/(1-Y)	=	12.9 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 %

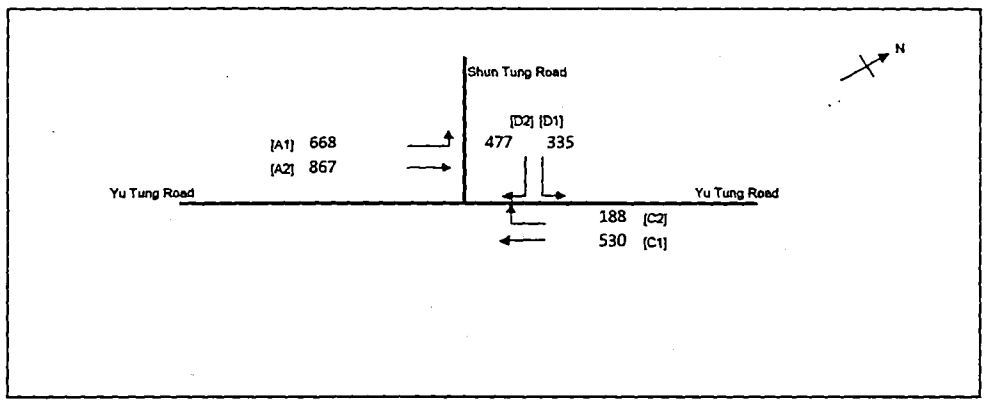


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

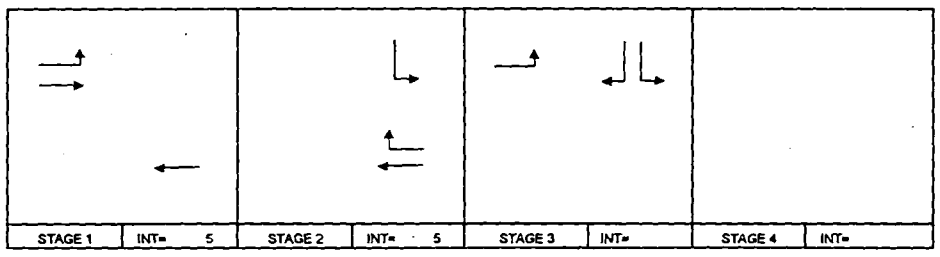
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	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	1,2	3.50	F	2			N	4070		710		710	0.00	4070			4070	0.174			28	44	0.276	15
C2	2	3.50	E	1	30			2105			232	232	1.00	2005			2005	0.116	0.116		19	19	0.430	20
D1	2,3	3.50	D	1	15		N	1965	261			261	1.00	1786			1786	0.146			24	43	0.240	12
D2	3	3.50	C	2	30			4210			413	413	1.00	4010			4010	0.103			17	19	0.385	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 : 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 =	0.468
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 %



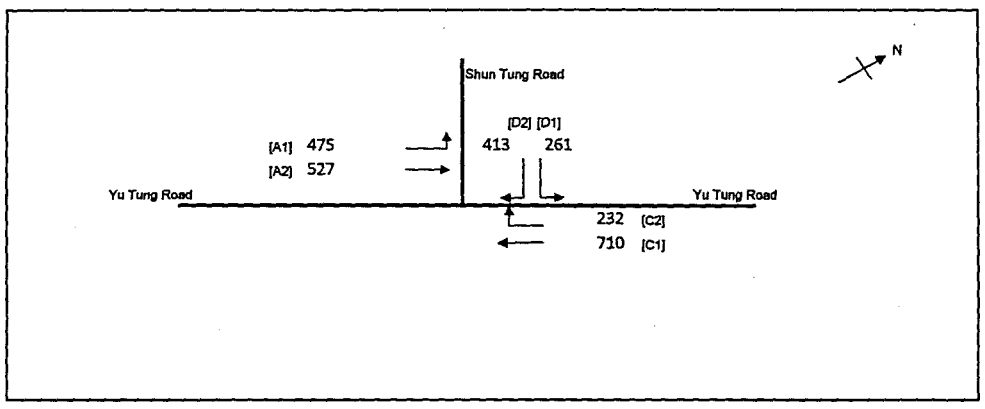
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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								

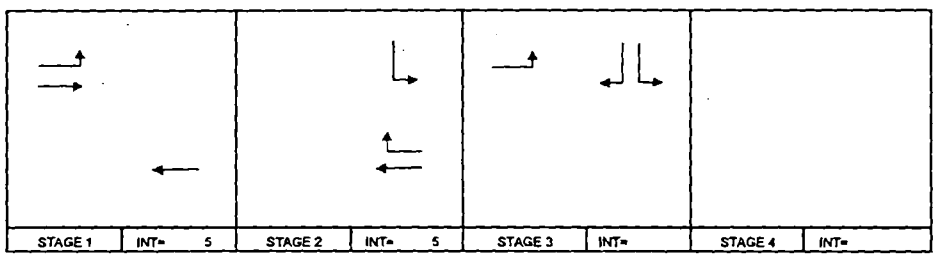
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	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
D1	2,3	3.50	D	1	15		N	1965	335			335	1.00	1786			1786	0.188			25	36	0.368	19
D2	3	3.50	C	2	30			4210			477	477	1.00	4010			4010	0.119			16	18	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 : 2-Dec-15	FILENPME :



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)	=	12.8 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 %



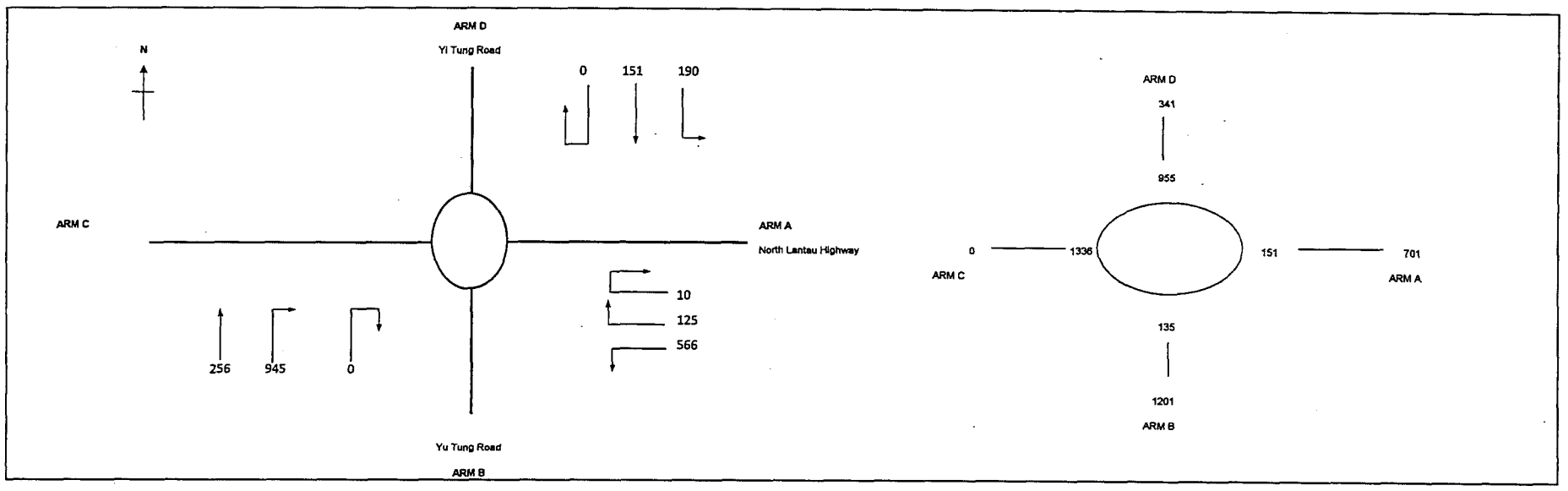
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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	Straight pcu/h	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.
																				8				
A1	1,3	3.50	B	1	15		N	1965	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			28	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
D1	2,3	3.50	D	1	15		N	1965	261			261	1.00	1786			1786	0.146			24	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

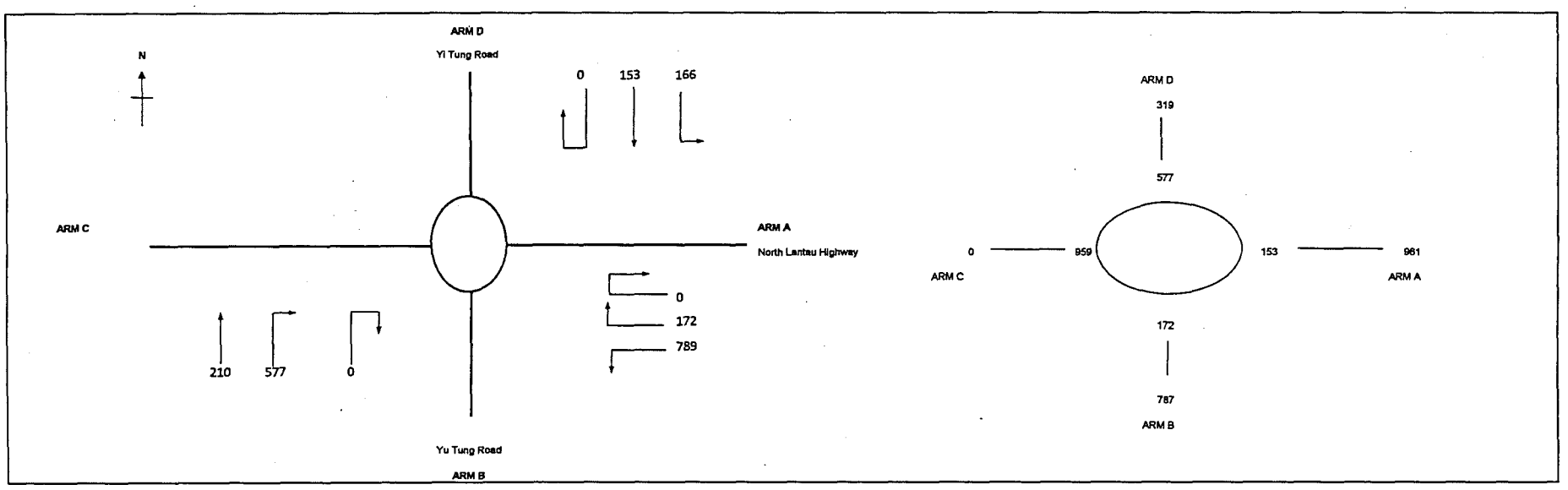
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2026 Reference Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME



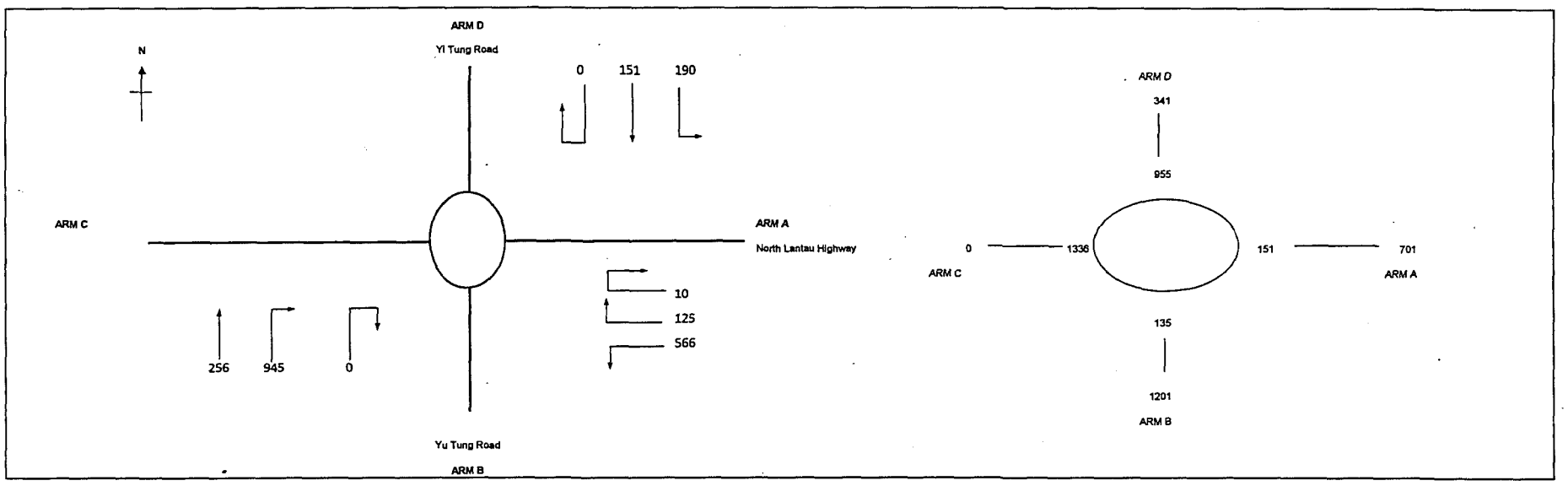
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	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))	11.49	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
J16 - Tung Chung Eastern interchange	Year 2026 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENPME



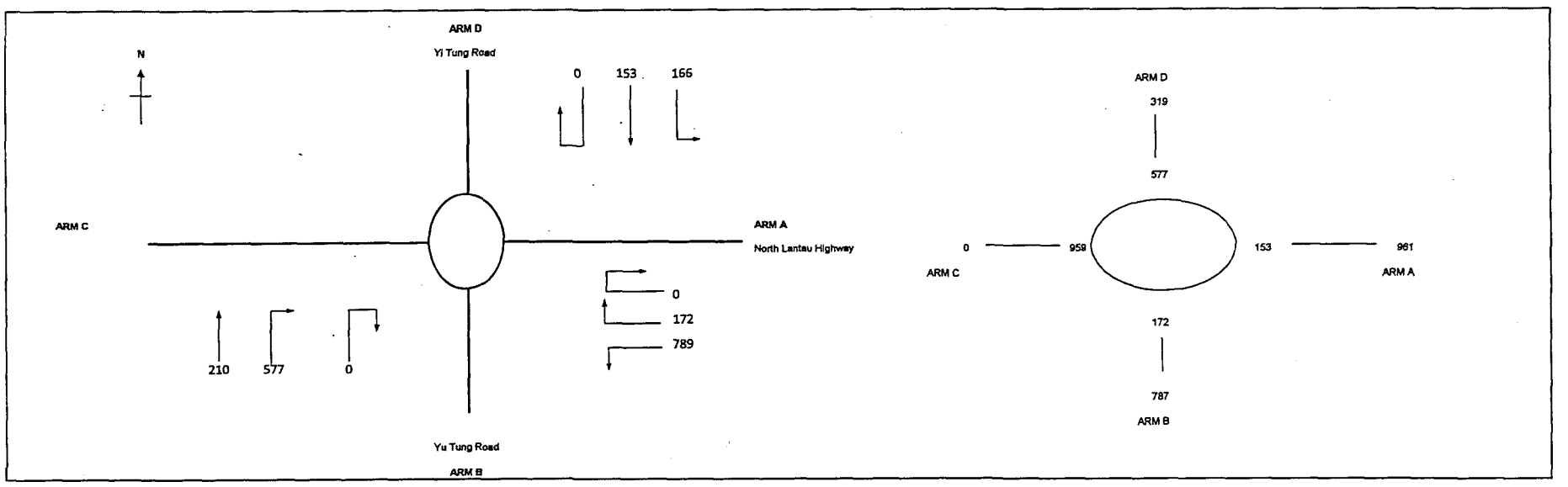
ARM			A	B	D			
INPUT PARPMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diPMeter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	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 PARPMETERS:								
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	12.86	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.	238078
J16 - Tung Chung Eastern interchange	Year 2026 Design Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME



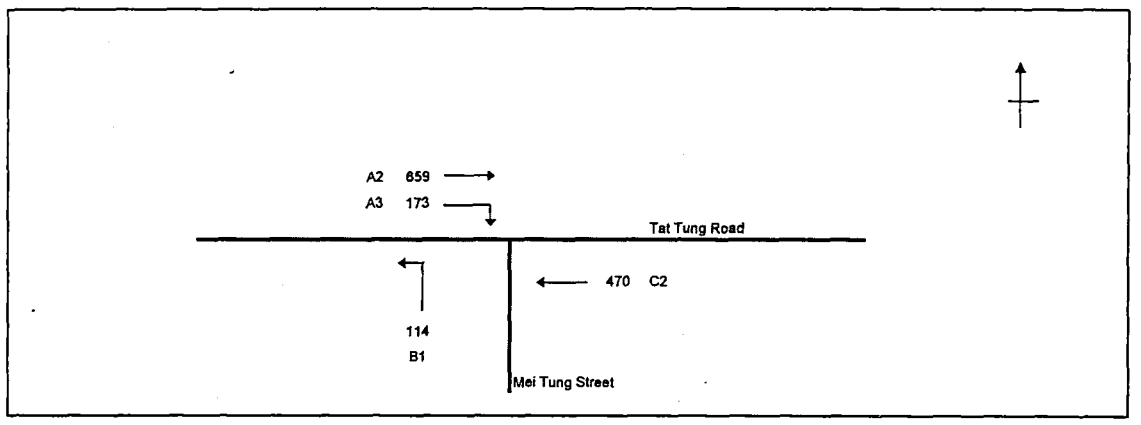
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	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))	11.49	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.	238078
J16 - Tung Chung Eastern interchange	Year 2026 Design Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENPME

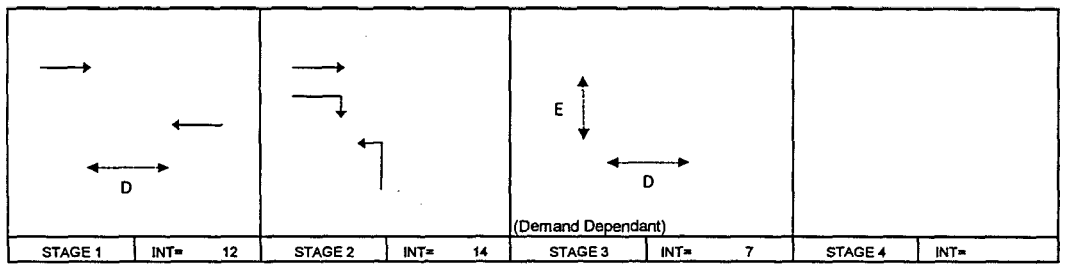


ARM			A	B	D			
INPUT PARPMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diPMeter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	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 PARPMETERS:								
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	12.86	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	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	Year 2026 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 =	120 sec
Sum(y)		Y =	0.333
Loss time		L =	51 sec
Total Flow		=	768 pcu
Co	= (1.5*L+5)/(1-Y)	=	122.2 sec
Cm	= L/(1-Y)	=	76.4 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	55.5 %
Cp	= 0.9*L/(0.9-Y)	=	80.9 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	55.5 % (Optimized)

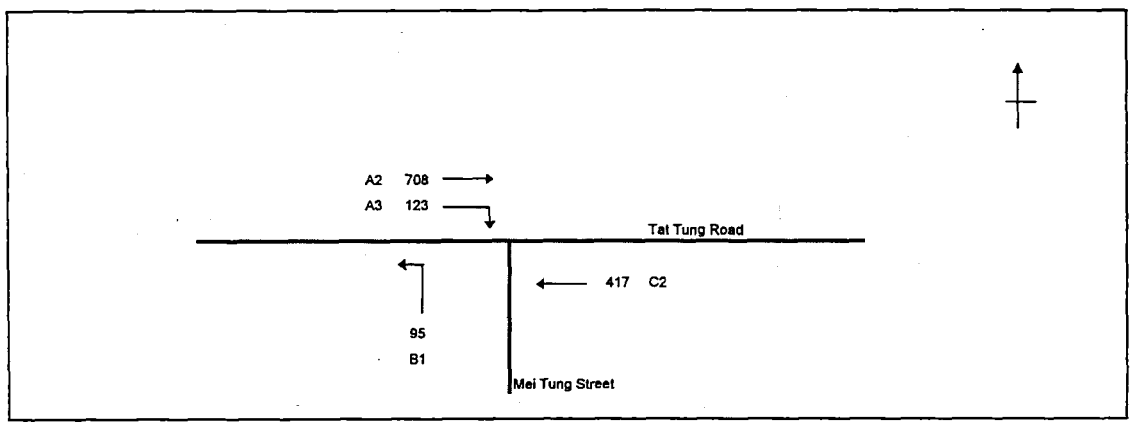


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

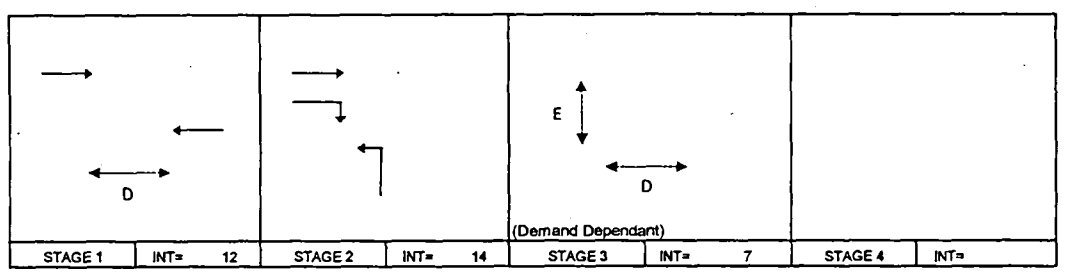
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		648		648	0.00	1945			1945	0.333			69	69	0.579	0
A2,A3	2	3.30	A	1	30			2085		11	173	184	0.94	1991			1991	0.092	0.092		19	69	0.161	16
B1	2	3.20	B	2	15		N	4010	114			114	1.00	3645			2916	0.039			8	8	0.579	11
C2	1	3.40	C	1			N	1955		470		470	0.00	1955			1955	0.240	0.240		50	50	0.579	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 : 2-Dec-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 =	0.318
Loss time		L =	51 sec
Total Flow		=	725 pcu
Co	= (1.5*L+5)/(1-Y)	=	119.6 sec
Cm	= L/(1-Y)	=	74.8 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	62.5 %
Cp	= 0.9*L/(0.9-Y)	=	78.9 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	62.5 % (Optimized)

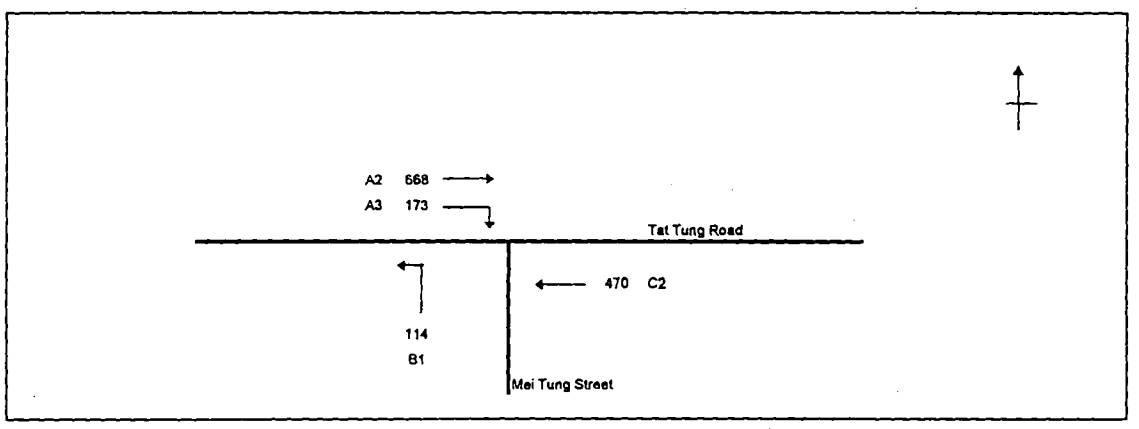


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

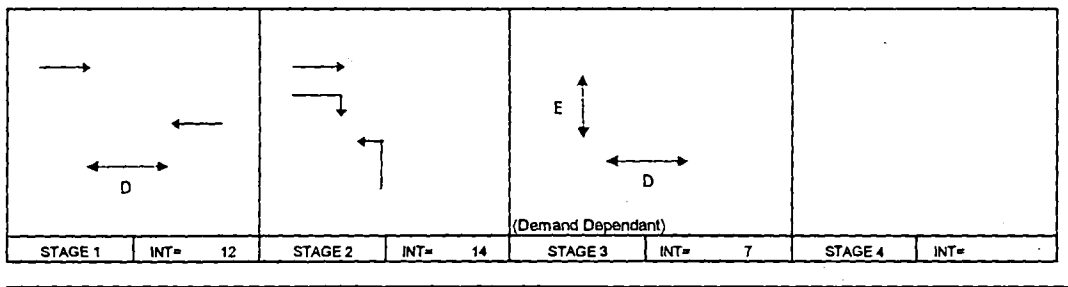
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		818		818	0.00	1945			1945	0.318			69	69	0.554	0
A2,A3	2	3.30	A	1	30			2085		90	123	213	0.58	2026			2026	0.105	0.105		23	69	0.183	18
B1	2	3.20	B	2	15		N	4010	95			95	1.00	3645			2916	0.033			7	7	0.554	9
C2	1	3.40	C	1			N	1955		417		417	0.00	1955			1955	0.213	0.213		46	46	0.554	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 : 2-Dec-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)



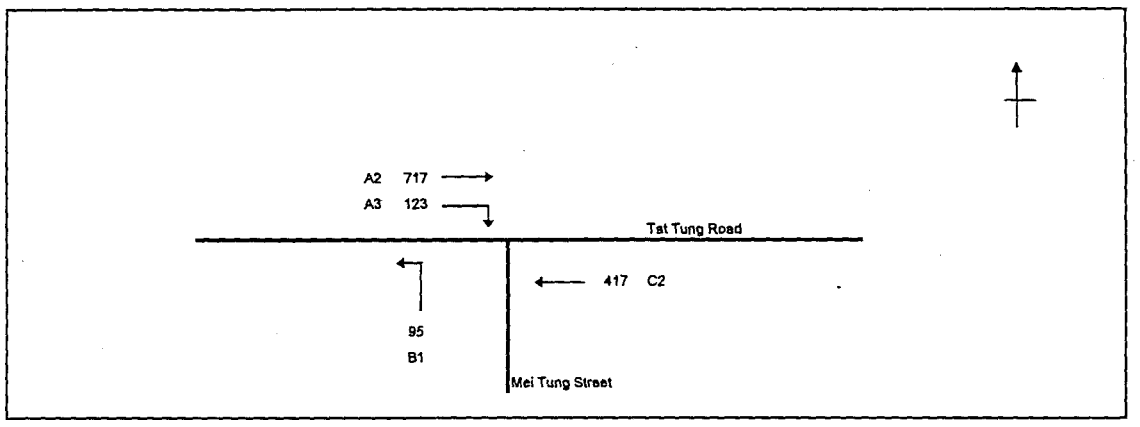
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

