Appendix B – Traffic and Transport Impact Assessment

MOTT MACDONALD

Application for Permission under Section 16 of the Town Planning Ordinance (Cap. 131) for Proposed “Flat” with “Commercial (1)” Zone of STTL626 and STTL627 in Shatin

Preliminary Traffic and Transport Impact Assessment

July 2026

Mott MacDonald

[redacted]

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Preliminary Traffic and Transport Impact Assessment

July 2026

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1 INTRODUCTION

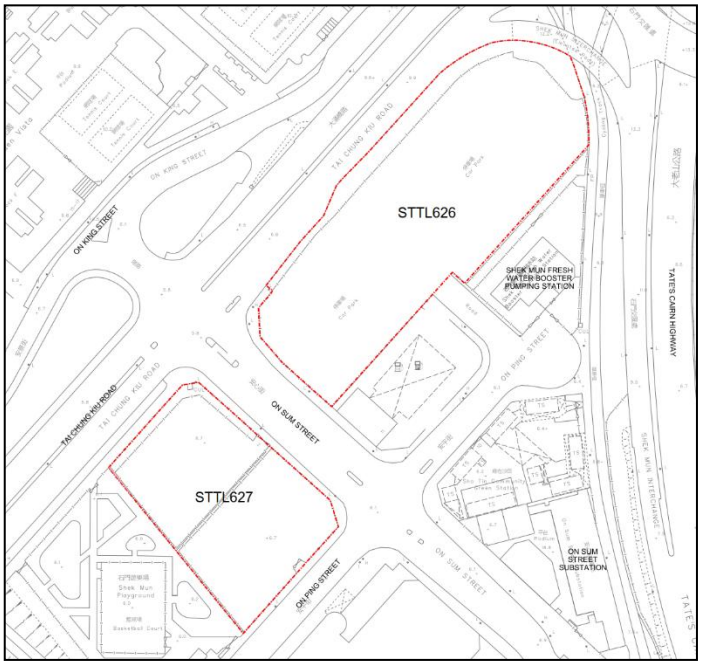
1.1 Study Background

1.1.1 The Government is committed to facilitating steady and continued land supply. The Government will continue to optimise the use of built-up land and its surrounding areas to meet the demand for housing and other development purposes in the short to medium term.

1.1.2 To achieve this objective, the Government has identified potential sites for conversion from commercial to residential use. Upon confirmation of the technical feasibility, a planning application will be submitted under section 16 of Town Planning Ordinance for consideration by the Town Planning Board.

1.1.3 On 15 August 2023, Mott MacDonald Hong Kong Limited (Mott) was commissioned by the CEDD's Housing Projects 3, Civil Engineering Office to undertake the "Term Consultancy for Site Formation and Infrastructure Works for Proposed Housing and Other Developments in Zone 1 (2023 – 2027) – Feasibility Study". Zone 1 mainly covers Shatin, Ma On Shan, Tsuen Wan and Kwai Ching, Lantau and outlying islands. On 31 October 2025, Task Order No. 4 (TO4) was instructed to conduct various technical assessments to support the town planning application for proposed private residential development at two development sites denoted as STTL626 (also known as ST-9353N) and STTL627 (also known as ST-9353S) respectively, located on the north and south sides of the section of On Sum Street between Tai Chung Kiu Road and On Ping Street in Shek Mun, Sha Tin. Location of the Site is shown in **Diagram 1-1** and **MMH/CE19/TO4/PTTIA/FIG/1.1**.