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

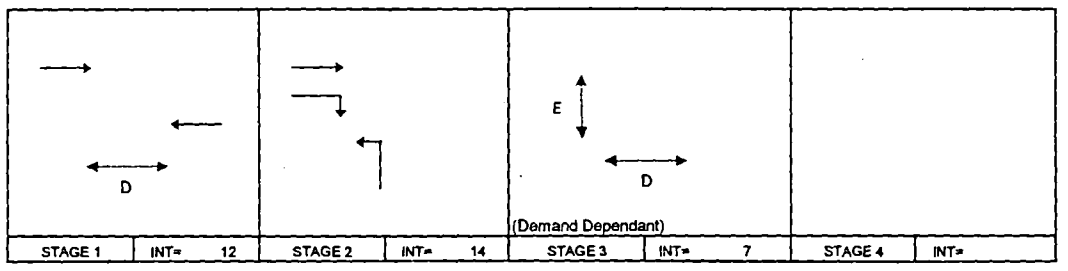
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		652		652	0.00	1945			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	18
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 : 2-Dec-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		=	729 pcu
Co	= (1.5*L+5)/(1-Y)	=	119.9 sec
Cm	= L/(1-Y)	=	75.0 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	61.6 %
Cp	= 0.9*L/(0.9-Y)	=	79.2 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=

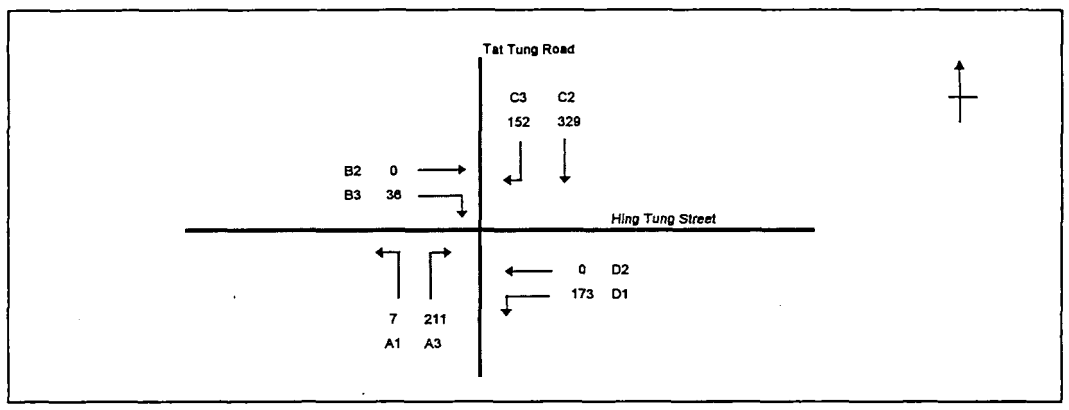
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	6	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m 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		623		623	0.00	1945			1945	0.320			69	69	0.557	0
A2,A3	2	3.30	A	1	30			2085		94	123	217	0.57	2028			2028	0.107	0.107		23	69	0.186	18
B1	2	3.20	B	2	15		N	4010	95			95	1.00	3845			2916	0.033			7	7	0.557	9
C2	1	3.40	C	1			N	1955		417		417	0.00	1955			1955	0.213	0.213		48	48	0.557	51
PED	3																			20				

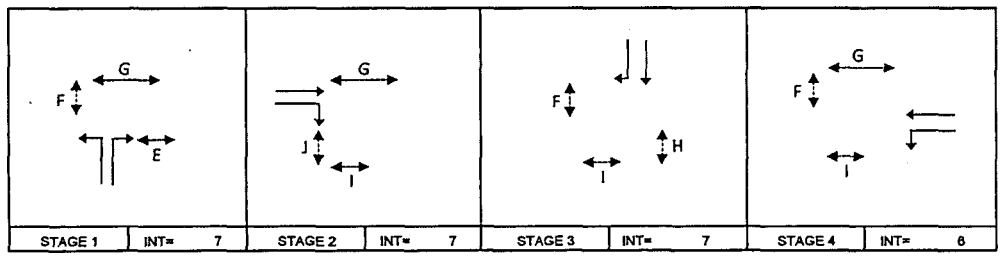
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Discovery Bay

J18 - Tat Tung Road / Hing Tung Street	Year 2026 Reference Traffic Flows (AM Peak)	PROJECT NO: 236078 DATE : 2-Dec-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 =	59 sec
Total Flow		=	900 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)



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	59	2	6	OK
J	6.6	5	6	6	5	6	6	OK

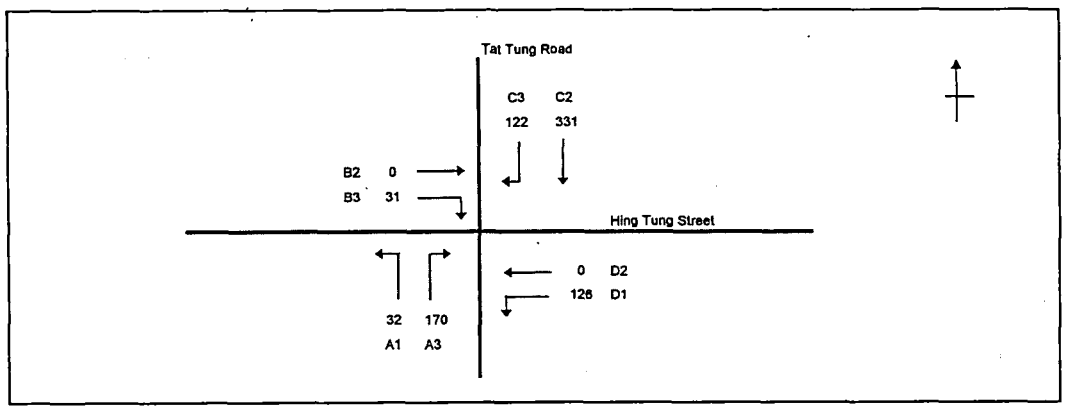
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1985	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	0.361	31
B2,B3	2	3.00	B	1	30		N	1915		0	16	16	1.00	1824			1459	0.011			3	11	0.120	3
B3	2	3.00	B	1	30			2055			20	20	1.00	1957			1566	0.013			4	11	0.137	4
C2	3	3.90	C	1	25		N	2005		245		245	0.00	2005			2005	0.122			39	11	1.333	45
C2,C3	3	3.90	C	1	25		N	2005		84	152	236	0.64	1930			1930	0.122			39	11	1.333	43
D1,D2	4	3.90	D	1	40		N	2005	173	0		173	1.00	1933			1933	0.090	0.090		28	28	0.361	28
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

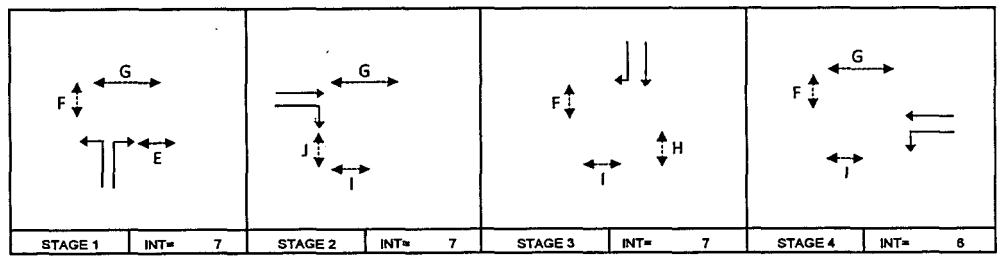
OVE ARUP & PARTNERS — TRAFFIC SIGNAL CALCULATION

Discovery Bay

J18 - Tat Tung Road / Hing Tung Street	Year 2026 Reference Traffic Flows (PM Peak)	PROJECT NO: 236078 DATE : 2-Dec-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 =	59 sec
Total Flow		=	779 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)



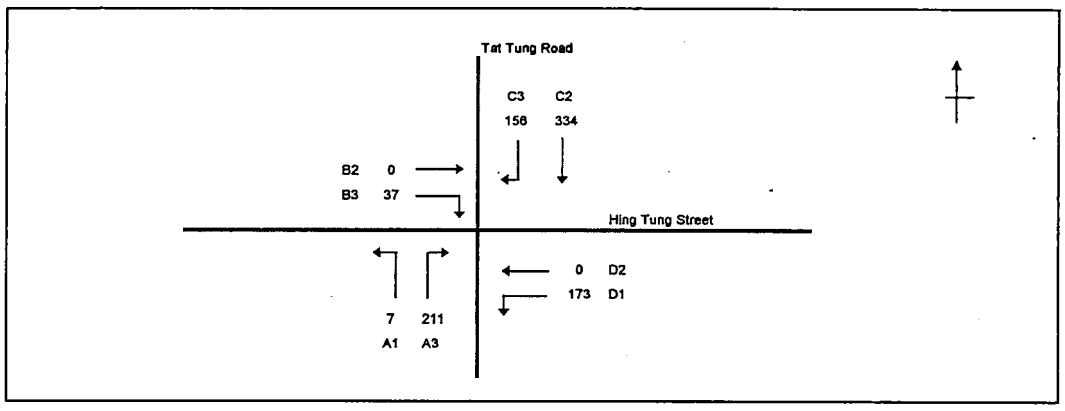
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

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	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

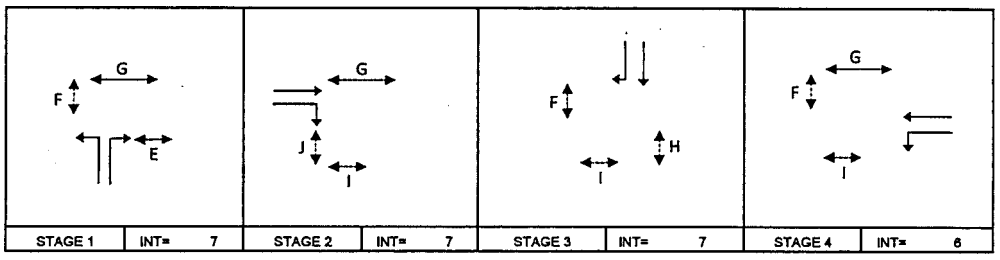
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				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	14	14	1.00	1824			1459	0.010			4	11	0.105	3
B3	2	3.00	B	1	30			2055			17	17	1.00	1957			1566	0.011			4	11	0.116	3
C2	3	3.90	C	1	25		N	2005		230		230	0.00	2005			2005	0.115			47	11	1.251	42
C2,C3	3	3.90	C	1	25		N	2005		101	122	223	0.55	1941			1941	0.115			47	11	1.252	40
D1,D2	4	3.90	D	1	40		N	2005	126	0		126	1.00	1933			1933	0.065	0.065		27	27	0.293	20
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 Design Traffic Flows (AM Peak)	DATE : 2-Dec-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 =	59 sec
Total Flow		=	911 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)



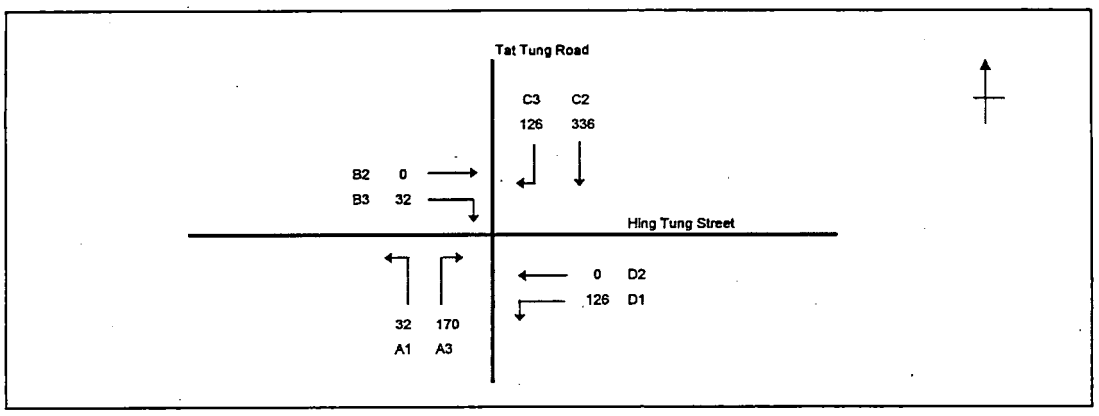
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

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	59	2	6	OK
J	6.6	5	6	6	5	6	6	OK

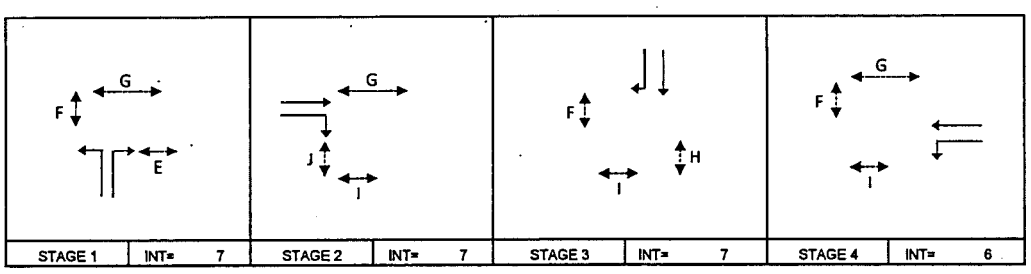
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				25				
A1	1	3.50	A	1	15		N	1965	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			19	19	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,D2	4	3.90	D	1	40		N	2005	173	0		173	1.00	1933			1933	0.090	0.090		25	25	0.381	25
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 Design Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.266
Loss time		L =	41 sec
Total Flow		=	790 pcu
Co	= (1.5*L+5)/(1-Y)	=	90.6 sec
Cm	= L/(1-Y)	=	55.9 sec
Yult		=	0.593
R.C.ult	= (Yult-Y)/Y*100%	=	122.6 %
Cp	= 0.9*L/(0.9-Y)	=	58.2 sec
Ymax	= 1-L/C	=	0.658
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	122.6 % (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	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	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

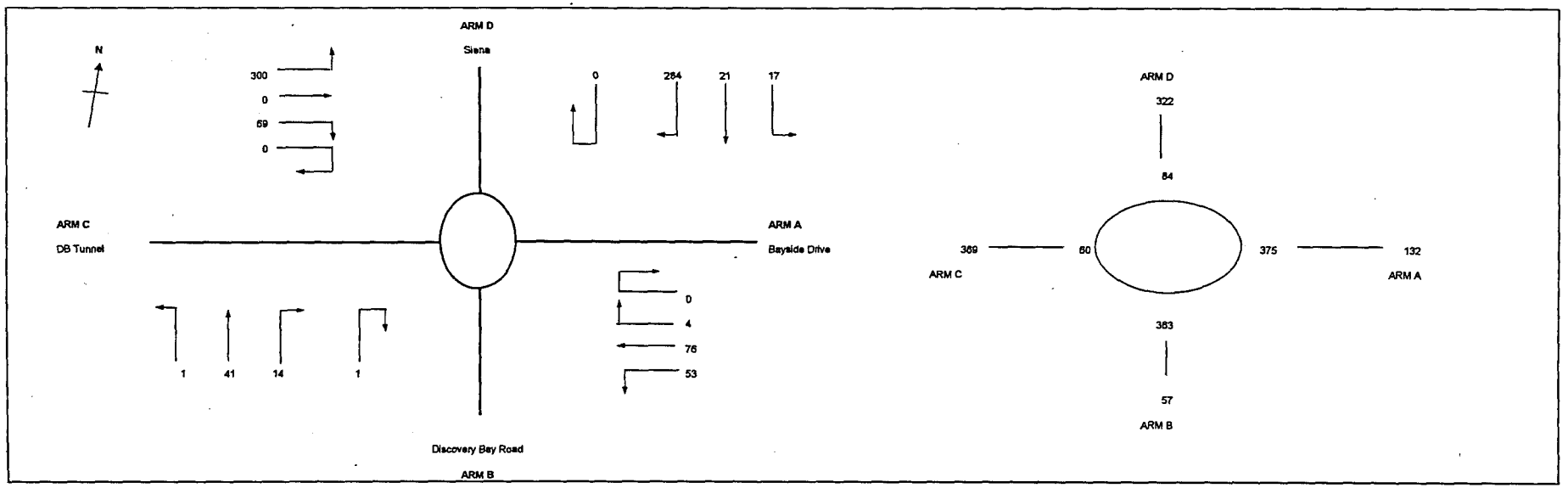
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1965	32			32	1.00	1786			1786	0.018	0.084		5	25	0.086	0
A1,A3	1	3.50	A	1	40			2105	0		170	170	1.00	2029			2029	0.084			25	25	0.404	27
B2,B3	2	3.00	B	1	30		N	1915		0	16	16	1.00	1824			1459	0.011			3	11	0.120	3
B3	2	3.00	B	1	30			2055			16	16	1.00	1957			1566	0.010			3	11	0.112	3
C2	3	3.90	C	1	25		N	2005		235		235	0.00	2005			2005	0.117	0.117		35	35	0.404	33
C2,C3	3	3.90	C	1	25		N	2005		101	126	227	0.56	1940			1940	0.117			35	35	0.404	32
D1,D2	4	3.90	D	1	40		N	2005	126	0		126	1.00	1933			1933	0.065	0.065		18	18	0.404	21
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

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION	PROJECT NO:	236078
Discovery Bay			
J1 - DB Tunnel Roundabout	Year 2031 Reference Traffic Flows (A.M Peak)	DATE	30-Nov-15 FILENAME

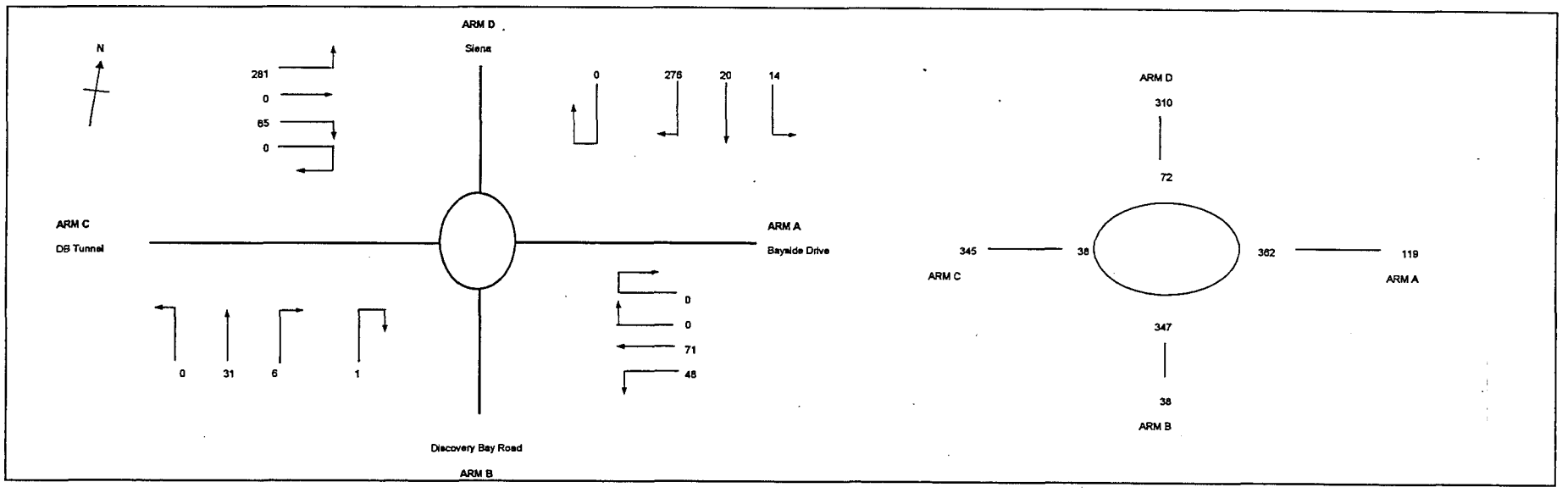


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.50	3.50	3.75	3.50
E	=	Entry width (m)	7.00	7.00	7.30	7.30
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00
R	=	Entry radius (m)	20.00	20.00	25.00	35.00
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00
Q	=	Entry flow (pcu/h)	132	57	369	322
Qc	=	Circulating flow across entry (pcu/h)	375	363	60	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	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)	1442	1490	1887	1896
DFC	=	Design flow/Capacity = Q/Qe	0.09	0.04	0.20	0.17

Total in Sum = **881** **PCU**

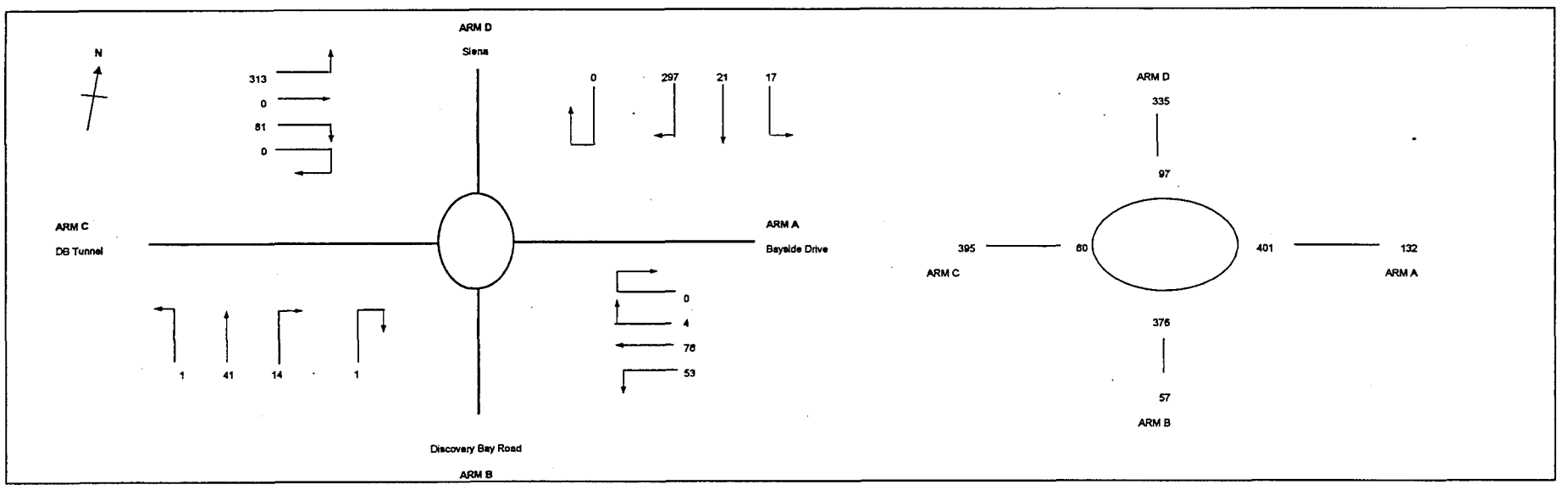
DFC of Critical Approach = **0.20**

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2031 Reference Traffic Flows (PM Peak)	DATE 30-Nov-15	FILENAME



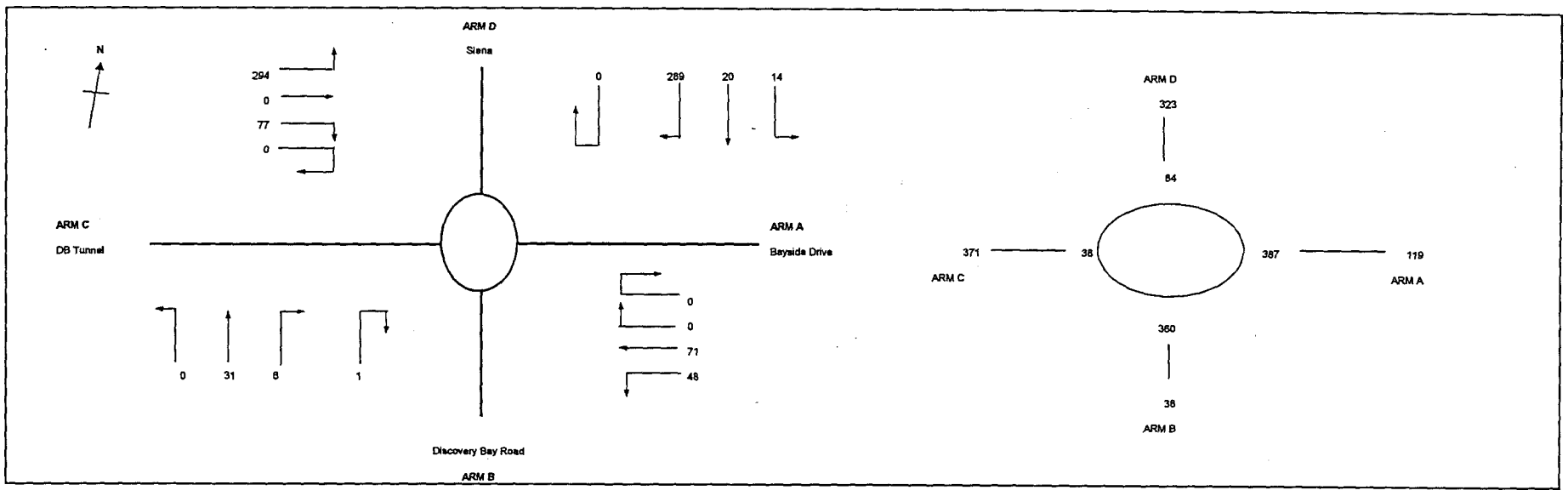
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
A	=	Entry angle (degree)	30.00	35.00	25.00	25.00			
Q	=	Entry flow (pcu/h)	119	38	345	310			
Qc	=	Circulating flow across entry (pcu/h)	362	347	38	72			
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)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1450	1500	1902	1904	Total In Sum =	813	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.03	0.18	0.16	DFC of Critical Approach =	0.18	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J1 - DB Tunnel Roundabout	Year 2031 Design Traffic Flows (AM Peak)	DATE 30-Nov-15	FILENAME



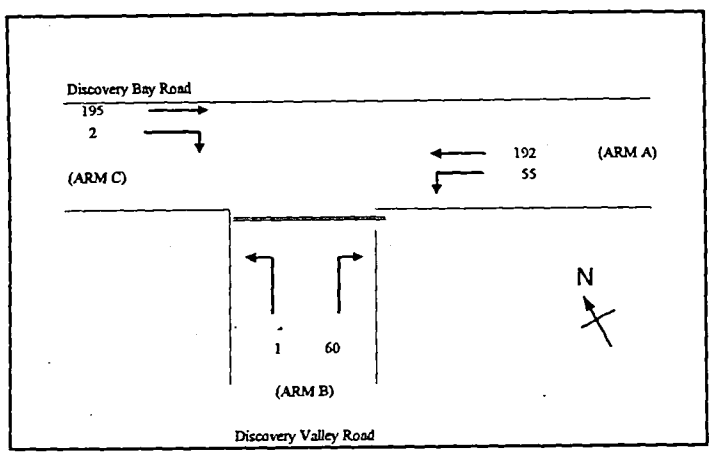
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	3.50	3.50	3.75	3.50			
E	=	Entry width (m)	7.00	7.00	7.30	7.30			
L	=	Effective length of flare (m)	15.00	20.00	25.00	30.00			
R	=	Entry radius (m)	20.00	20.00	25.00	35.00			
D	=	Inscribed circle diameter (m)	50.00	50.00	50.00	50.00			
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*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)	0.60	0.62	0.64	0.64			
Qe	=	K(F-Fc*Qc)	1426	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 30-Nov-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	323			
Qc	=	Circulating flow across entry (pcu/h)	387	360	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	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)	1435	1492	1902	1896	Total In Sum =	851	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 (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	=	192	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	195.2	(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	=	543
Q b-c	=	707
Q c-b	=	681
Q b-ac	=	545.5

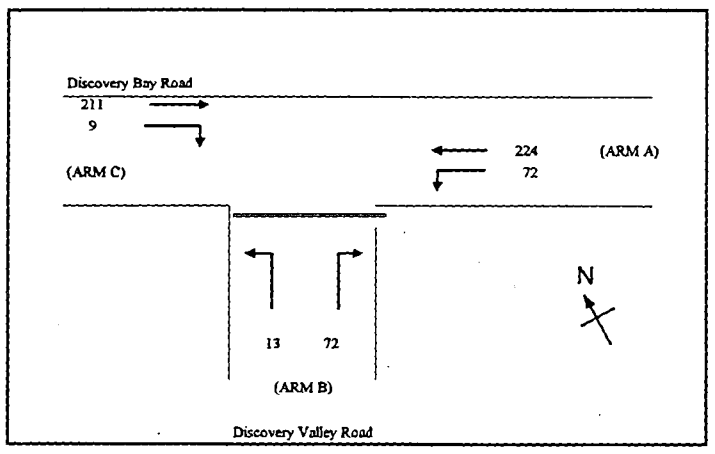
TOTAL FLOW = 505.8666484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1109
DFC b-c	=	0.0017
DFC c-b	=	0.0036
DFC b-ac	=	0.1126

CRITICAL DFC = 0.113

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	=	72	(pcu/hr)
q a-c	=	224	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.50	(metres)
Vr c-b	=	120	(metres)
q c-a	=	211.1	(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	=	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	=	530
Q b-c	=	698
Q c-b	=	671
Q b-ac	=	549.8

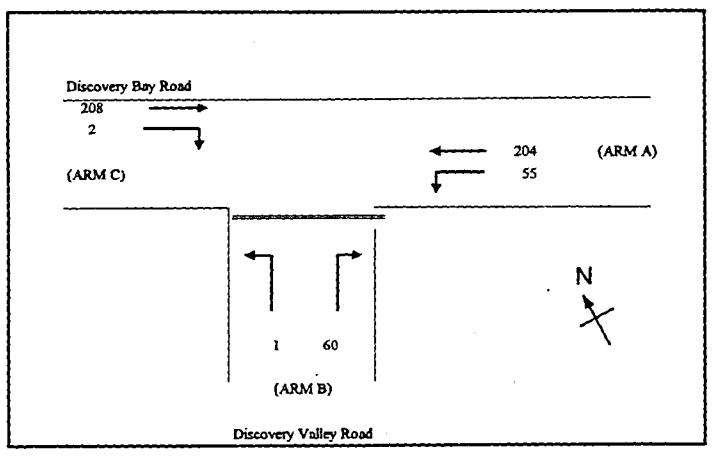
TOTAL FLOW = 599.9935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1356
DFC b-c	=	0.0181
DFC c-b	=	0.0132
DFC b-ac	=	0.1537

CRITICAL DFC = 0.154

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	=	2.436	(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

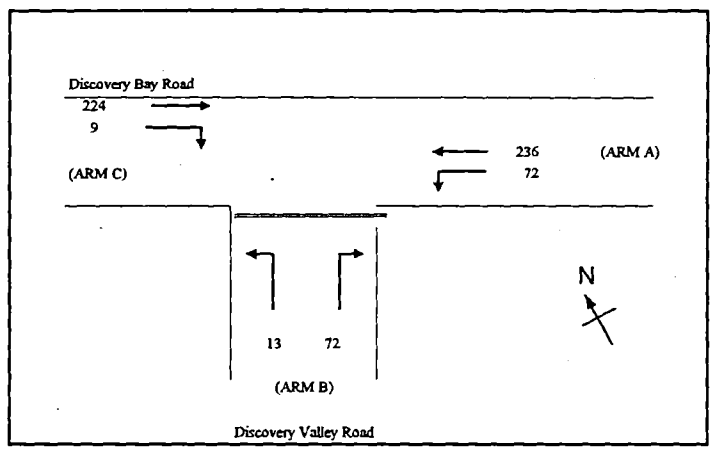
TOTAL FLOW = 530.8666484 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1119
DFC b-c	=	0.0017
DFC c-b	=	0.0038
DFC b-ac	=	0.1138

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	=	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

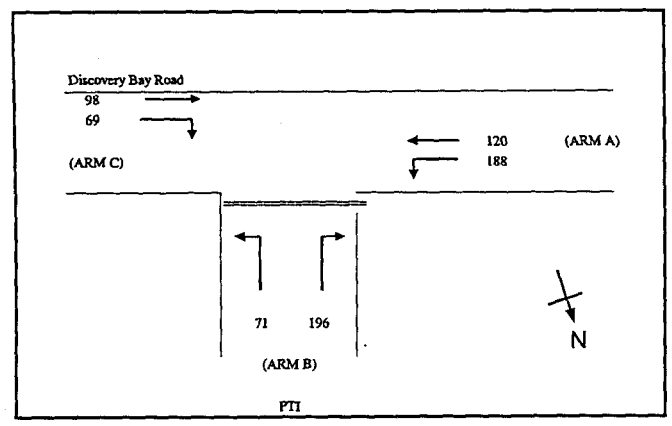
TOTAL FLOW = 624.9935702 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1366
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	=	188	(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	=	68.7	(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	=	196	(pcu/hr)
q b-c	=	71	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	679
Q c-b	=	684
Q b-ac	=	549.6

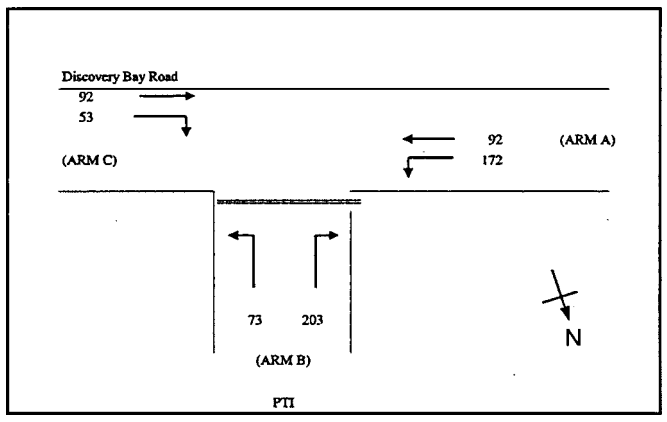
TOTAL FLOW = 742.2003363 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3806
DFC b-c	=	0.1045
DFC c-b	=	0.1004
DFC b-ac	=	0.4851

CRITICAL DFC = 0.485

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	=	172	(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	=	52.85	(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	=	203	(pcu/hr)
q b-c	=	73	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	527
Q b-c	=	686
Q c-b	=	694
Q b-ac	=	561.5

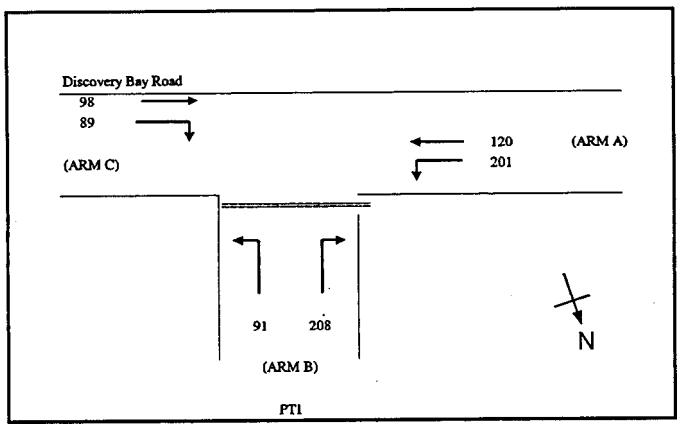
TOTAL FLOW = 684.7141485 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.3852
DFC b-c	=	0.1068
DFC c-b	=	0.0761
DFC b-ac	=	0.4920

CRITICAL DFC = 0.492

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	=	68.7	(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

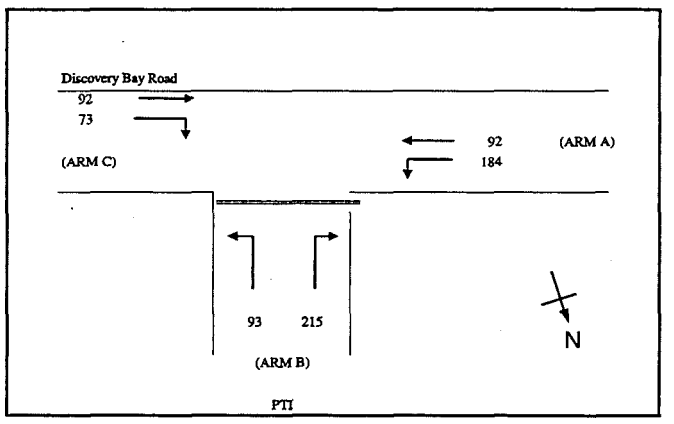
TOTAL FLOW = 807.2003363 (PCU/HR)

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 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	=	0.621

THE CAPACITY OF MOVEMENT :

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

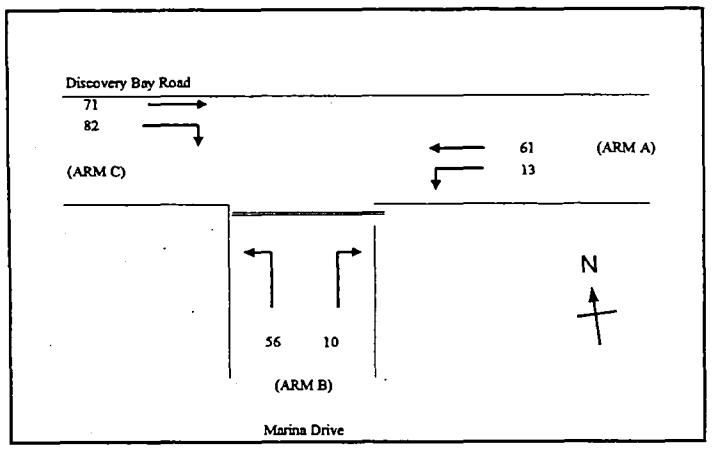
TOTAL FLOW = 749.7141485 (PCU/HR)

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 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	=	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	=	81.79	(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	=	56	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	514
Q b-c	=	679
Q c-b	=	703
Q b-ac	=	646.5

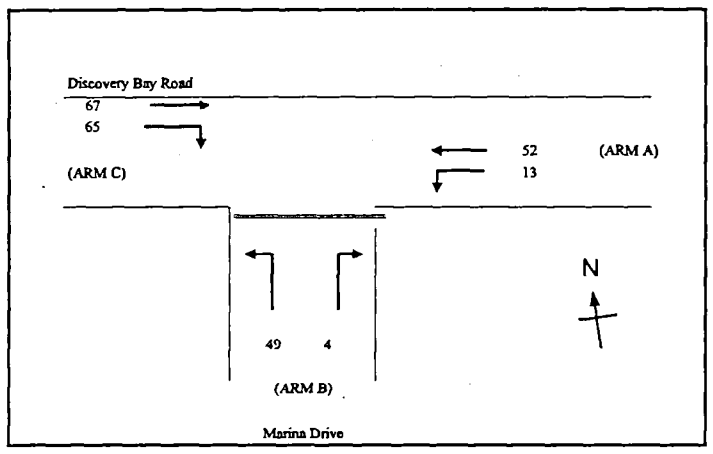
TOTAL FLOW = 292.9017535 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0201
DFC b-c	=	0.0818
DFC c-b	=	0.1164
DFC b-ac	=	0.1019

CRITICAL DFC = 0.116

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 : 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	=	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	=	65.26	(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	=	49	(pcu/hr)

GEOMETRIC FACTORS :

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

THE CAPACITY OF MOVEMENT :

Q b-a	=	522
Q b-c	=	681
Q c-b	=	705
Q b-ac	=	666.6

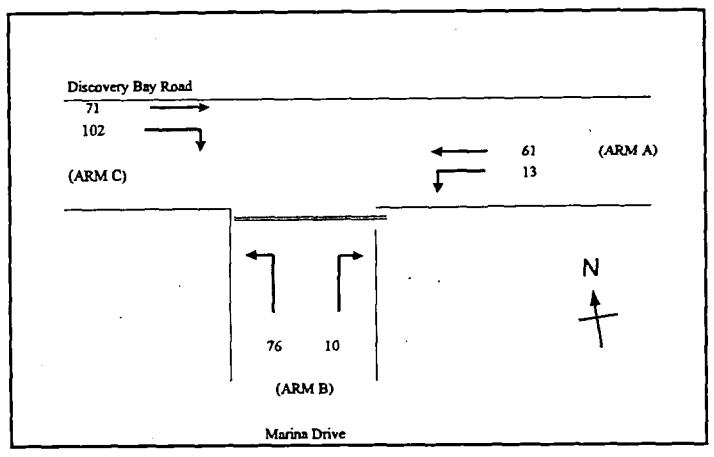
TOTAL FLOW = 250.6005285 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0071
DFC b-c	=	0.0718
DFC c-b	=	0.0926
DFC b-ac	=	0.0789

CRITICAL DFC = 0.093

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 : 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	=	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

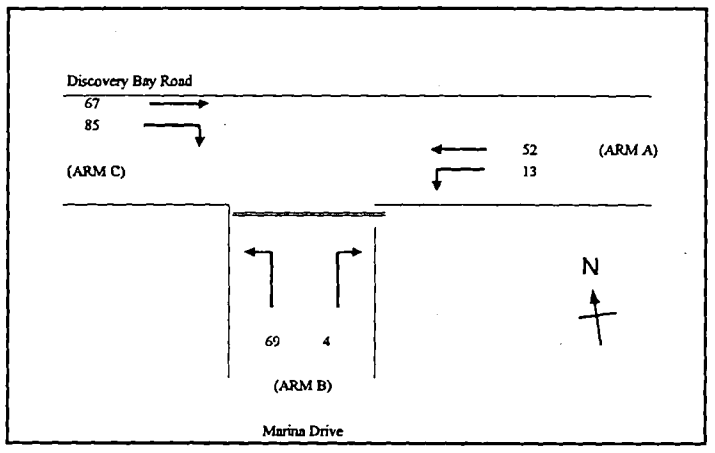
TOTAL FLOW = 332.9017535 (PCU/HR)

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 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	=	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

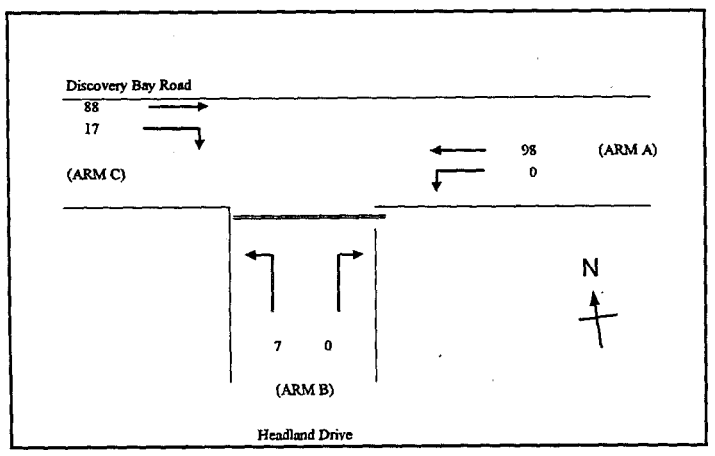
TOTAL FLOW = 290.6005285 (PCU/HR)

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 : 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	=	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	=	87.97	(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	=	459
Q b-c	=	614
Q c-b	=	683
Q b-ac	=	614

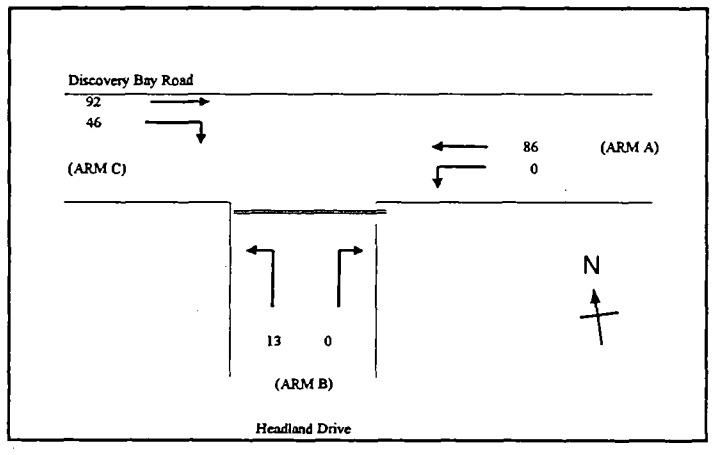
TOTAL FLOW = 210.0415223 (PCU/HR)

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 : 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	=	7.60	(metres)
W cr	=	0	(metres)
q a-b	=	0	(pcu/hr)
q a-c	=	86	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.80	(metres)
Vr c-b	=	50	(metres)
q c-a	=	92.22	(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	=	453
Q b-c	=	617
Q c-b	=	686
Q b-ac	=	817

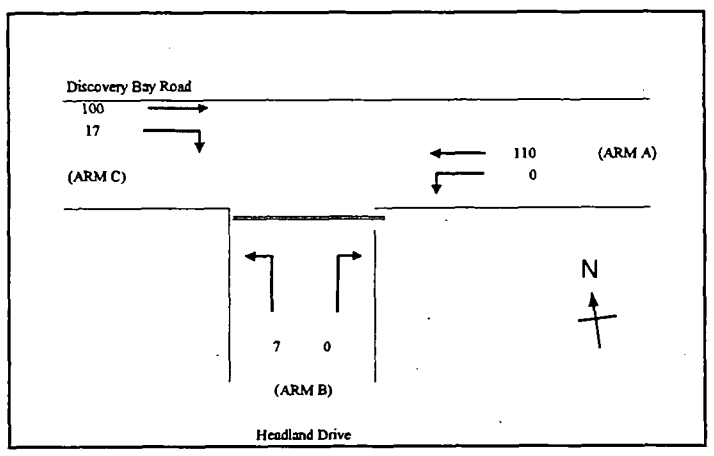
TOTAL FLOW = 236.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.0211
DFC c-b	=	0.0664
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 : 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	=	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

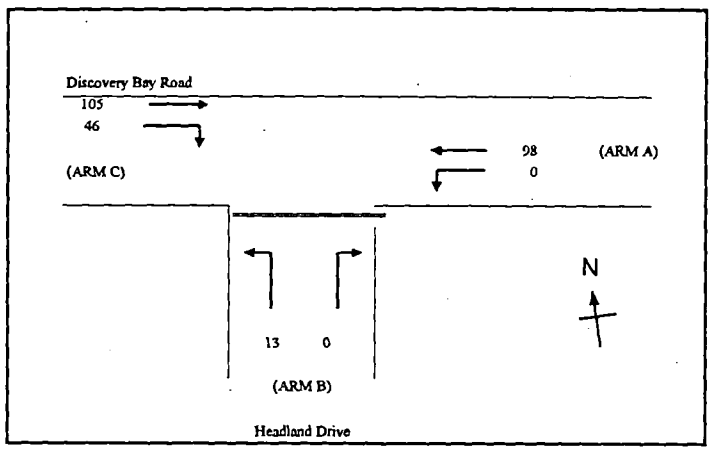
TOTAL FLOW = 235.0415223 (PCU/HR)

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 : 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	=	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	=	614
Q c-b	=	683
Q b-ac	=	614

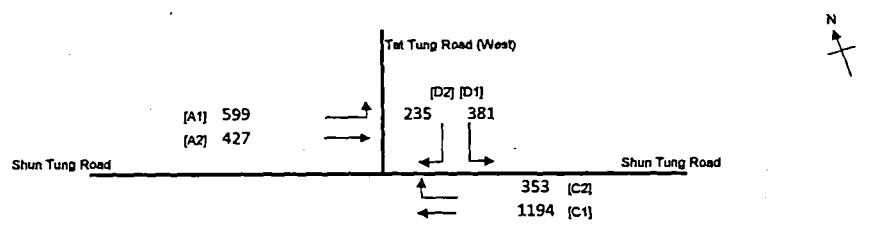
TOTAL FLOW = 261.6402299 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

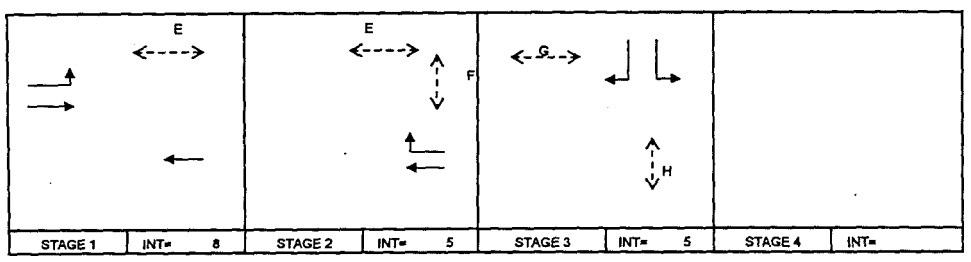
DFC b-a	=	0.0000
DFC b-c	=	0.0212
DFC c-b	=	0.0666
DFC b-ac	=	0.0212

CRITICAL DFC = 0.067

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J6 - Shun Tung Road / Tat Tung Road (West)	Year 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 =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.674
Loss time		L =	15 sec
Total Flow		=	3188.809 pcu
Co	= (1.5*L+5)/(1-Y)	=	84.5 sec
Cm	= L/(1-Y)	=	46.1 sec
Yult		=	0.788
R.C.ult	= (Yult-Y)/Y*100%	=	16.8 %
Cp	= 0.9*L/(0.9-Y)	=	59.8 sec
Ymax	= 1-L/C	=	0.875
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	16.8 %

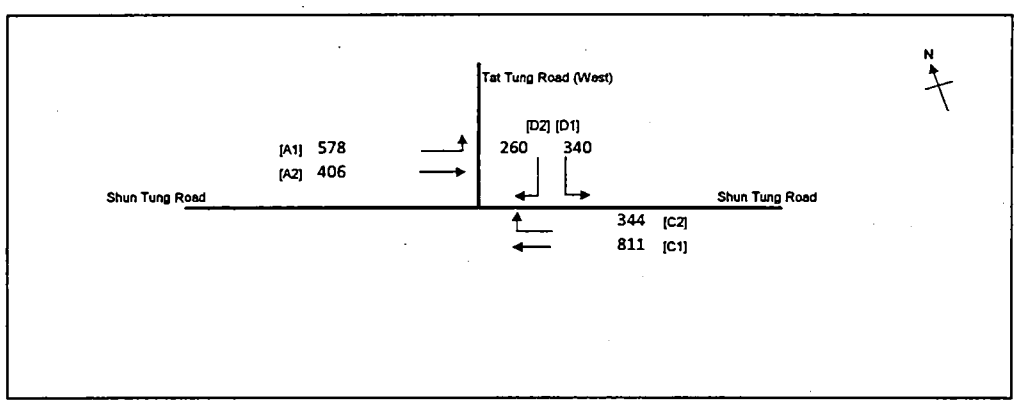


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	23	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	9	18	2	9	OK

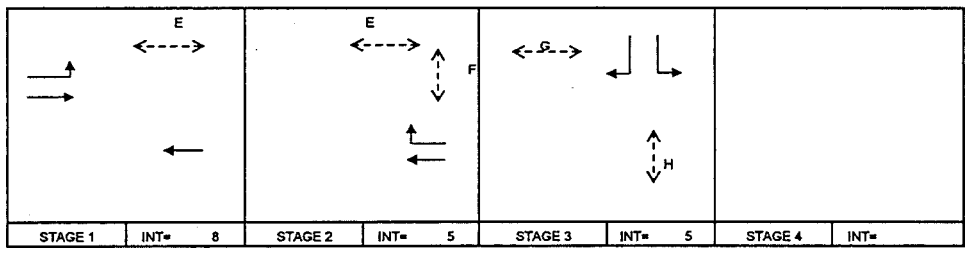
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (Input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1865	599			599	1.00	1788			1788	0.335	0.335		52	52	0.771	68
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			48	83	0.426	37
C2	2	3.50	C	1	30			2105			353	353	1.00	2005			2005	0.176	0.176		27	27	0.771	54
D1	3	3.50	D	1	15		N	1865	289			289	1.00	1788			1788	0.162	0.163		25	25	0.784	46
D1,D2	3	3.50	D	1	30			2105	92		235	327	1.00	2005			2005	0.163			25	25	0.771	52

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 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.853
Loss time		L =	15 sec
Total Flow		=	2738.809 pcu
Co	= (1.5*L+5)/(1-Y)	=	79.4 sec
Cm	= L/(1-Y)	=	43.3 sec
Yult		=	0.788
R.C.ult	= (Yult-Y)/Y*100%	=	20.5 %
Cp	= 0.9*L/(0.9-Y)	=	54.8 sec
Ymax	= 1-L/C	=	0.875
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	20.5 %

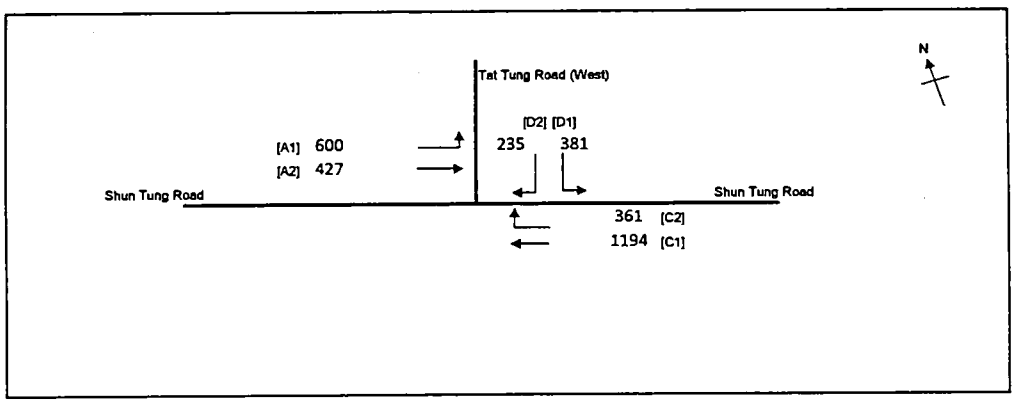


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	9	18	2	9	OK

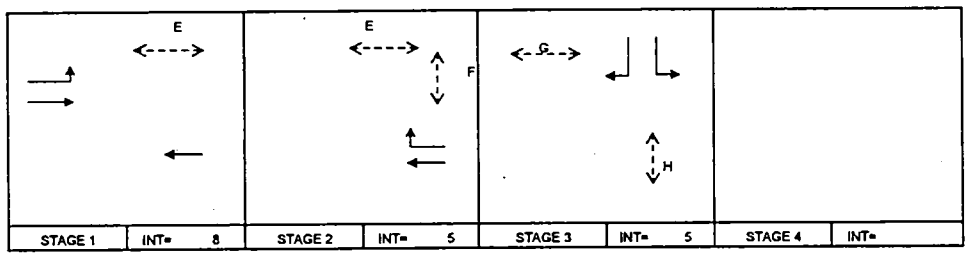
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	578			578	1.00	1788			1788	0.323	0.323		52	52	0.747	68
A2	1	3.50	A	1				2105		406		406	0.00	2105			2105	0.193			31	52	0.445	48
C1	1,2	3.50	B	2			N	4070		811		811	0.00	4070			4070	0.199			32	83	0.290	25
C2	2	3.50	C	1	30			2105			344	344	1.00	2005			2005	0.172	0.172		28	28	0.747	53
D1	3	3.50	D	1	15		N	1965	283			283	1.00	1788			1788	0.158	0.158		25	25	0.747	45
D1,D2	3	3.50	D	1	30			2105	57		260	317	1.00	2005			2005	0.158			25	25	0.745	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 : 2-Dec-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		=	3198.082 pcu
Co	= (1.5*L+5)/(1-Y)	=	85.7 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 %

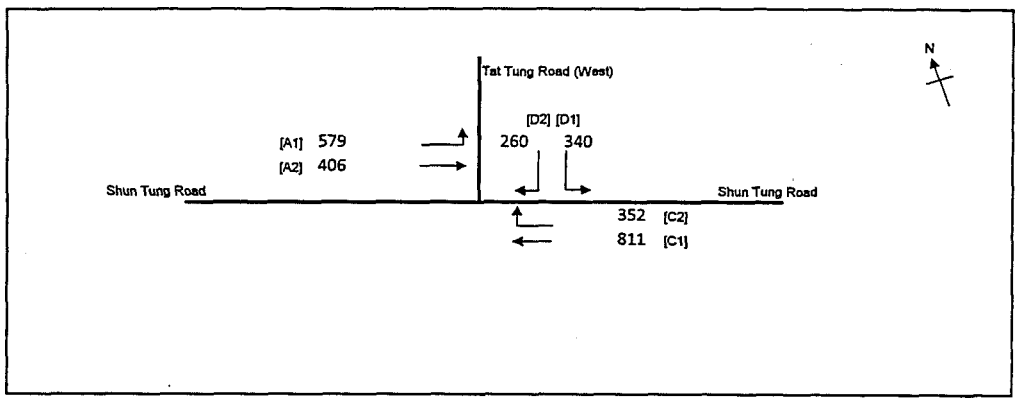


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	82	1	8	OK
F	8	5	1	7	24	1	7	OK
G	8	5	6	7	16	6	7	OK
H	11	5	2	9	18	2	9	OK

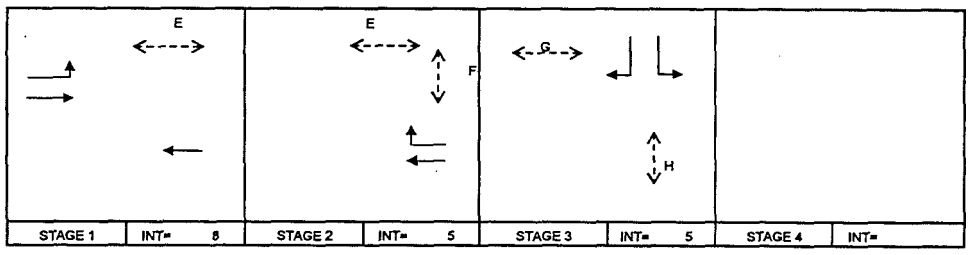
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	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	48
C1	1,2	3.50	B	2			N	4070		1194		1194	0.00	4070			4070	0.293			45	83	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	289			289	1.00	1788			1788	0.162	0.163		25	25	0.770	48
D1,D2	3	3.50	D	1	30			2105	92		235	327	1.00	2005			2005	0.163			25	25	0.776	52

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	
J8 - Shun Tung Road / Tat Tung Road (West)	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 =	3
Cycle time		C =	120 sec
Sum(y)		Y =	0.658
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		=	0.788
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 %



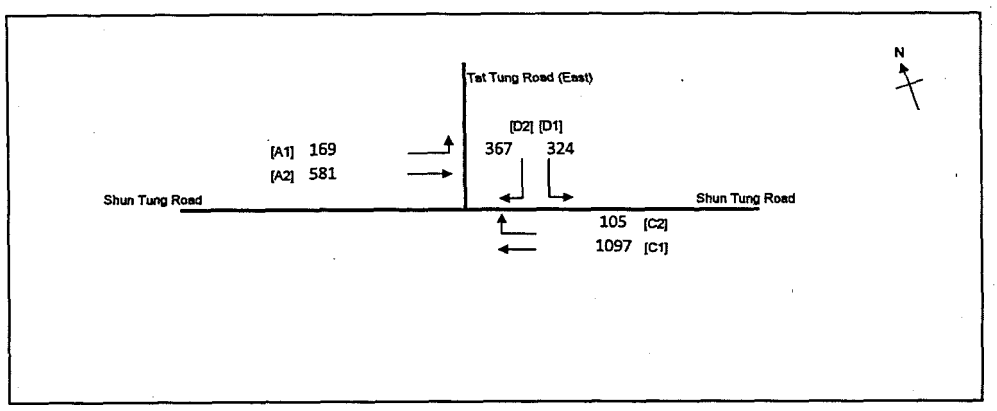
STAGE 1	INT= 8	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT=

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

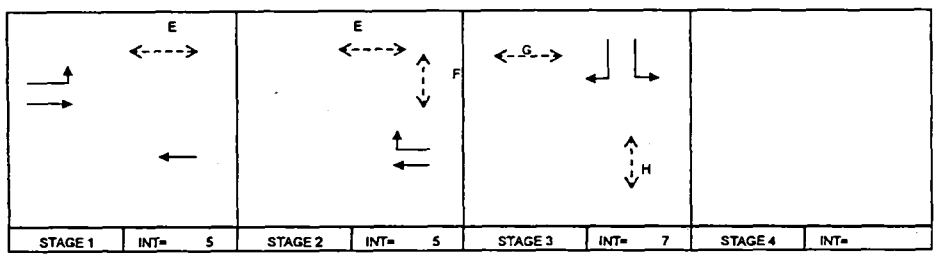
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				15				
A1	1	3.50	A	1	15		N	1965	579			579	1.00	1788			1788	0.324	0.324		52	52	0.752	66
A2	1	3.50	A	1				2105		406		406	0.00	2105			2105	0.193			31	52	0.448	46
C1	1,2	3.50	B	2			N	4070		811		811	0.00	4070			4070	0.199			32	83	0.289	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	1965	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: 238078	
J7 - Shun Tung Road / Tat Tung Road (East)	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 =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.433
Loss time		L =	21 sec
Total Flow		=	2642.206 pcu
Co	= (1.5*L+5)/(1-Y)	=	64.3 sec
Cm	= L/(1-Y)	=	37.0 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	71.6 %
Cp	= 0.9*L/(0.9-Y)	=	40.4 sec
Ymax	= 1-L/C	=	0.767
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.5 %



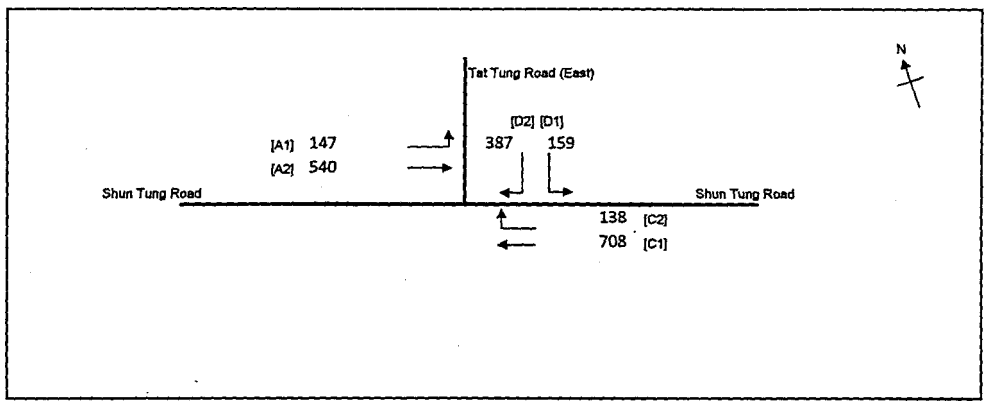
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
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

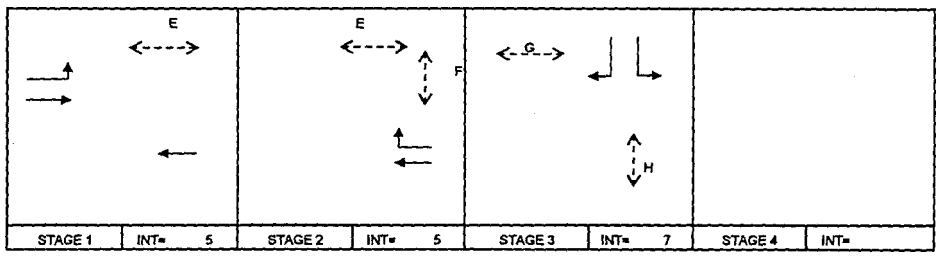
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	169	185		354	0.48	1875			1875	0.189	0.189		30	30	0.584	35
A2	1	3.50	A	1				2105		396		396	0.00	2105			2105	0.188			30	30	0.583	40
C1	1,2	3.50	B	2			N	4070		1097		1097	0.00	4070			4070	0.269			43	48	0.500	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	1965	324			324	1.00	1788			1788	0.181	0.192		29	31	0.534	32
D1,D2	3	3.50	D	1	15			2105	0		367	367	1.00	1914			1914	0.192			31	31	0.584	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 : 2-Dec-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
Loss time		L =	18 sec
Total Flow		=	2078.206 pcu
Co	= (1.5*L+5)/(1-Y)	=	57.5 sec
Cm	= L/(1-Y)	=	32.4 sec
Yult		=	0.765
R.C.ult	= (Yult-Y)/Y*100%	=	72.4 %
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%	=	82.3 %

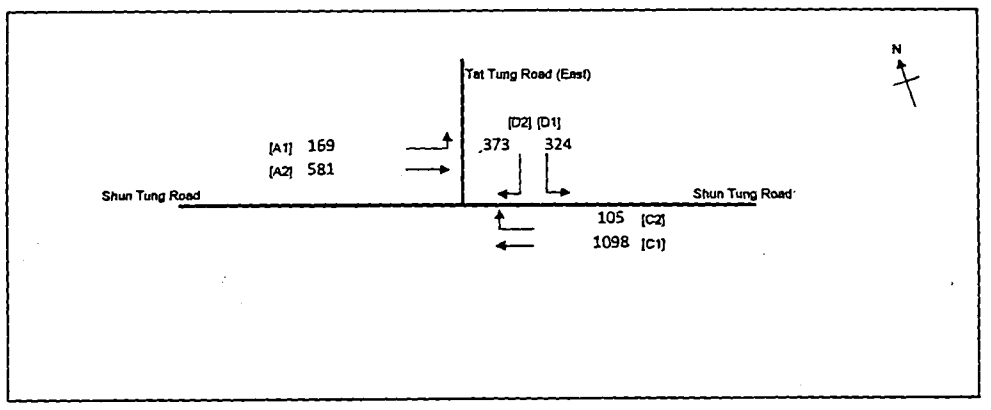


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	42	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	25	7	7	OK
H	10	5	2	8	29	2	8	OK

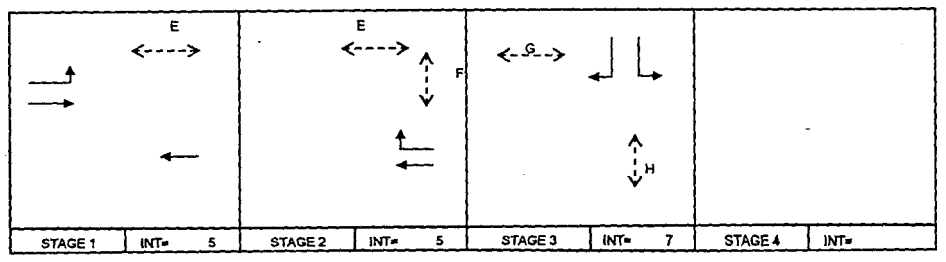
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	147	178		325	0.45	1880			1880	0.173	0.173		28	28	0.555	34
A2	1	3.50	A	1				2105		362		362	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	48	0.339	28
C2	2	3.50	C	1	30			2105			138	138	1.00	2005			2005	0.069	0.069	4	11	15	0.408	17
D1	3	3.50	D	1	15		N	1965	159			159	1.00	1786			1786	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 : 2-Dec-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
Loss time		L =	21 sec
Total Flow		=	2650.055 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 %



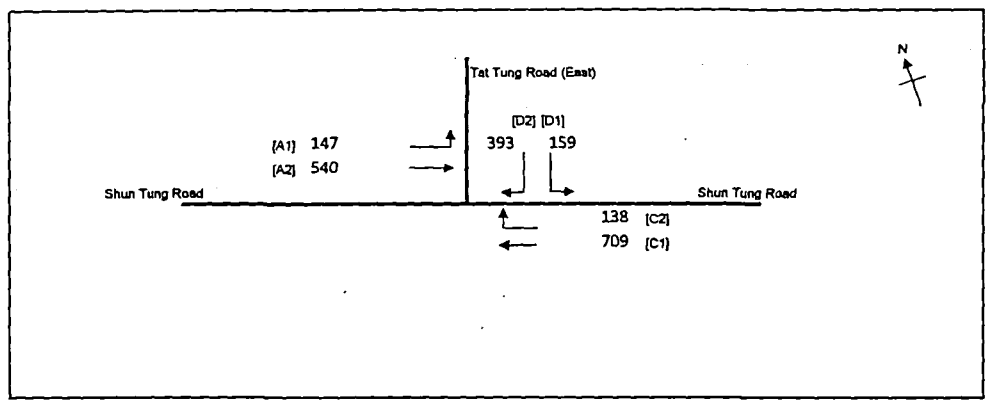
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	7	5	1	8	44	1	8	OK
F	8	5	7	7	5	7	7	OK
G	8	5	7	7	23	7	7	OK
H	10	5	2	8	27	2	8	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	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.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	169	185		354	0.48	1875			1875	0.189	0.189		30	30	0.589	35
A2	1	3.50	A	1				2105		398		398	0.00	2105			2105	0.188			30	30	0.587	40
C1	1,2	3.50	B	2			N	4070		1098		1098	0.00	4070			4070	0.270			43	48	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	1965	324			324	1.00	1786			1786	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	0.589	37

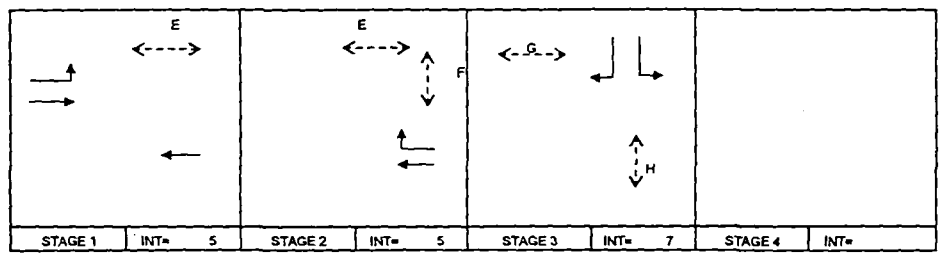
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Discovery Bay

J7 - Shun Tung Road / Tat Tung Road (East) | Year 2031 Design Traffic Flows (PM Peak)



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	=	2066.055	pcu
Co = (1.5*L+5)/(1-Y)	=	57.9	sec
Cm = L/(1-Y)	=	32.6	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

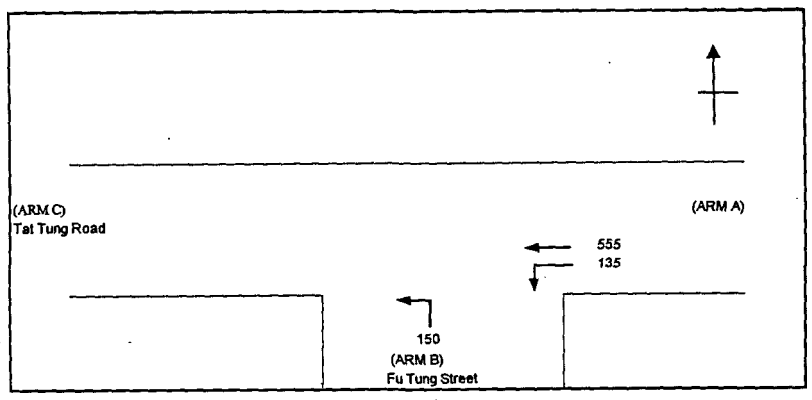
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
A1,A2	1	3.50	A	1	15		N	1965	147	178		325	0.45	1880			1880	0.173	0.173		28	28	0.559	34
A2	1	3.50	A	1				2105		382		382	0.00	2105			2105	0.172			28	28	0.558	38
C1	1,2	3.50	B	2			N	4070		709		709	0.00	4070			4070	0.174			28	48	0.341	28
C2	2	3.50	C	1	30			2105			138	138	1.00	2005			2005	0.069	0.069	4	11	15	0.411	17
D1	3	3.50	D	1	15		N	1965	159			159	1.00	1786			1786	0.089	0.205		14	33	0.242	15
D1,D2	3	3.50	D	1	15			2105	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 : Dec 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	=	135	(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	=	150	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.7821
E	=	0.8451
F	=	0.5860
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

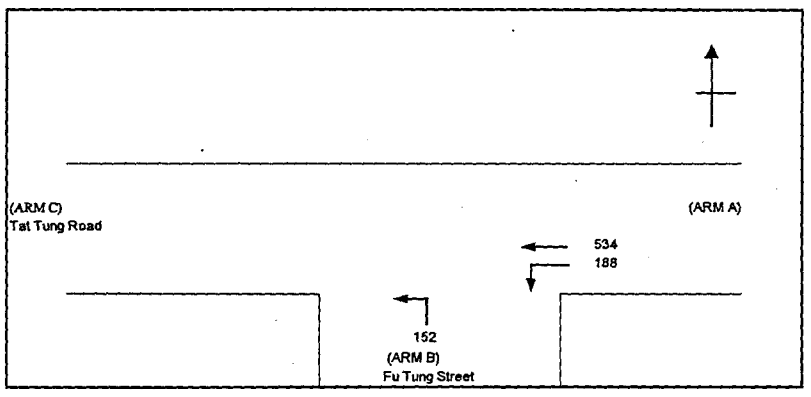
TOTAL FLOW = 840 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.3995
DFC c-b	=	0.0000
DFC b-ac	=	0.3995

CRITICAL DFC = 0.40

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 : Dec 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	=	188	(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	=	152	(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

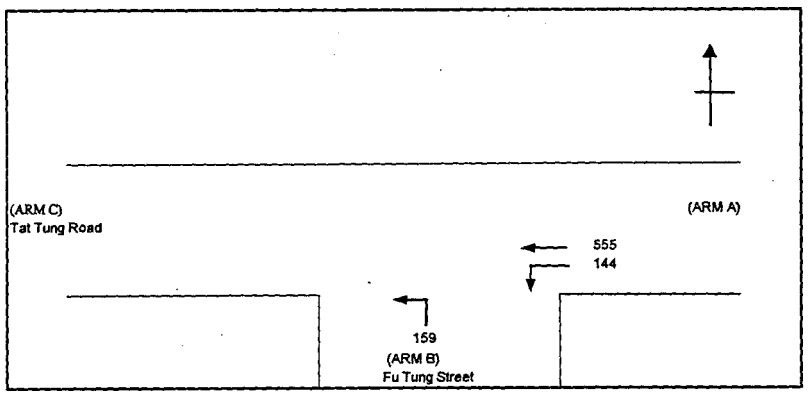
TOTAL FLOW = 874 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.4048
DFC c-b	=	0.0000
DFC b-ac	=	0.4048

CRITICAL DFC = 0.40

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 : Dec 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

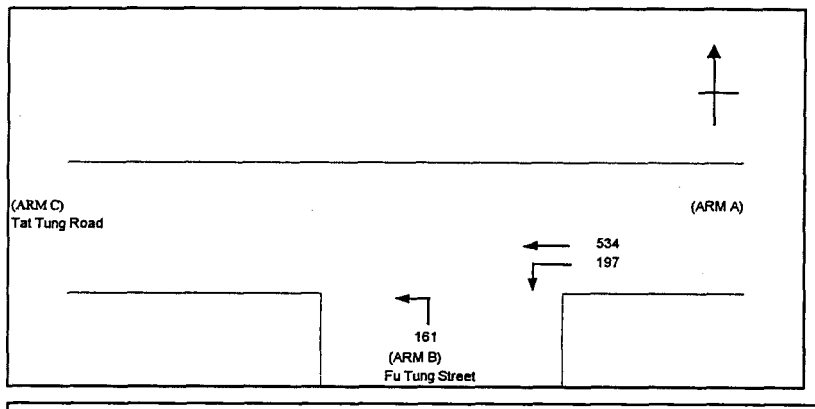
TOTAL FLOW = 858 (PCU/HR)

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 : Dec 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	=	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	=	161	(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	=	321
Qb-ac	=	374

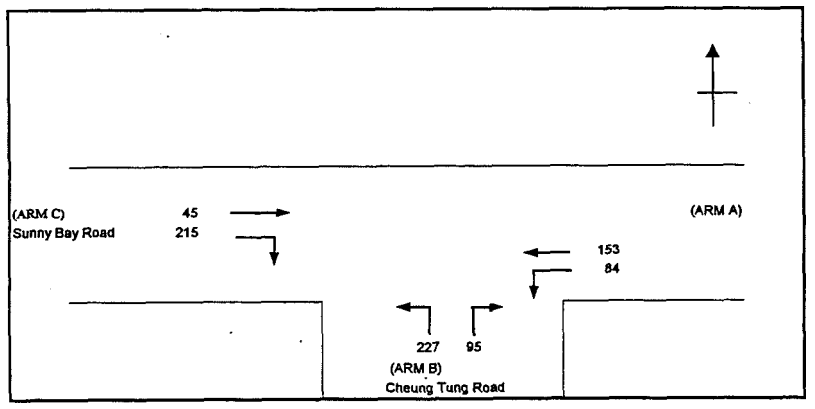
TOTAL FLOW = 892 (PCU/HR)

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 : Dec 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	=	215	(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	=	95	(pcu/hr)
q b-c	=	227	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.7046

THE CAPACITY OF MOVEMENT :

Q b-a	=	515
Q b-c	=	664
Q c-b	=	681
Qb-ac	=	612

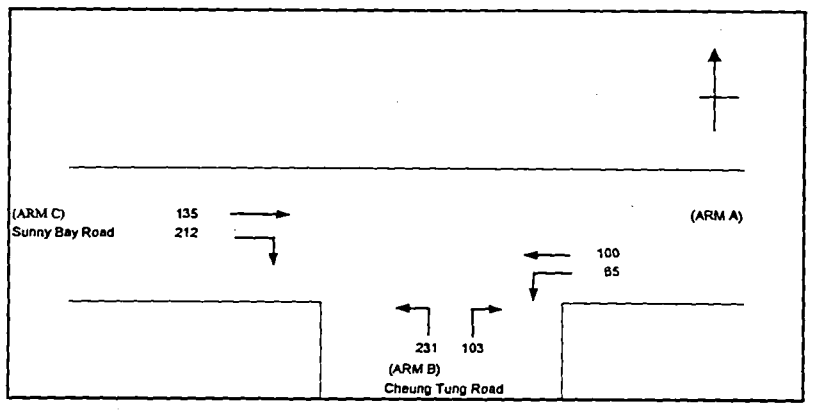
TOTAL FLOW = 818 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1845
DFC b-c	=	0.3413
DFC c-b	=	0.3152
DFC b-ac	=	0.5258

CRITICAL DFC = 0.53

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 : Dec 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	=	4.0	(metres)
Vr c-b	=	50	(metres)
q c-a	=	135	(pcu/hr)
q c-b	=	212	(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	=	103	(pcu/hr)
q b-c	=	231	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9678
Y	=	0.4825
P	=	0.6917

THE CAPACITY OF MOVEMENT :

Q b-a	=	516
Q b-c	=	674
Q c-b	=	693
Qb-ac	=	618

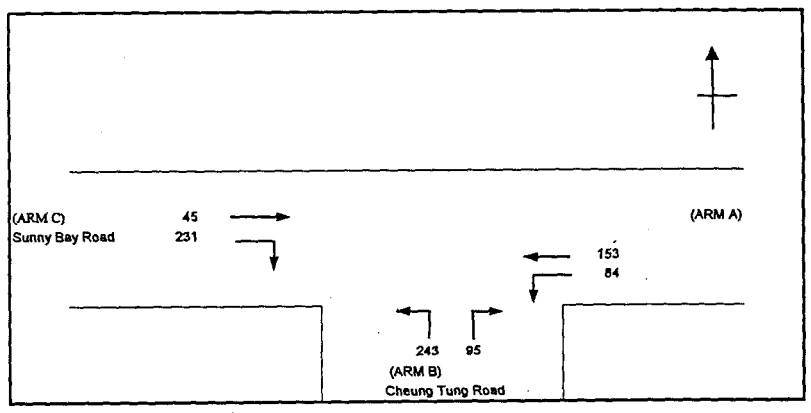
TOTAL FLOW = 848 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1996
DFC b-c	=	0.3429
DFC c-b	=	0.3061
DFC b-ac	=	0.5425

CRITICAL DFC = 0.54

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 : Dec 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	=	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	=	95	(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

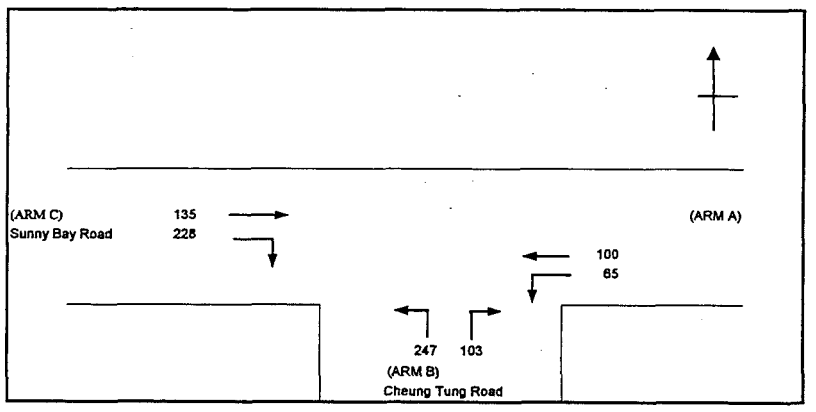
TOTAL FLOW = 850 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.1855
DFC b-c	=	0.3655
DFC c-b	=	0.3387
DFC b-ac	=	0.5510

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 : Dec 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	=	4.0	(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	=	3.5	(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	=	103	(pcu/hr)
q b-c	=	247	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.8711
E	=	0.9327
F	=	0.9878
Y	=	0.4825
P	=	0.7059

THE CAPACITY OF MOVEMENT :

Q b-a	=	513
Q b-c	=	874
Q c-b	=	693
Qb-ac	=	817

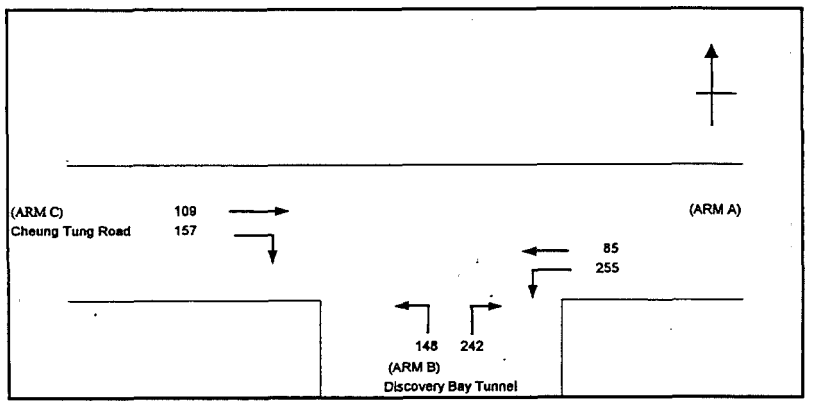
TOTAL FLOW = 878 (PCU/HR)

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 : Dec 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	=	255	(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	=	157	(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	=	242	(pcu/hr)
q b-c	=	148	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3798

THE CAPACITY OF MOVEMENT :

Q b-a	=	485
Q b-c	=	727
Q c-b	=	616
Qb-ac	=	555

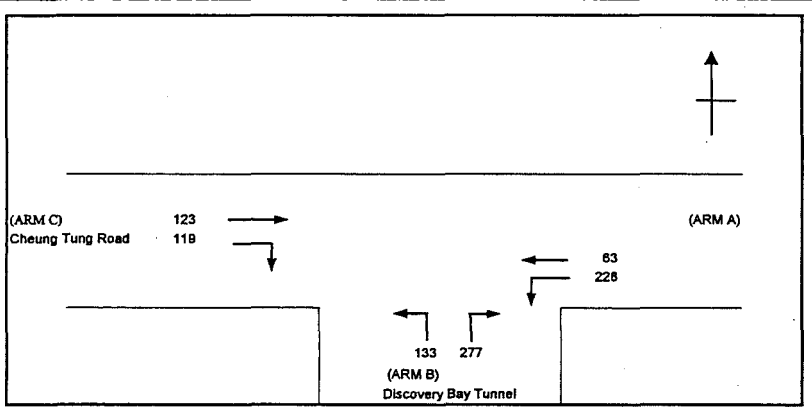
TOTAL FLOW = 995 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.4982
DFC b-c	=	0.2033
DFC c-b	=	0.2546
DFC b-ac	=	0.7015

CRITICAL DFC = 0.70

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 : Dec 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	=	228	(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	=	119	(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	=	277	(pcu/hr)
q b-c	=	133	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9705
E	=	1.0458
F	=	0.9408
Y	=	0.7309
P	=	0.3240

THE CAPACITY OF MOVEMENT :

Q b-a	=	505
Q b-c	=	736
Q c-b	=	628
Qb-ac	=	582

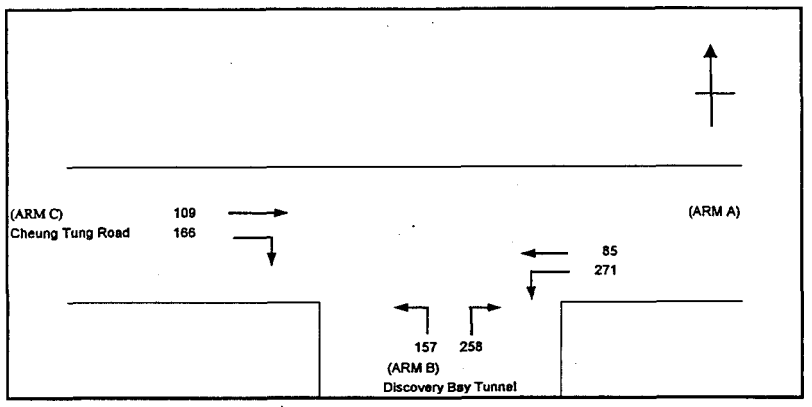
TOTAL FLOW = 943 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.5487
DFC b-c	=	0.1804
DFC c-b	=	0.1892
DFC b-ac	=	0.7292

CRITICAL DFC = 0.73

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 : Dec 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	=	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	=	612
Qb-ac	=	551

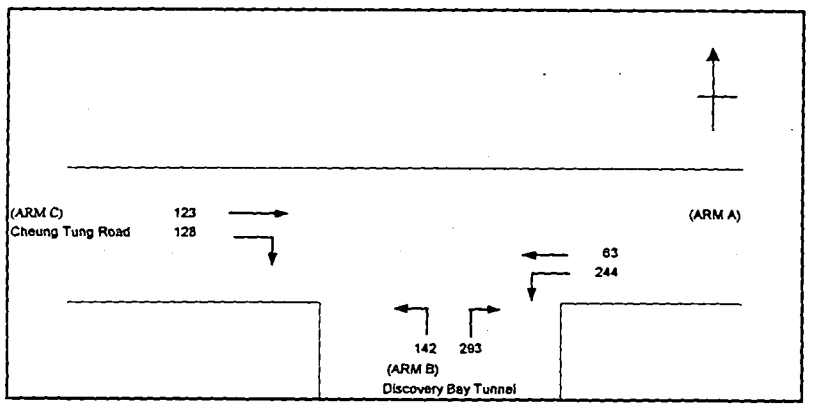
TOTAL FLOW = 1045 (PCU/HR)

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 : Dec 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	=	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	=	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	=	0.9408
Y	=	0.7309
P	=	0.3264

THE CAPACITY OF MOVEMENT :

Q b-a	=	500
Q b-c	=	735
Q c-b	=	624
Qb-ac	=	558

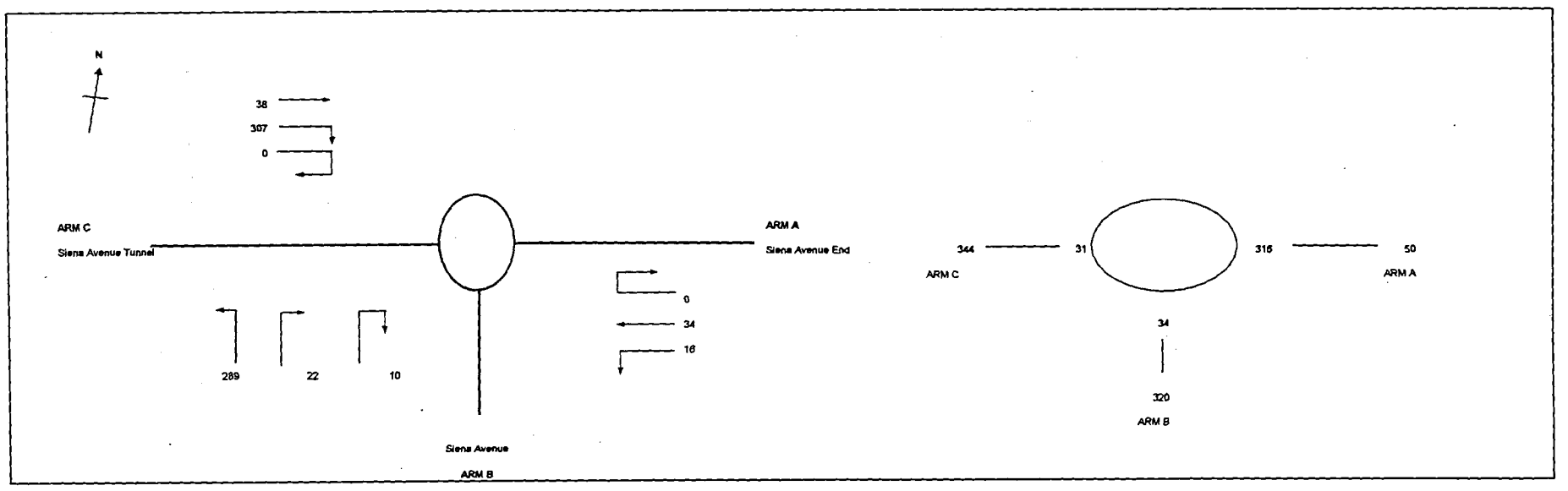
TOTAL FLOW = 893 (PCU/HR)

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 2-Dec-15	FILENAME

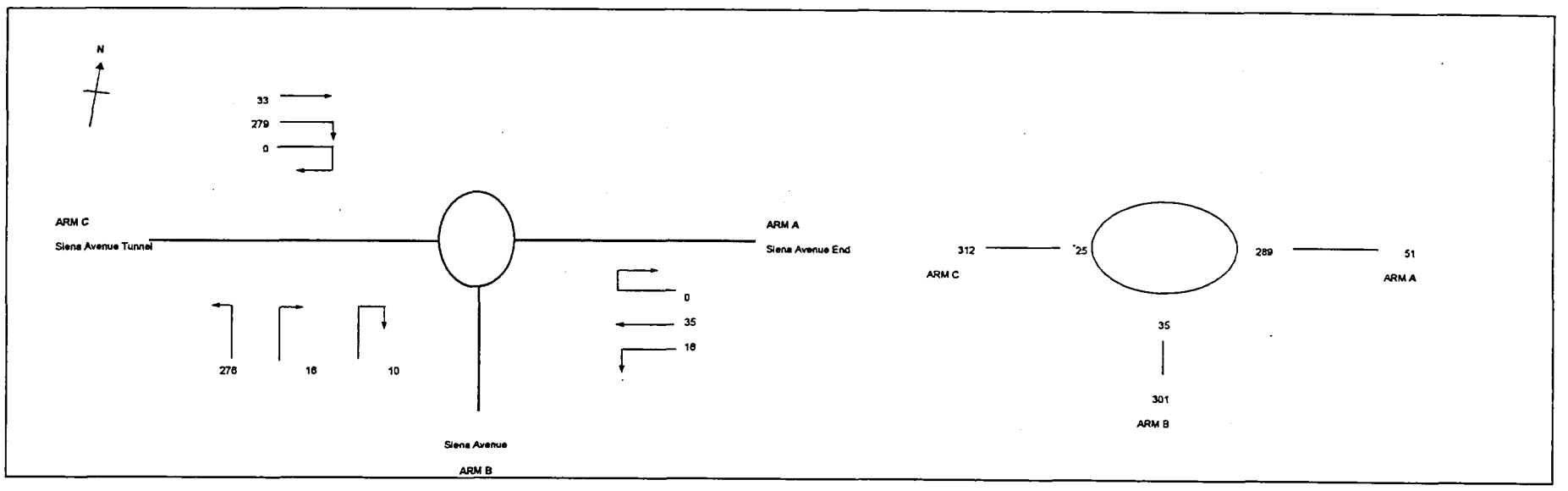


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.65	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	50	320	344
Qc	=	Circulating flow across entry (pcu/h)	316	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	0.64	0.61
Qe	=	K(F-Fc*Qc)	888	1488	1274
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.22	0.27

Total In Sum = 714 PCU

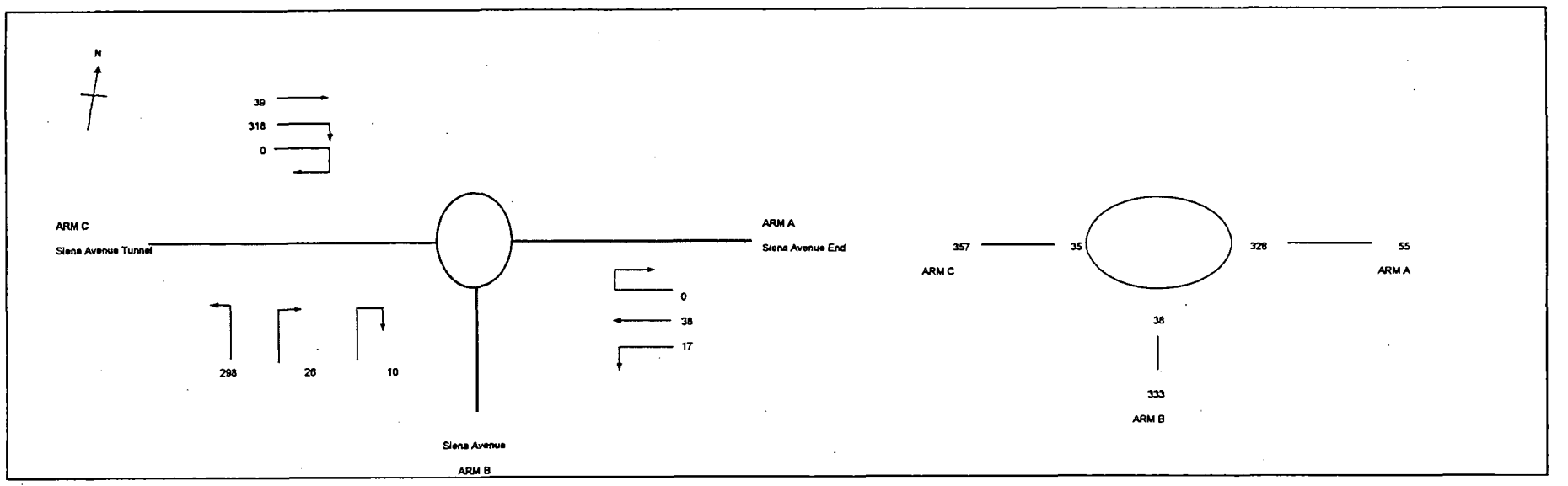
DFC of Critical Approach = 0.27

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



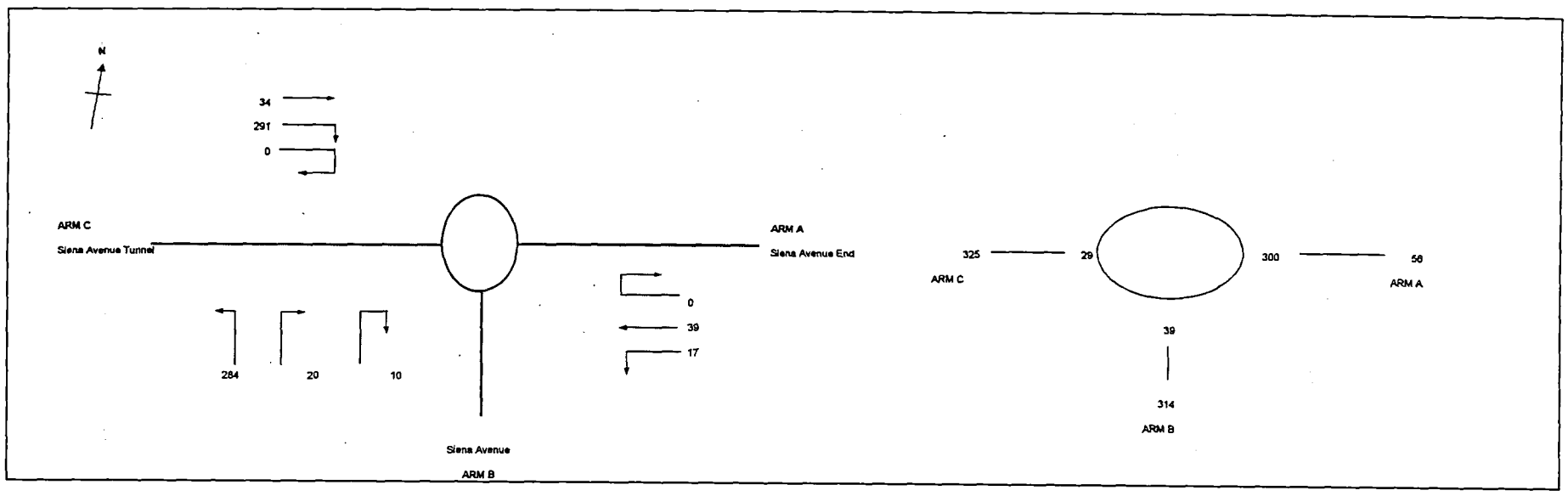
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	3.65	4.80	4.30			
E	=	Entry width (m)	4.00	5.50	5.00			
L	=	Effective length of flare (m)	2.00	7.00	10.00			
R	=	Entry radius (m)	9.00	10.00	8.00			
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00			
A	=	Entry angle (degree)	45.00	35.00	45.00			
Q	=	Entry flow (pcu/h)	51	301	312			
Qc	=	Circulating flow across entry (pcu/h)	289	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	0.64	0.61			
Qe	=	K(F-Fc*Qc)	902	1487	1278	Total In Sum =	664	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.20	0.24	DFC of Critical Approach =	0.24	

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		PROJECT NO:	236078
J11 - Siena Avenue North Roundabout	Year 2031 Design Traffic Flows (AM Peak)	DATE 2-Dec-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	0.16	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	0.64	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 2-Dec-15	FILENAME

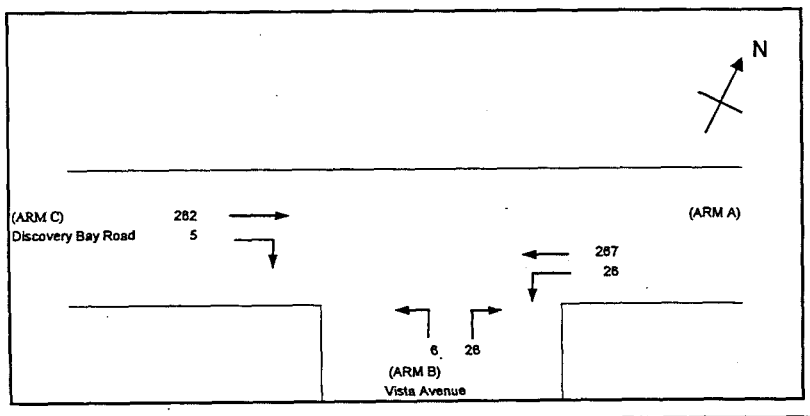


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	3.85	4.80	4.30
E	=	Entry width (m)	4.00	5.50	5.00
L	=	Effective length of flare (m)	2.00	7.00	10.00
R	=	Entry radius (m)	9.00	10.00	8.00
D	=	Inscribed circle diameter (m)	30.00	30.00	30.00
A	=	Entry angle (degree)	45.00	35.00	45.00
Q	=	Entry flow (pcu/h)	56	314	325
Qc	=	Circulating flow across entry (pcu/h)	300	39	29
OUTPUT PARAMETERS:					
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	4.67
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	0.64	0.61
Qe	=	K(F-Fc*Qc)	896	1485	1275
DFC	=	Design flow/Capacity = Q/Qe	0.06	0.21	0.25

Total In Sum = 694 PCU

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 : Dec 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	=	287	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	282	(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	=	26	(pcu/hr)
q b-c	=	6	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	495
Q b-c	=	667
Q c-b	=	754
Qb-ac	=	520

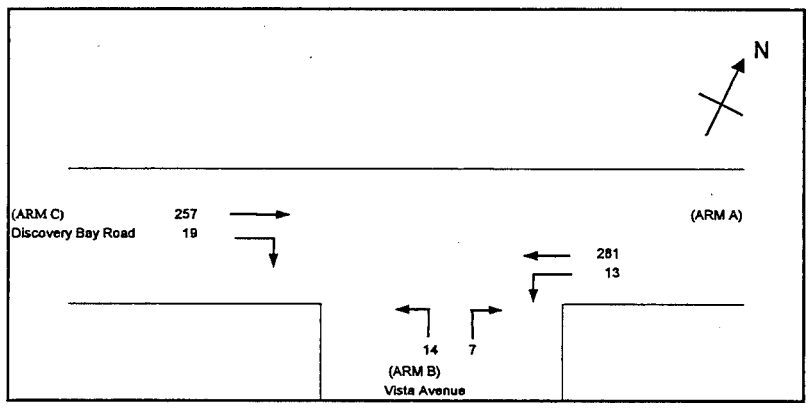
TOTAL FLOW = 613 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0534
DFC b-c	=	0.0090
DFC c-b	=	0.0064
DFC b-ac	=	0.0624

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 : Dec 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	=	281	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(metres)
q c-a	=	257	(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	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.6731

THE CAPACITY OF MOVEMENT :

Q b-a	=	493
Q b-c	=	885
Q c-b	=	753
Qb-ac	=	597

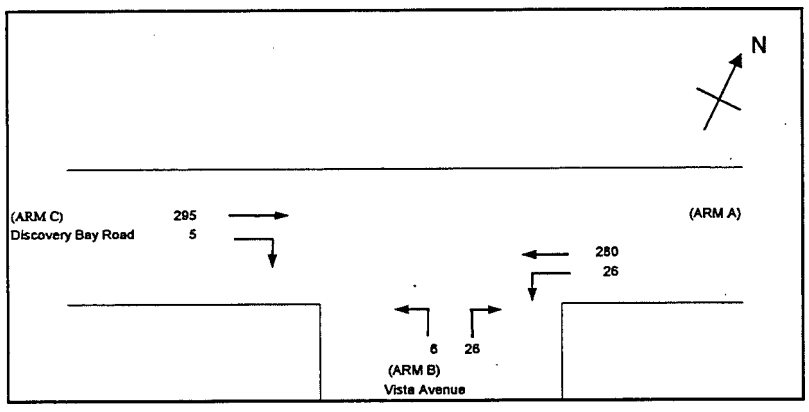
TOTAL FLOW = 592 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0142
DFC b-c	=	0.0217
DFC c-b	=	0.0255
DFC b-ac	=	0.0359

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 : Dec 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	=	280	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.5	(metres)
Vr c-b	=	60	(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	=	26	(pcu/hr)
q b-c	=	6	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.1852

THE CAPACITY OF MOVEMENT :

Q b-a	=	491
Q b-c	=	664
Q c-b	=	751
Qb-ac	=	516

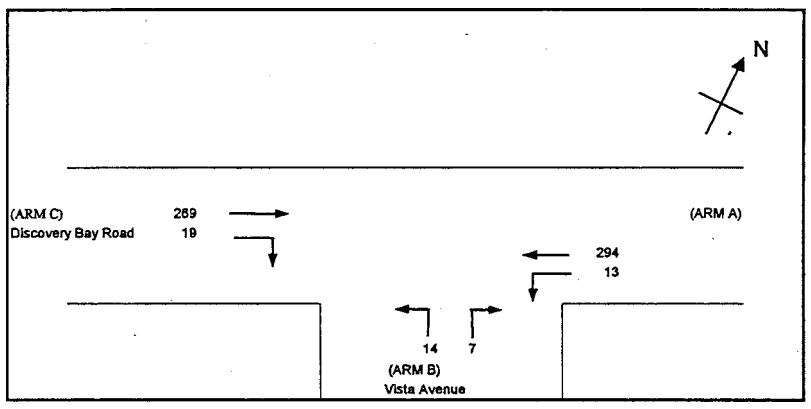
TOTAL FLOW = 838 (PCU/HR)

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 : Dec 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)
Vr c-b	=	60	(metres)
q c-a	=	269	(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	=	0.9481
E	=	0.9774
F	=	1.1105
Y	=	0.6205
P	=	0.6731

THE CAPACITY OF MOVEMENT :

Q b-a	=	488
Q b-c	=	662
Q c-b	=	750
Qb-ac	=	593

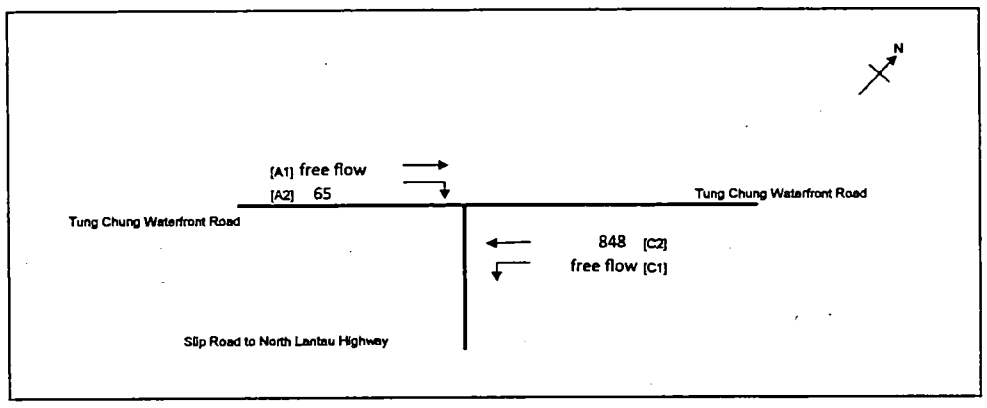
TOTAL FLOW = 617 (PCU/HR)

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 : 2-Dec-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 =	0.235
Loss 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%	=	256.9 %
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 %

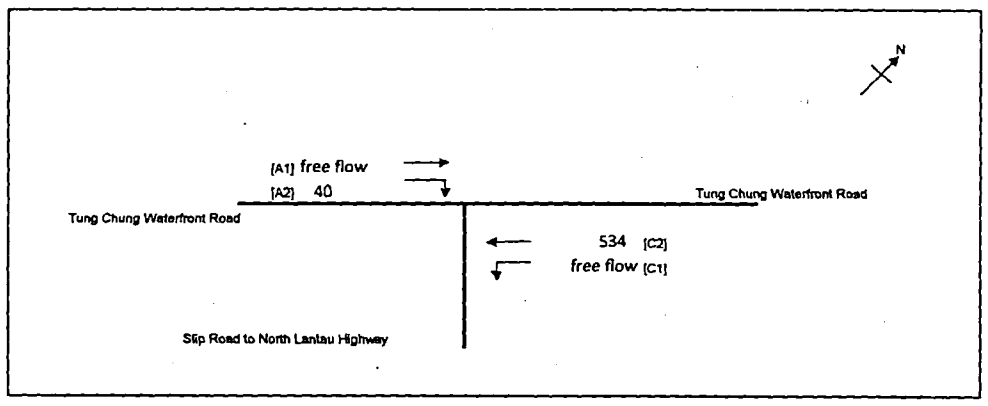
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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	Straight pcu/h	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.
																				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 : 2-Dec-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	=	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%	=	468.6	%
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%	=	427.9	%

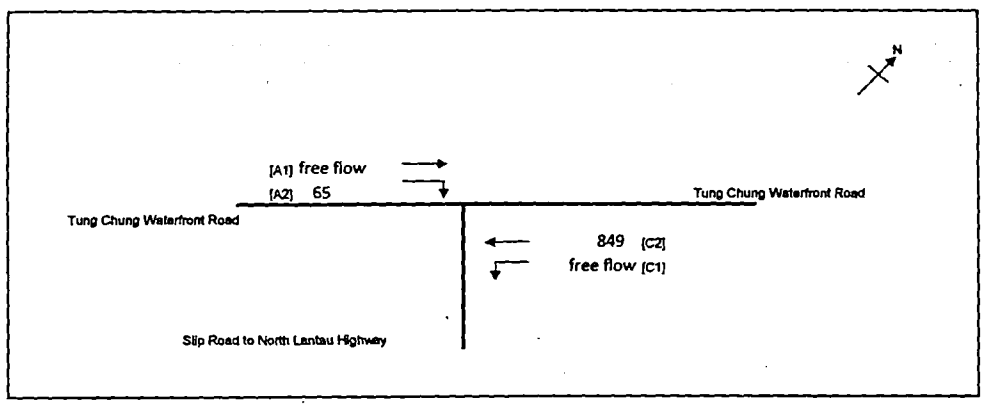
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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 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.
																				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 : 2-Dec-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 =	0.238	
Loss time	L =	8	sec
Total Flow	=	914	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	%

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

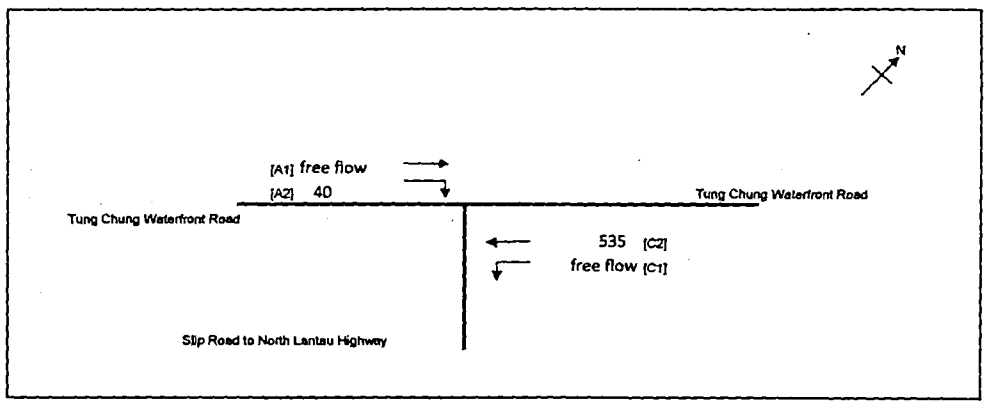
Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay FG	Green Time Provided (s) SG Delay FG	Check
1				
2				
3				
4				
5				
6				
7				
8				

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 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.
																				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

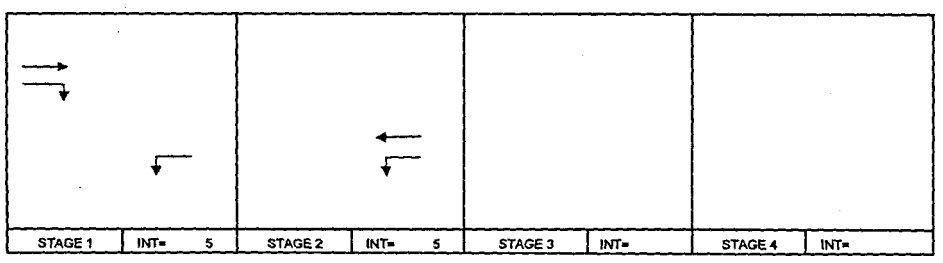
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Discovery Bay

J13A - Tung Chung Waterfront Road / Slip Road to North Lantau Highway | Year 2031 Design Traffic Flows (PM Peak)



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	=	575	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)	=	9.6	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								

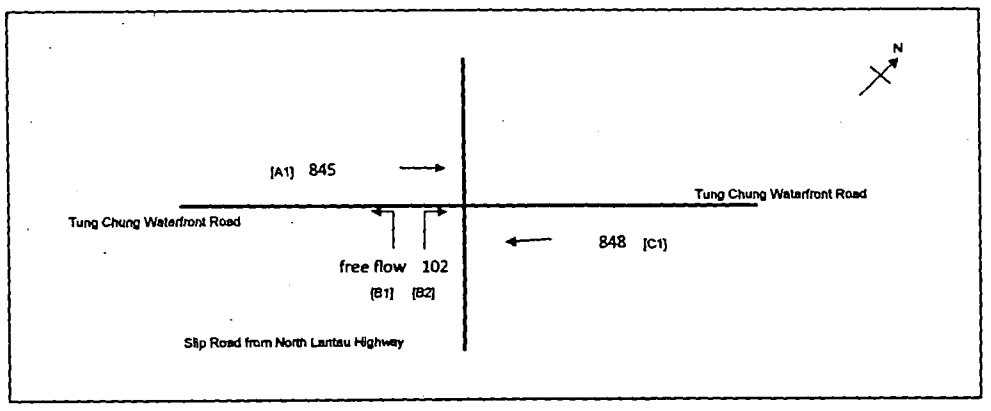
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) 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

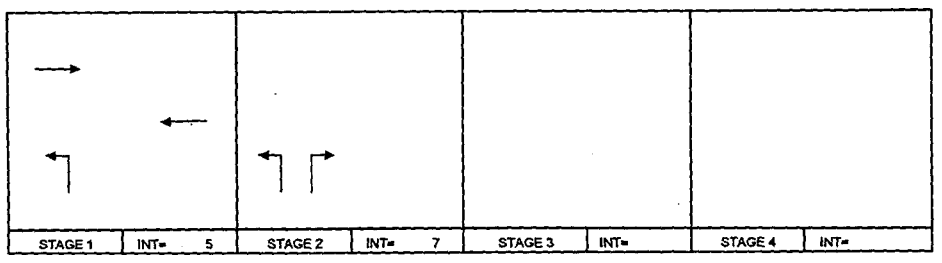
OVE ARUP & PARTNERS | TRAFFIC SIGNAL CALCULATION

Discovery Bay | PROJECT NO: 238078

J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway | Year 2031 Reference Traffic Flows (AM Peak) | DATE : 2-Dec-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	=	1785	pcu
Co = (1.5*L+5)/(1-Y)	=	28.8	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	%

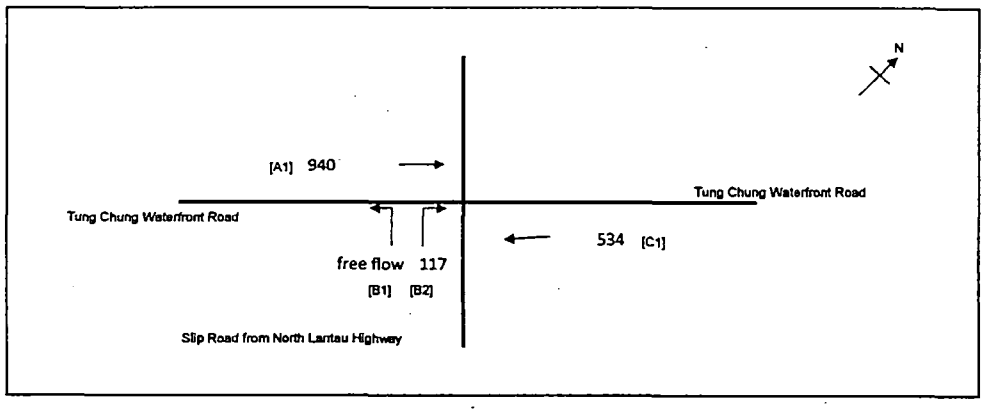


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1								
2								
3								
4								
5								
6								
7								
8								

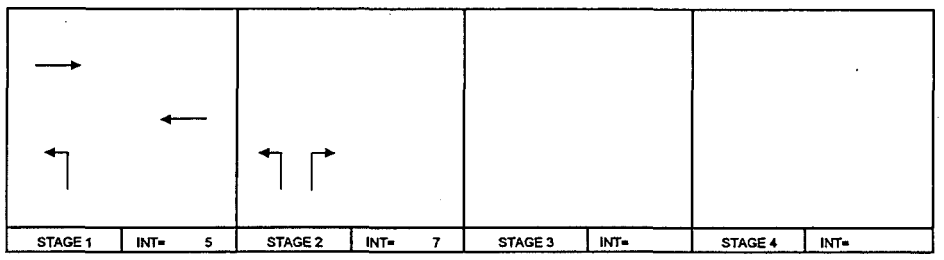
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) 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	8
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
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Reference Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.284
Loss time		L =	10 sec
Total Flow		=	1591 pcu
Co	= (1.5*L+5)/(1-Y)	=	27.9 sec
Cm	= L/(1-Y)	=	14.0 sec
Yult		=	0.825
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%	=	193.7 %



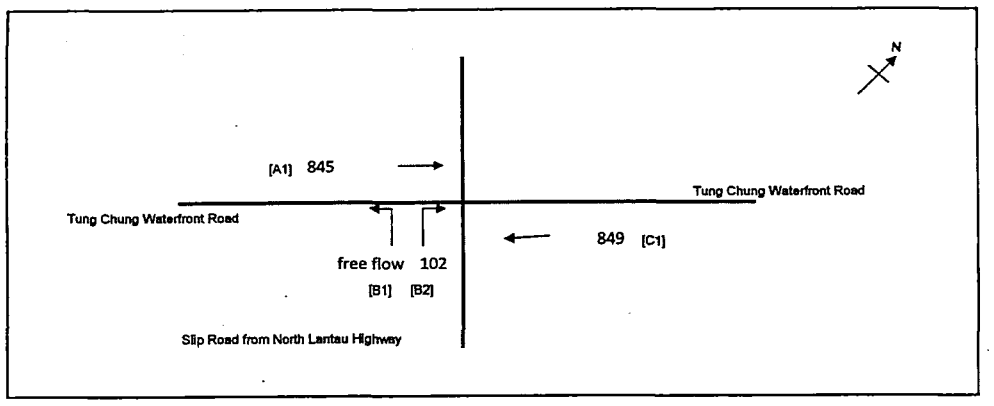
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

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								

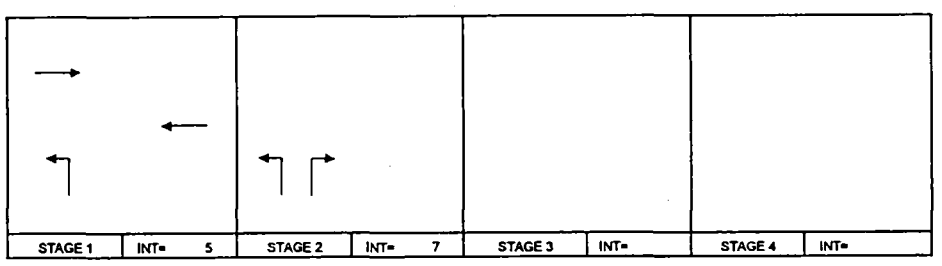
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				10				
A1	1	3.50	A	2				4210		940		940	0.00	4210			4210	0.223	0.223		39	39	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	39	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 * 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 Design Traffic Flows (AM Peak)	DATE : 2-Dec-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 =	0.255
Loss time		L =	10 sec
Total Flow		=	1796 pcu
Co	= (1.5*L+5)/(1-Y)	=	26.8 sec
Cm	= L/(1-Y)	=	13.4 sec
Yult		=	0.825
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%	=	194.2 %



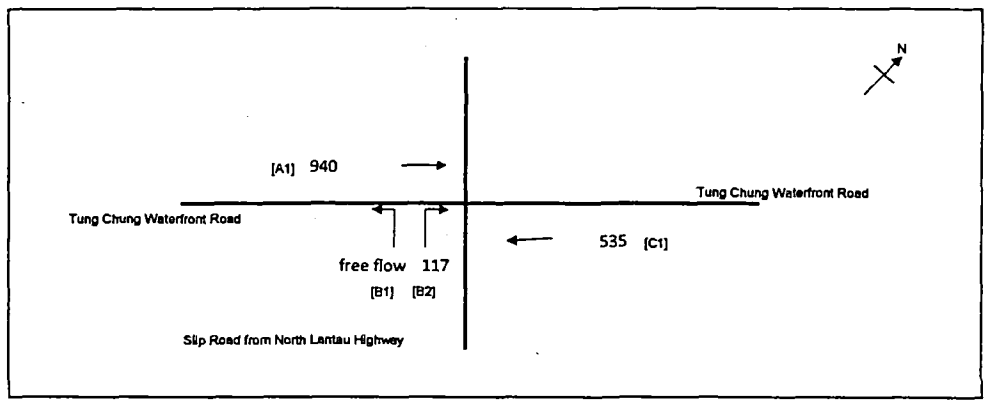
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

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	Straight pcu/h	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.
																				10				
A1	1	3.50	A	2				4210		845		845	0.00	4210			4210	0.201			39	39	0.306	15
B2	2	3.50	B	1	15			2105			102	102	1.00	1914			1914	0.053	0.053		10	10	0.306	8
C1	1	3.50	A	2				4210		849		849	0.00	4210			4210	0.202	0.202		40	39	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:	236078
J13B - Tung Chung Waterfront Road / Slip Road from North Lantau Highway	Year 2031 Design Traffic Flows (PM Peak)	DATE : 2-Dec-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 =	0.284
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%	=	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%	=	163.7 %

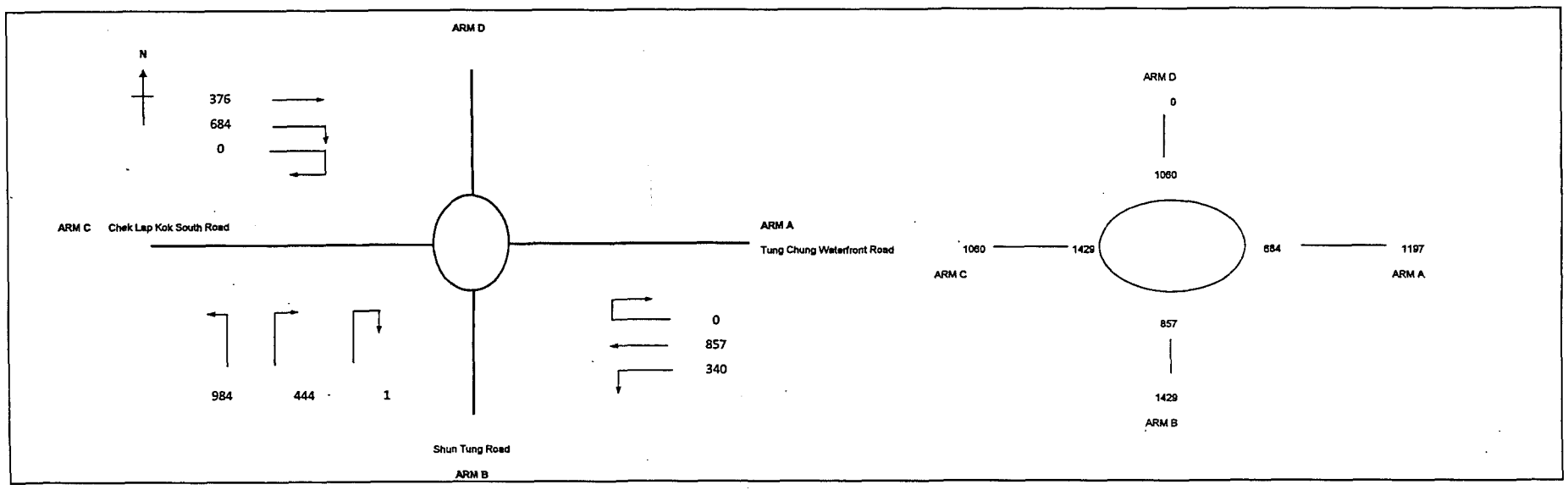
STAGE 1	INT= 5	STAGE 2	INT= 7	STAGE 3	INT=	STAGE 4	INT=

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	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
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		535		535	0.00	4210			4210	0.127			22	39	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 * 6m

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	238078
J14 - Chek Lap Kok South Road Roundabout	Year 2031 Reference Traffic Flows (AM Peak)	DATE 2-Dec-15	FILENAME

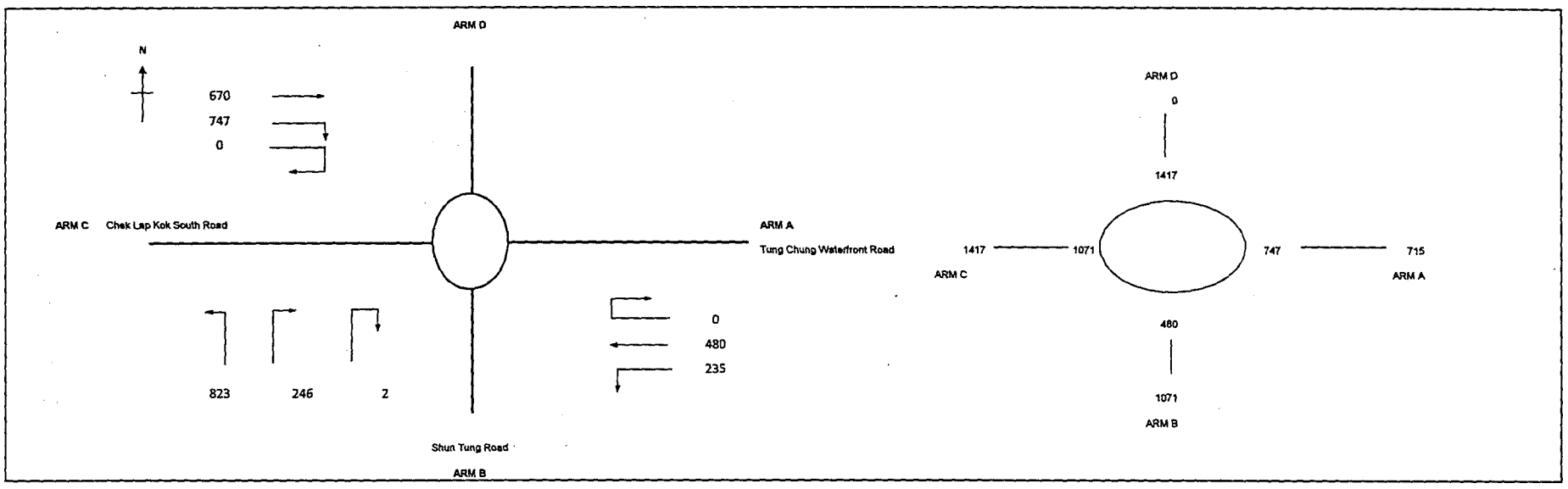


ARM			A	B	C
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	11.00	10.00	10.00
L	=	Effective length of flare (m)	5.00	5.00	5.00
R	=	Entry radius (m)	35.00	27.50	22.50
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00
A	=	Entry angle (degree)	30.00	45.00	35.00
Q	=	Entry flow (pcu/h)	1197	1429	1060
Qc	=	Circulating flow across entry (pcu/h)	684	857	1429
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	0.98	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)	2032	1775	1438
DFC	=	Design flow/Capacity = Q/Qe	0.59	0.81	0.74

Total In Sum = 3686 PCU

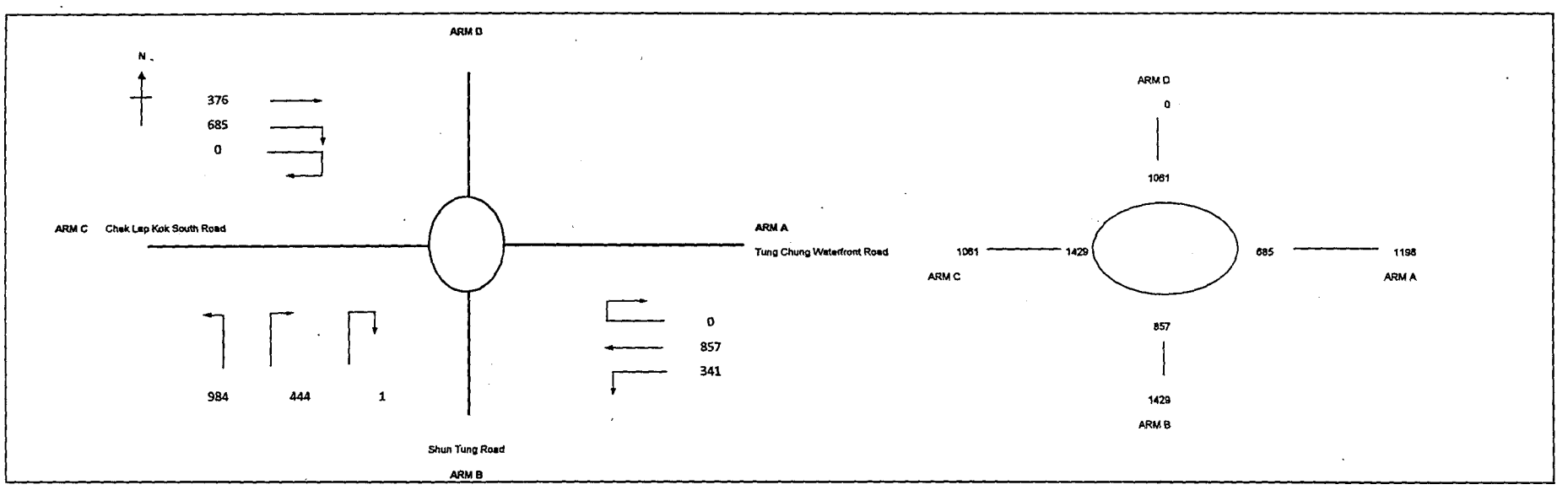
DFC of Critical Approach = 0.81

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 2-Dec-15	FILENAME



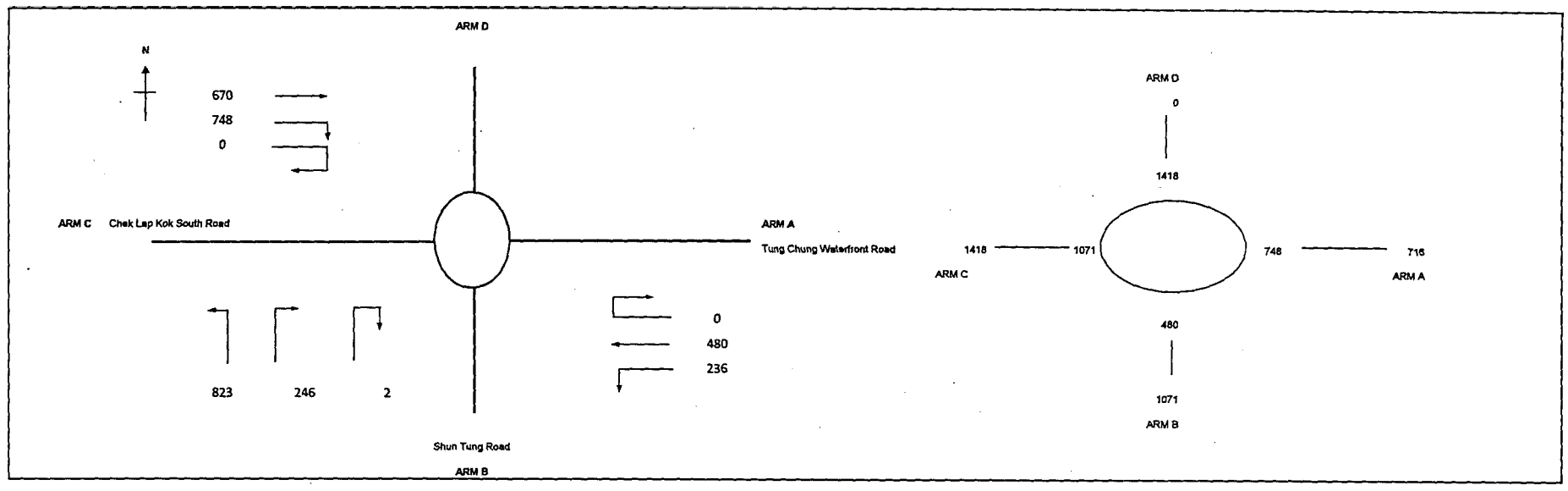
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	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	0.98	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)	0.69	0.68	0.68			
Qe	=	K(F-Fc*Qc)	1988	2023	1680	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 2-Dec-15	FILENAME



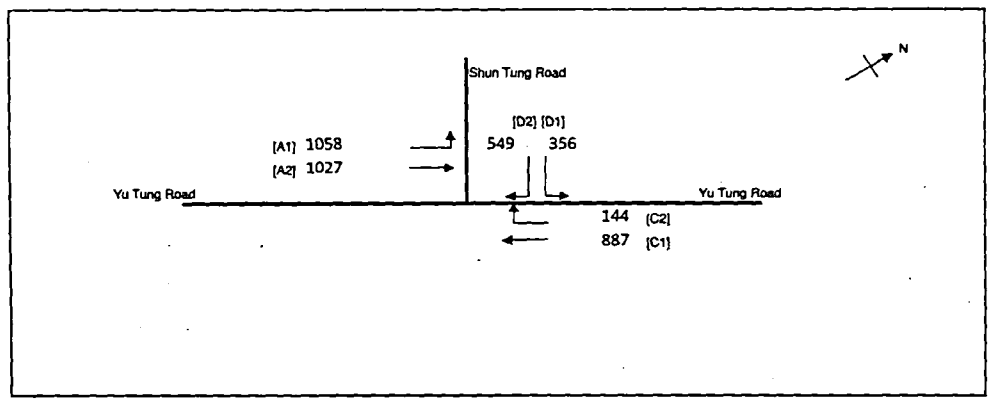
ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	1198	1429	1061			
Qc	=	Circulating flow across entry (pcu/h)	685	857	1429			
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	0.98	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 2-Dec-15	FILENAME

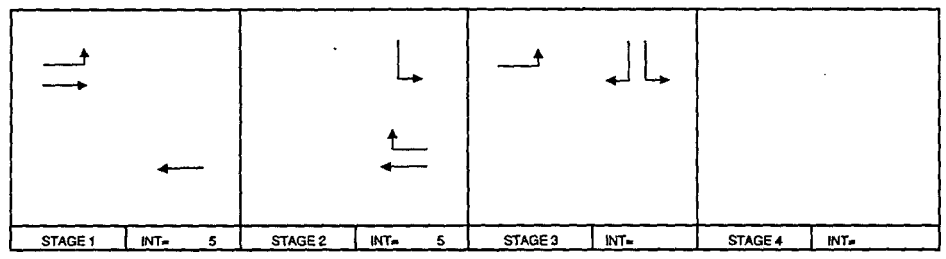


ARM			A	B	C			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	11.00	10.00	10.00			
L	=	Effective length of flare (m)	5.00	5.00	5.00			
R	=	Entry radius (m)	35.00	27.50	22.50			
D	=	Inscribed circle diameter (m)	60.00	60.00	60.00			
A	=	Entry angle (degree)	30.00	45.00	35.00			
Q	=	Entry flow (pcu/h)	716	1071	1418			
Qc	=	Circulating flow across entry (pcu/h)	748	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))	8.12	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)	1987	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
J15 - 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 =	0.664	
Loss 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%	=	26.5	%
Cp = 0.9*L/(0.9-Y)	=	30.5	sec
Ymax = 1-L/C	=	0.886	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	20.0	%



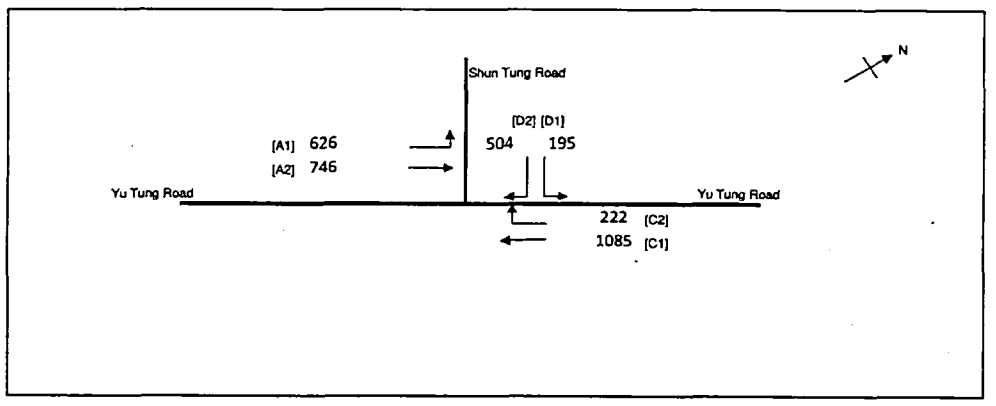
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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				

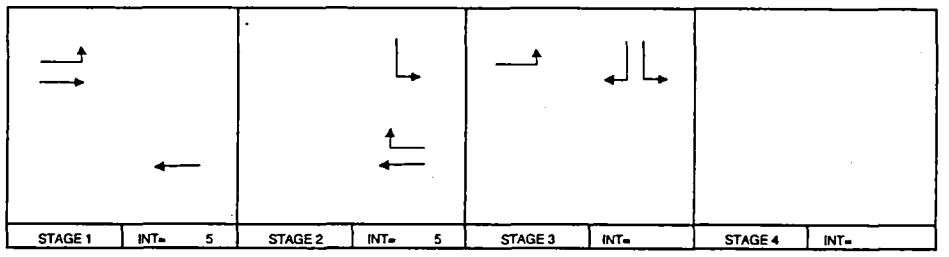
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	1058			1058	1.00	1786			1786	0.592	0.592		55	55	0.750	26
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	4070		887		887	0.00	4070			4070	0.218			20	34	0.442	26
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		N	1965	356			356	1.00	1786			1786	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	0.336	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	FILENPME :



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%	=	72.9 %



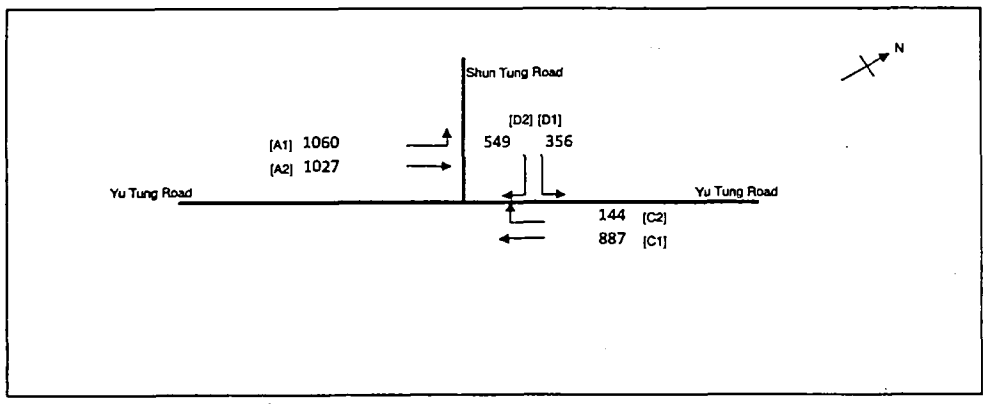
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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

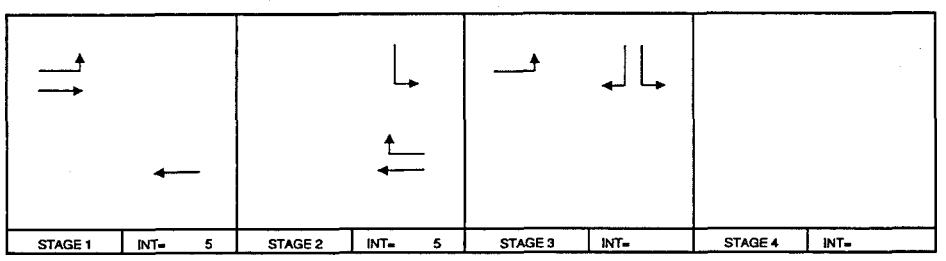
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	626			626	1.00	1786			1786	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	3.50	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		15	15	0.521	20
D1	2,3	3.50	D	1	15		N	1965	195			195	1.00	1786			1786	0.109			15	39	0.195	10
D2	3	3.50	C	2	30			4210			504	504	1.00	4010			4010	0.126			17	19	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 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 =	0.665
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 %



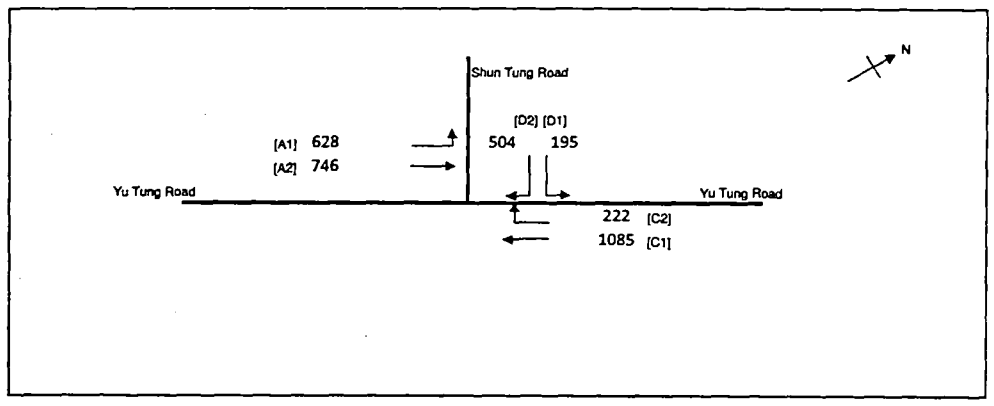
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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

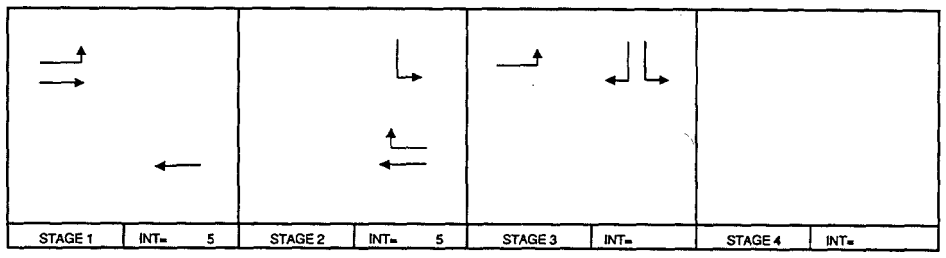
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				8				
A1	1,3	3.50	B	1	15		N	1965	1060			1060	1.00	1786			1786	0.593	0.593		55	55	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	26
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	1965	356			356	1.00	1786			1786	0.199			15	40	0.346	18
D2	3	3.50	C	2	30			4210			549	549	1.00	4010			4010	0.137			13	29	0.335	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	FILENPME :



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 %



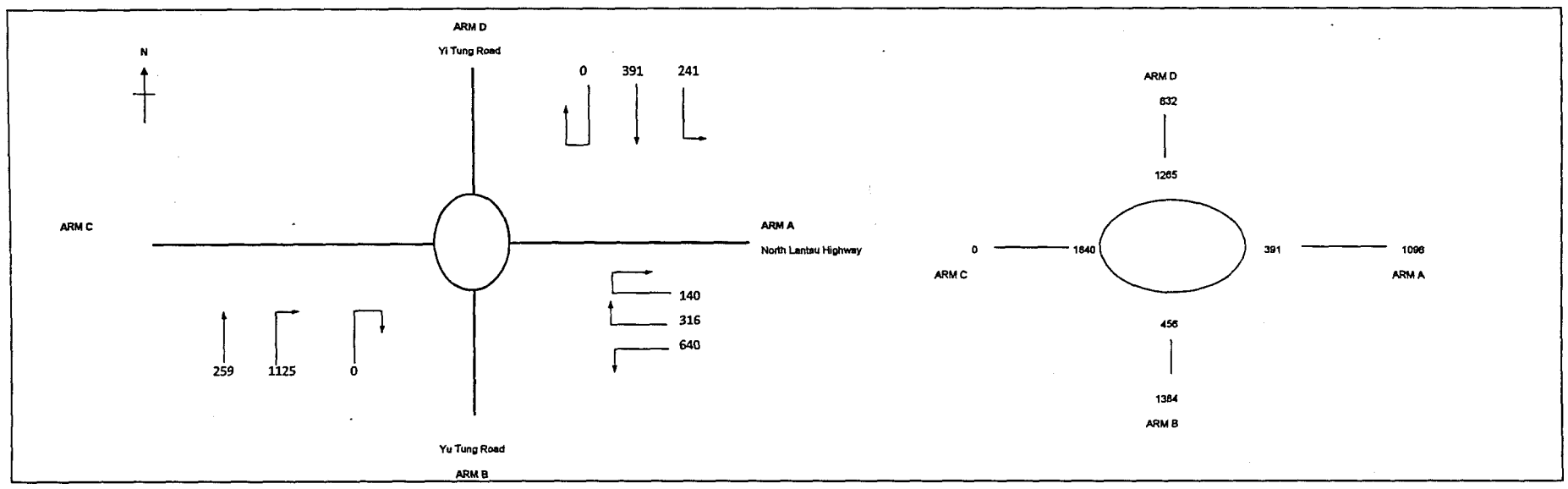
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT=

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 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.
																				8				
A1	1,3	3.50	B	1	15		N	1965	628			628	1.00	1786			1786	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
C1	1,2	3.50	F	2			N	4070		1085		1085	0.00	4070			4070	0.267			36	44	0.428	24
C2	2	3.50	E	1	30			2105			222	222	1.00	2005			2005	0.111	0.111		15	15	0.522	20
D1	2,3	3.50	D	1	15		N	1965	195			195	1.00	1786			1786	0.109			15	39	0.195	10
D2	3	3.50	C	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 2-Dec-15	FILENAME

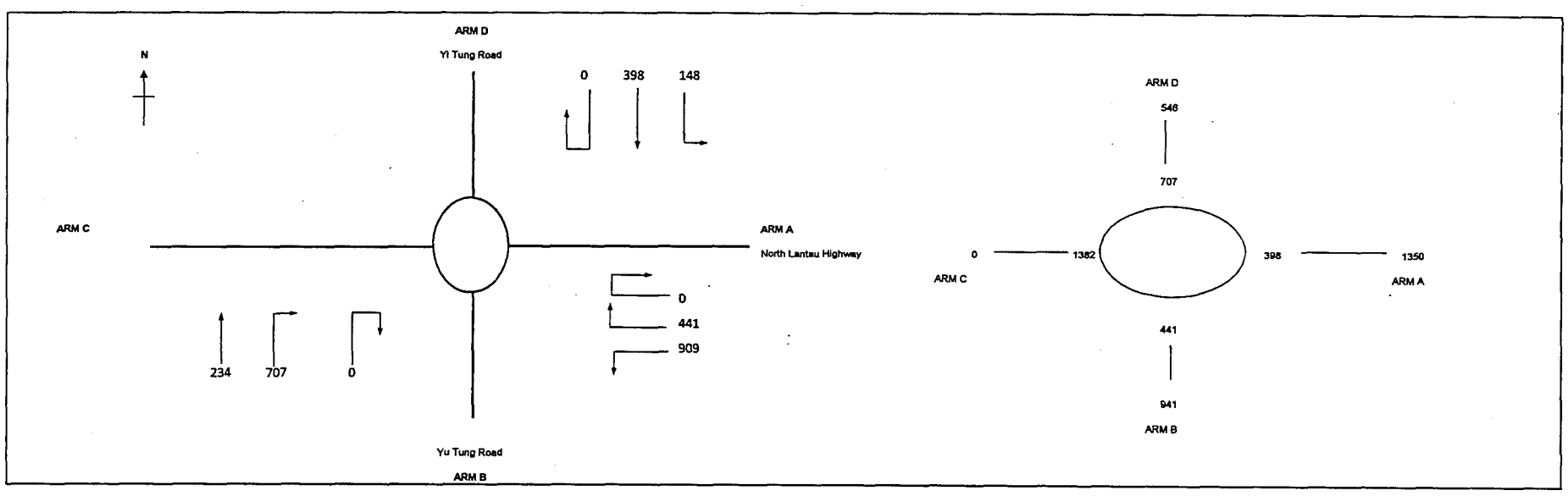


ARM			A	B	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.00	7.00	7.00
E	=	Entry width (m)	14.00	15.00	14.00
L	=	Effective length of flare (m)	40.00	70.00	30.00
R	=	Entry radius (m)	80.00	40.00	60.00
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00
A	=	Entry angle (degrees)	35.00	40.00	35.00
Q	=	Entry flow (pcu/h)	1096	1384	632
Qc	=	Circulating flow across entry (pcu/h)	391	456	1265
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.26	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)	3271	3516	2520
DFC	=	Design flow/Capacity = Q/Qe	0.34	0.39	0.25

Total In Sum = **3112** **PCU**

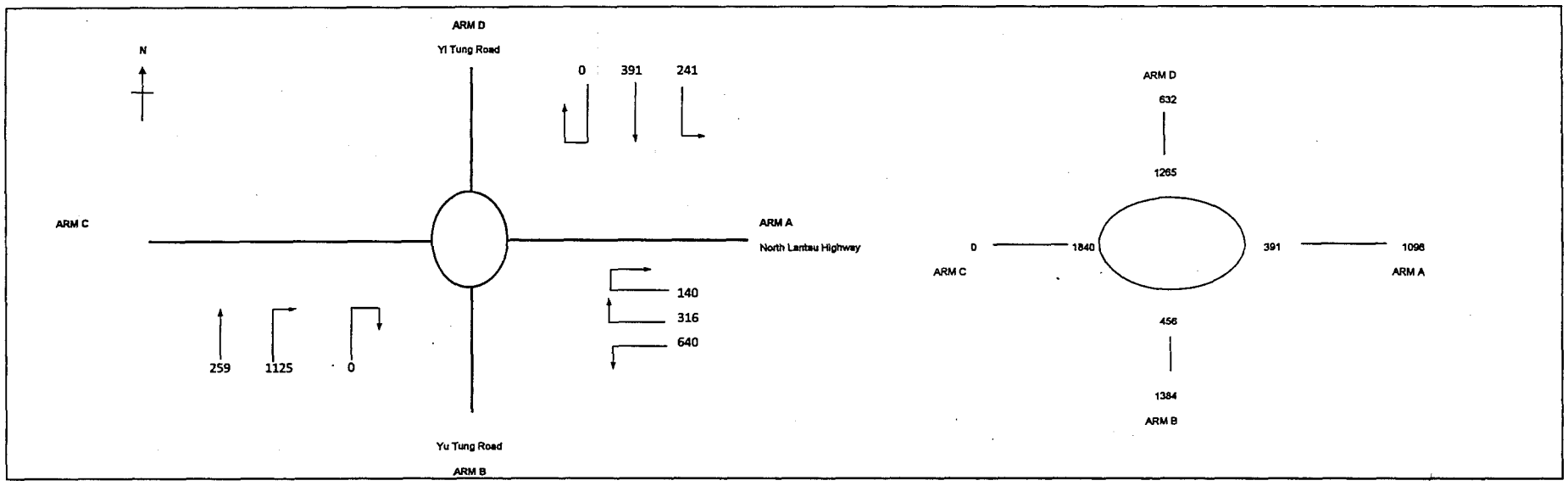
DFC of Critical Approach = **0.39**

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Discovery Bay		Project No.	236078
J16 - Tung Chung Eastern Interchange	Year 2031 Reference Traffic Flows (PM Peak)	DATE 2-Dec-15	FILENAME



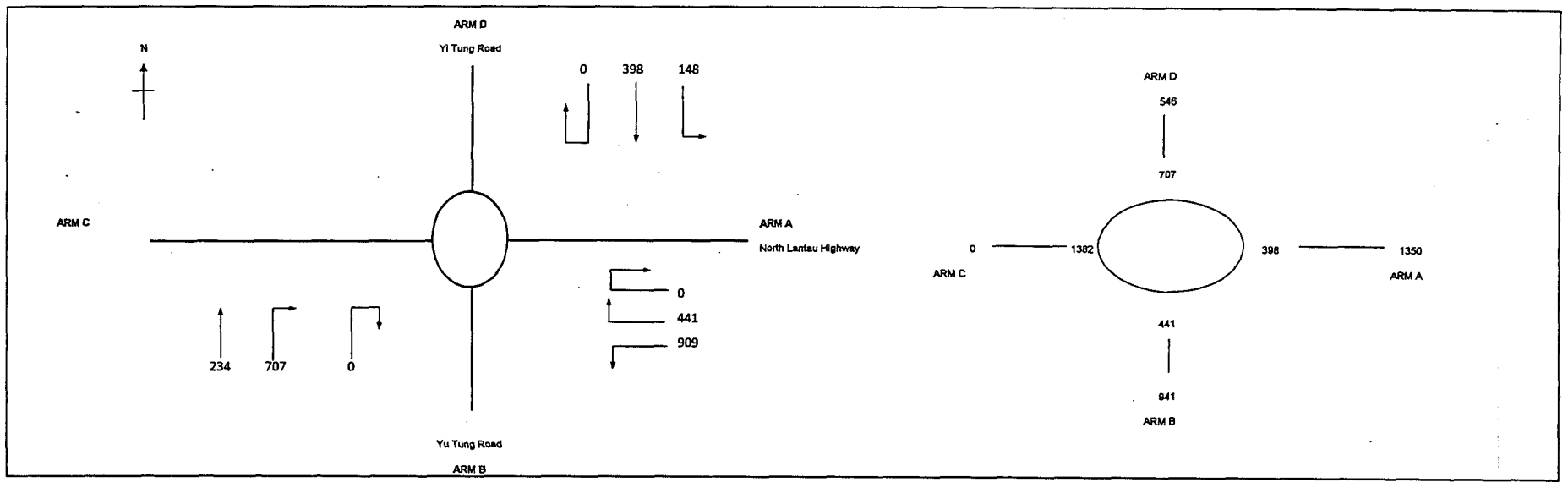
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1350	941	546			
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	12.86	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)	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 2-Dec-15	FILENAME



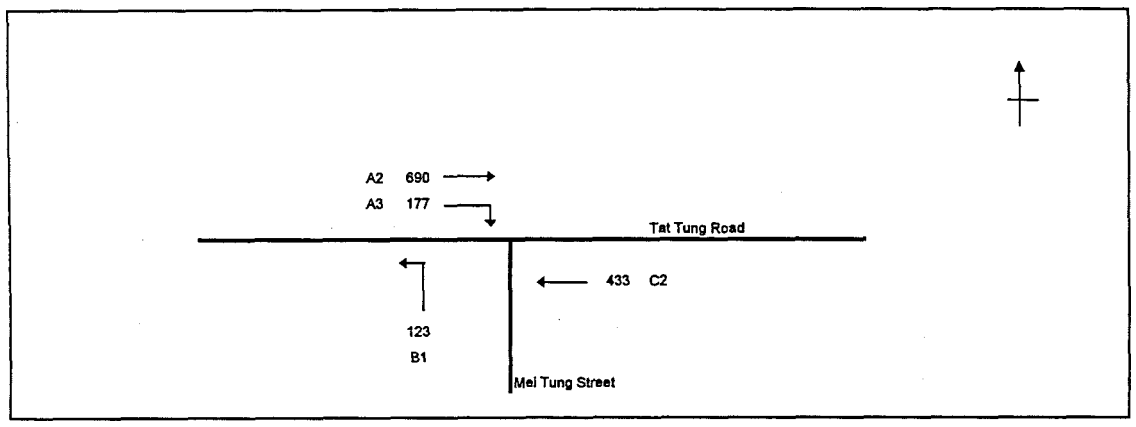
ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1098	1384	632			
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	12.86	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)	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 2-Dec-15	FILENAME

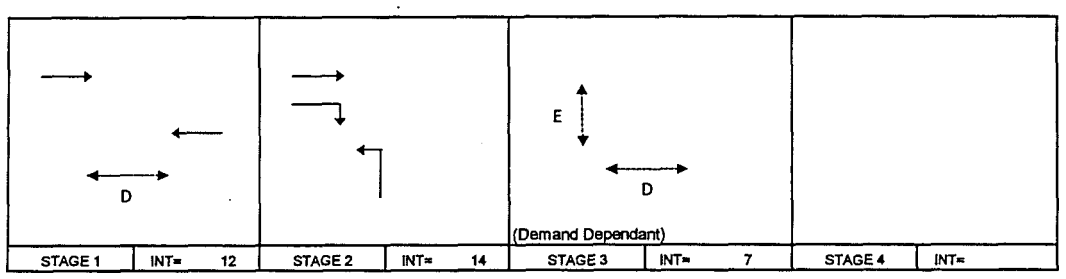


ARM			A	B	D			
INPUT PARAMETERS:								
V	=	Approach half width (m)	7.00	7.00	7.00			
E	=	Entry width (m)	14.00	15.00	14.00			
L	=	Effective length of flare (m)	40.00	70.00	30.00			
R	=	Entry radius (m)	80.00	40.00	60.00			
D	=	Inscribed circle diameter (m)	110.00	110.00	110.00			
A	=	Entry angle (degree)	35.00	40.00	35.00			
Q	=	Entry flow (pcu/h)	1350	941	546			
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	12.86	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)	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	TRAFFIC SIGNAL CALCULATION		
Discovery Bay		PROJECT NO: 236078	
J17 - Tat Tung Road / Mei Tung Street	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 =	120 sec
Sum(y)		Y =	0.332
Loss time		L =	51 sec
Total Flow		=	778 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)



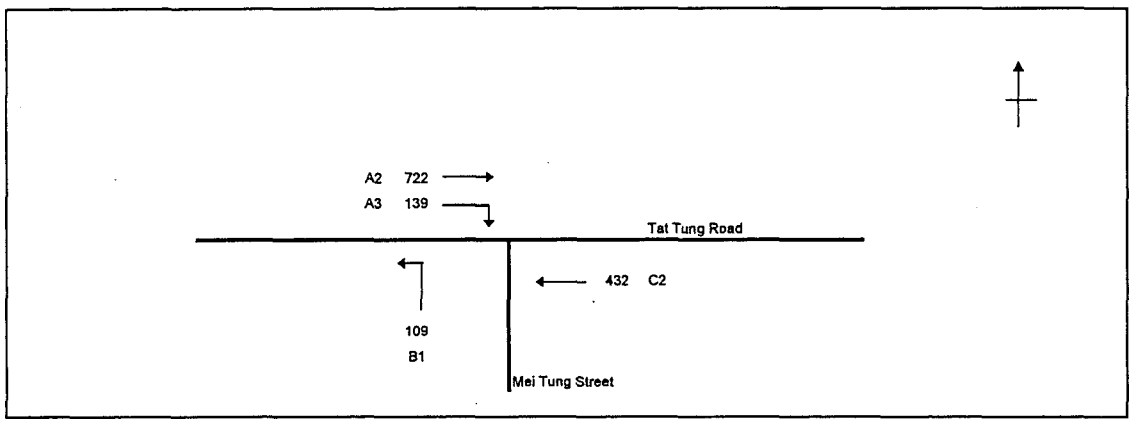
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

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

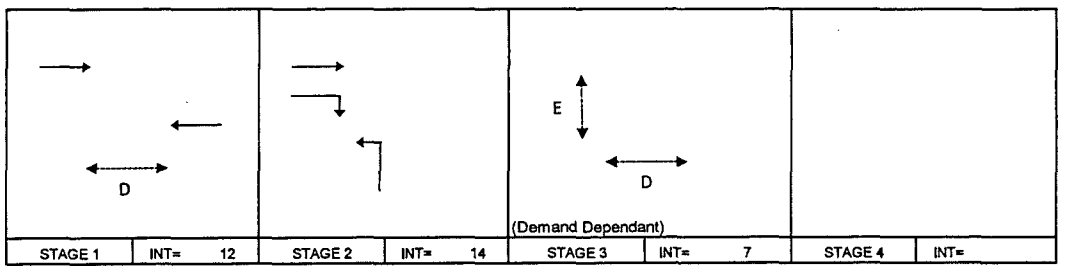
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		845		845	0.00	1945			1945	0.332			69	69	0.578	0
A2,A3	2	3.30	A	1	30			2085		45	177	222	0.80	2005			2005	0.111	0.111		23	69	0.193	19
B1	2	3.20	B	2	15		N	4010	123			123	1.00	3645			2916	0.042			9	9	0.578	11
C2	1	3.40	C	1			N	1955		433		433	0.00	1955			1955	0.221	0.221		48	48	0.578	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 - Tat Tung Road / Mei Tung Street	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 =	120 sec
Sum(y)		Y =	0.329
Loss time		L =	51 sec
Total Flow		=	760 pcu
Co	= (1.5*L+5)/(1-Y)	=	121.5 sec
Cm	= L/(1-Y)	=	76.0 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	57.1 %
Cp	= 0.9*L/(0.9-Y)	=	80.4 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	57.1 % (Optimized)



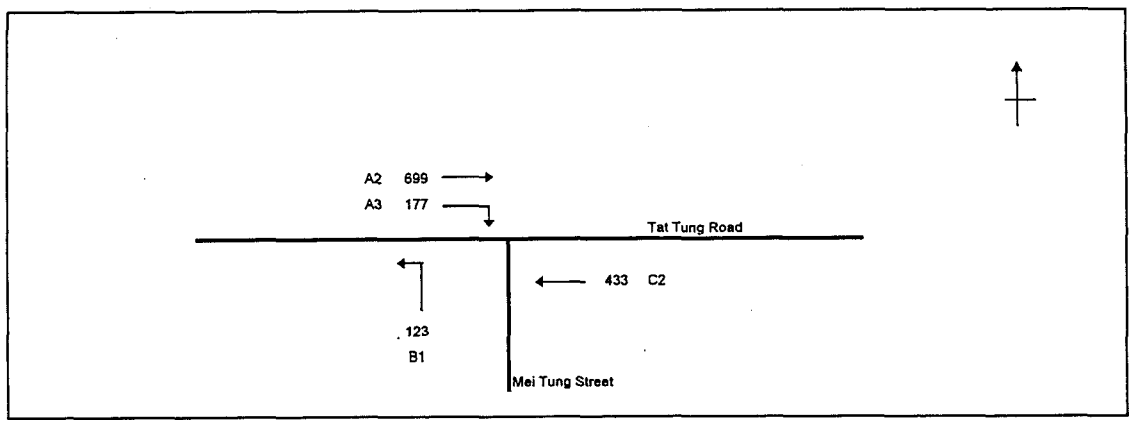
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

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

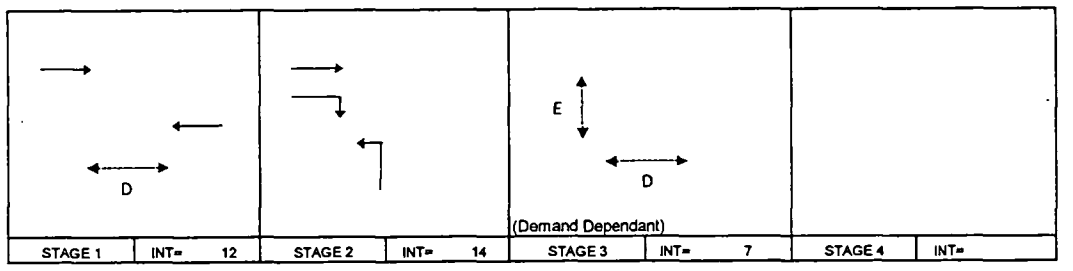
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		642		642	0.00	1945			1945	0.330			69	69	0.573	0
A2,A3	2	3.30	A	1	30			2085		80	139	219	0.63	2021			2021	0.108	0.108		23	69	0.188	19
B1	2	3.20	B	2	15		N	4010	109			109	1.00	3645			2916	0.037			8	8	0.573	10
C2	1	3.40	C	1			N	1955		432		432	0.00	1955			1955	0.221	0.221		48	48	0.573	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 - Tat Tung Road / Mei Tung Street	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 =	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)	=	61.1 sec
Ymax	= 1-L/C	=	0.575
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	54.9 % (Optimized)



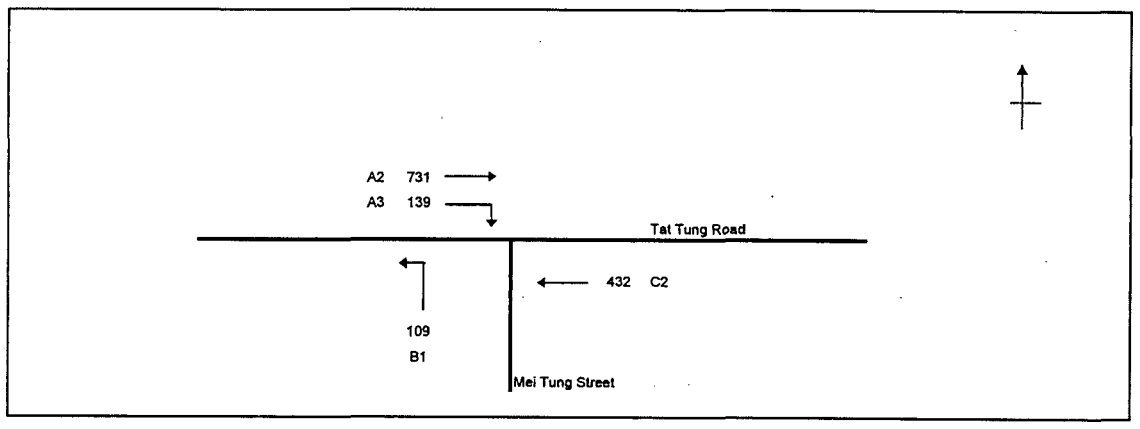
STAGE 1	INT= 12	STAGE 2	INT= 14	STAGE 3	INT= 7	STAGE 4	INT=

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

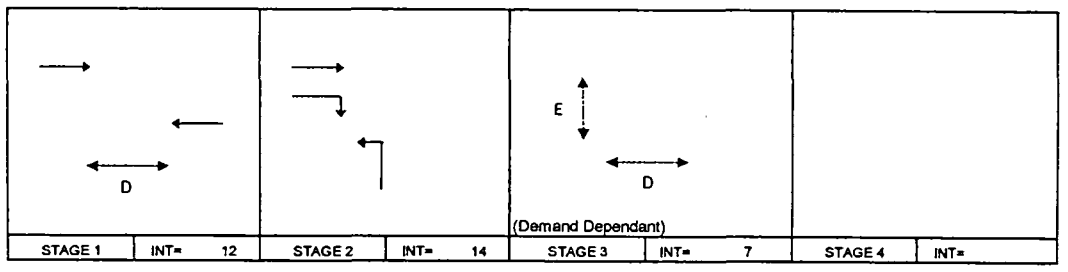
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		650		650	0.00	1945			1945	0.334			69	69	0.581	0
A2,A3	2	3.30	A	1	30			2085		49	177	226	0.78	2008			2008	0.113	0.113		23	69	0.196	19
B1	2	3.20	B	2	15		N	4010	123			123	1.00	3645			2916	0.042			9	9	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 : 2-Dec-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		=	765 pcu
Co	= (1.5*L+5)/(1-Y)	=	122.0 sec
Cm	= L/(1-Y)	=	76.3 sec
Yult		=	0.518
R.C.ult	= (Yult-Y)/Y*100%	=	56.0 %
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%	=	56.0 % (Optimized)

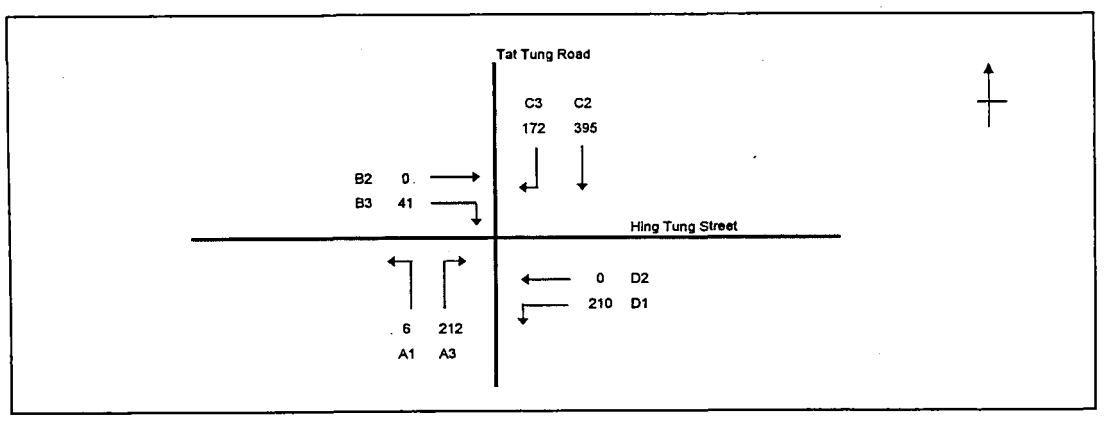


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
D	7.3	8	9	5	6	9	5	OK
E	6.4	5	8	5	7	8	5	OK

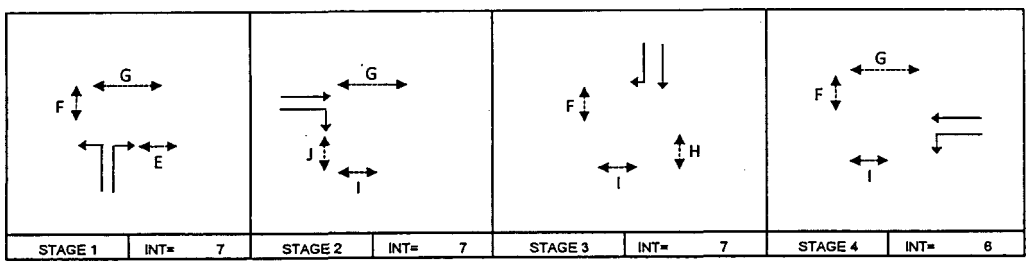
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				31				
A2	1,2	3.30	A	1			N	1945		848		848	0.00	1945			1945	0.332			69	69	0.577	0
A2,A3	2	3.30	A	1	30			2085		85	139	224	0.62	2022			2022	0.111	0.111		23	69	0.192	19
B1	2	3.20	B	2	15		N	4010	109			109	1.00	3845			2916	0.037			8	8	0.577	10
C2	1	3.40	C	1			N	1955		432		432	0.00	1955			1955	0.221	0.221		46	46	0.577	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	
J18 - Tat Tung Road / Hing Tung Street	Year 2031 Reference Traffic Flows (AM Peak)	DATE : 2-Dec-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 =	0.357
Loss time		L =	41 sec
Total Flow		=	1029 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%	=	65.8 %
Cp	= 0.9*L/(0.9-Y)	=	68.0 sec
Ymax	= 1-L/C	=	0.658
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	65.8 % (Optimized)

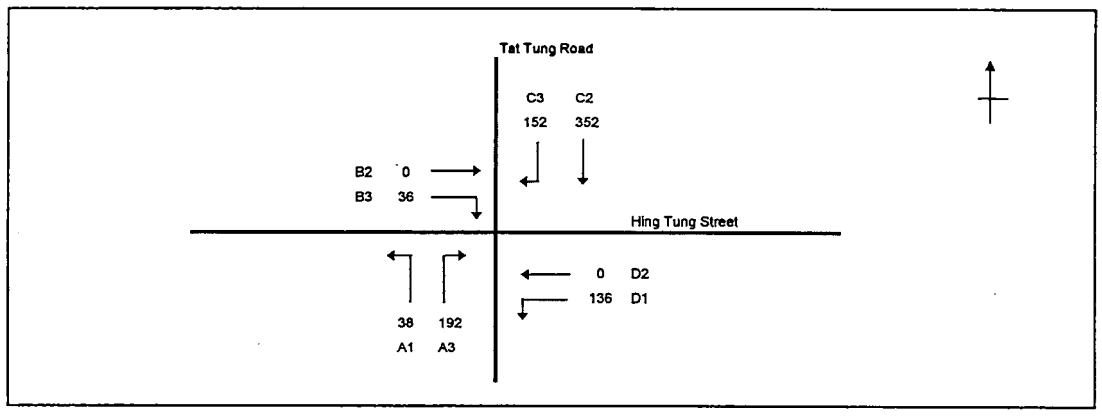


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
E	6.7	5	7	6	16	7	6	OK
F	6.3	5	2	5	89	2	5	OK
G	6.1	5	2	5	68	2	5	OK
H	6.3	5	7	5	26	7	5	OK
I	7.4	5	2	6	76	2	6	OK
J	6.6	5	6	6	5	6	6	OK

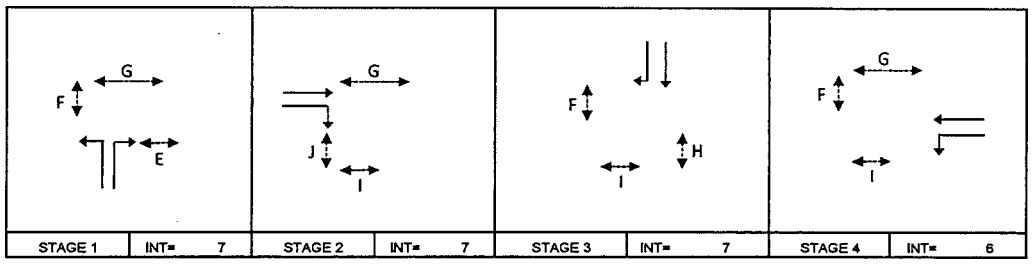
Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1965	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	19	19	1.00	1824			1459	0.013			3	11	0.142	3
B3	2	3.00	B	1	30			2055			22	22	1.00	1957			1566	0.014			3	11	0.151	4
C2	3	3.90	C	1	25		N	2005		288		288	0.00	2005			2005	0.144	0.144		32	32	0.541	42
C2,C3	3	3.90	C	1	25		N	2005		107	172	279	0.62	1934			1934	0.144			32	32	0.543	41
D1,D2	4	3.90	D	1	40		N	2005	210	0		210	1.00	1933			1933	0.109	0.109		24	24	0.543	34
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 : 2-Dec-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 =	0.293	
Loss time	L =	41	sec
Total Flow	=	867	pcu
Co = (1.5*L+5)/(1-Y)	=	94.1	sec
Cm = L/(1-Y)	=	58.0	sec
Yult	=	0.593	
R.C.ult = (Yult-Y)/Y*100%	=	102.1	%
Cp = 0.9*L/(0.9-Y)	=	60.8	sec
Ymax = 1-L/C	=	0.658	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	102.1	% (Optimized)



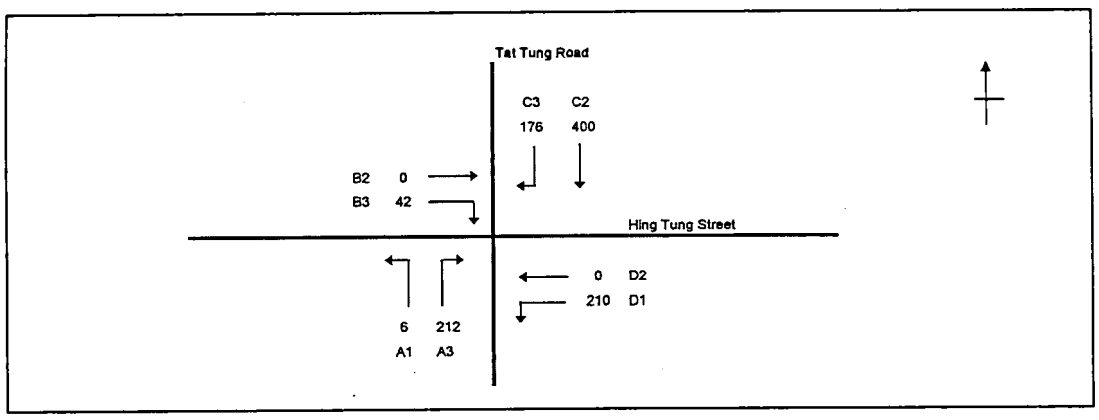
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

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	89	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

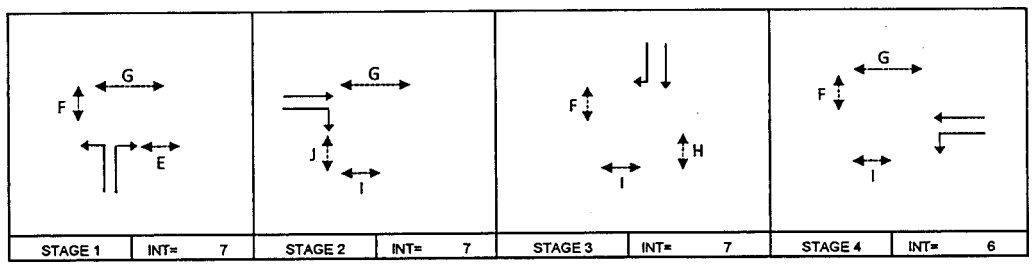
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1965	38			38	1.00	1788			1788	0.021	0.095		6	25	0.100	0
A1,A3	1	3.50	A	1	40			2105	0		192	192	1.00	2029			2029	0.095			25	25	0.445	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	0.130	3
C2	3	3.90	C	1	25		N	2005		257		257	0.00	2005			2005	0.128	0.128		35	35	0.445	37
C2,C3	3	3.90	C	1	25		N	2005		95	152	247	0.62	1934			1934	0.128			34	35	0.443	35
D1,D2	4	3.90	D	1	40		N	2005	136	0		136	1.00	1933			1933	0.070	0.070		19	19	0.445	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 : 2-Dec-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)



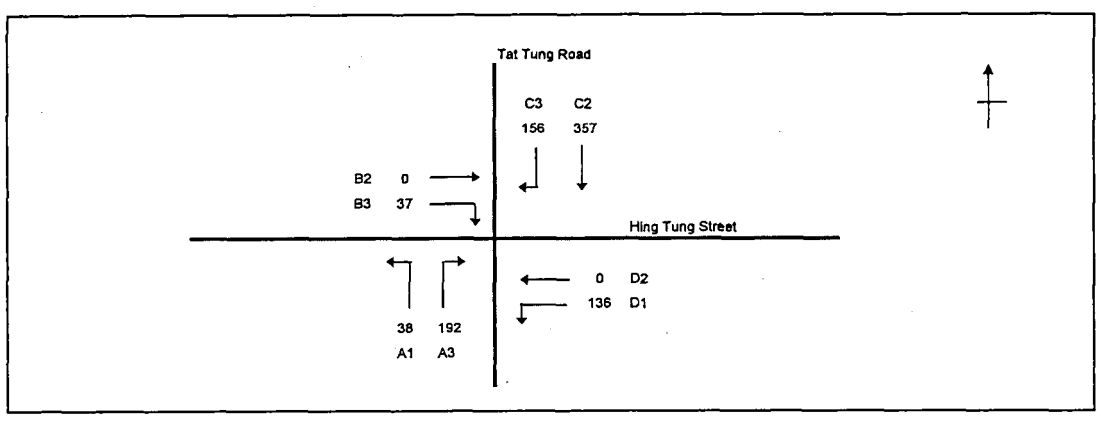
STAGE 1	INT= 7	STAGE 2	INT= 7	STAGE 3	INT= 7	STAGE 4	INT= 6

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	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	76	2	6	OK
J	6.6	5	6	6	5	6	6	OK

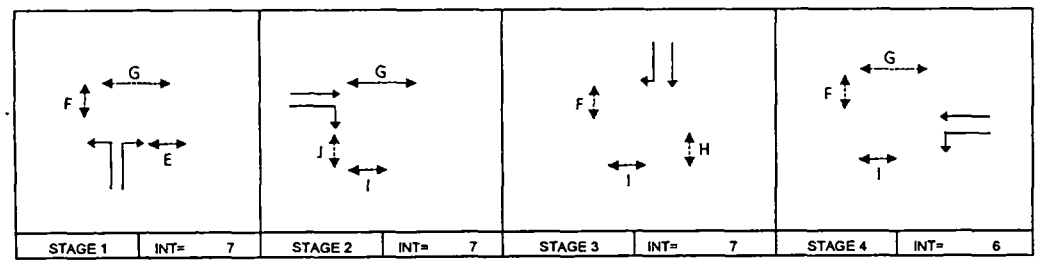
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				24				
A1	1	3.50	A	1	15		N	1965	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	34
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,D2	4	3.90	D	1	40		N	2005	210	0		210	1.00	1933			1933	0.109	0.109		24	24	0.546	34
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 : 2-Dec-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		=	878 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)	=	61.0 sec
Ymax	= 1-L/C	=	0.658
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	100.6 % (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	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	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

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m 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.
																				24				
A1	1	3.50	A	1	15		N	1965	38			38	1.00	1786			1786	0.021	0.095		6	25	0.101	0
A1,A3	1	3.50	A	1	40			2105	0		192	192	1.00	2029			2029	0.095			25	25	0.449	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			20	20	1.00	1957			1566	0.013			3	11	0.140	4
C2	3	3.90	C	1	25		N	2005		261		261	0.00	2005			2005	0.130	0.130		35	35	0.448	37
C2,C3	3	3.90	C	1	25		N	2005		96	156	252	0.62	1933			1933	0.130			35	35	0.449	36
D1,D2	4	3.90	D	1	40		N	2005	136	0		136	1.00	1933			1933	0.070	0.070		19	19	0.449	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