Diagram 1-1 Location of the Site

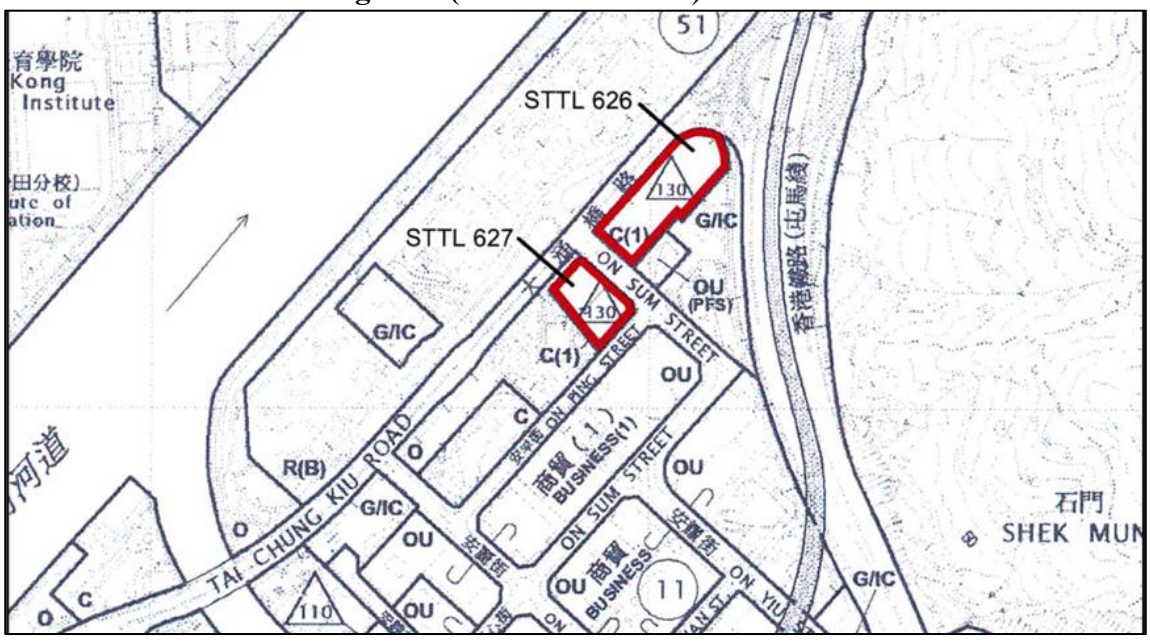


1.2 Site Description and Major Scope of Works

1.2.1 The two subject sites of this assignment STTL626 and STTL627, currently zoned "Commercial (1)" ("C(1)") on the approved Sha Tin Outline Zoning Plan (OZP) no. S/ST/40, cover a site area of approximately 0.80ha and 0.41ha respectively. Located at the northern fringe of the Shek Mun Business Area (Planning Area 11 in the OZP), the sites are generally bounded by Shek Mun Interchange to the north, Tai Chung Kiu Road (TCKR) to the northwest, Shek Mun Playground to the south, and On Ping Street (OPS) to the east, with On Sum Street (OSS) running along a corridor that separates the two sites. A hotel (Courtyard by Marriot Hong Kong Shatin) is located to the further southwest. Currently the STTL626 site is used as a fee-paying carpark (FPC) whereas the STTL627 site is vacant Government land. Both sites are formed flat ground, with an existing ground level at approximately +6mPD.

1.2.2 The proposed sites are covered by the approved Sha Tin Outline Zoning Plan (OZP) No. S/ST/40 and zoned as "C(1)", as shown in **Diagram 1-2**.

Diagram 1-2 Boundaries of the two sites under Approved Sha Tin Outline Zoning Plan (Plan No. S/ST/40)



Source: Sha Tin Outline Zoning Plan (Plan No. S/ST/40), Town Planning Board Portal

1.2.3 The design parameters of the Indicative Scheme for the Proposed Development are summarised in **Table 1.1** below.

Table 1.1 Target Design Parameters of Indicative Scheme

	Development Parameters	
	STTL626	**STTL627**
Application Site Area	0.80Ha	0.41Ha
Planned Housing Type	Private Housing	
No. of Flats (Total No. of Flats : 1,456) (1)	962	494

Note:
(1) For technical assessment purpose, the adopted flat nos. for STTL626 and STTL627 are 1,100 and 451 (including 10% buffer) respectively. This is on conservative side since the total flat nos. of 1,551 (and consequently the design population) are larger than that in the Indicative Scheme.

1.2.4 The proposed site accesses are shown in **Figure MMH/CE19/TO4/TIA/FIG/1.2**.

1.2.5 This EFS aims to conduct the necessary technical assessments to support the planning application for the proposed private residential developments for the two sites STTL626 and STTL627 in Shek Mun. The scope of work includes the followings:

- To conduct the technical assessments related to traffic and transport, drainage, sewerage, water supply and utilities;
- To assess environmental impacts and conduct quantitative risk assessments; and
- To prepare a Planning Report and to provide support for the planning application

1.2.6 Based on the information available, the technical assessments are currently scheduled for completion in March 2026 to initiate the Section 16 town planning application procedure in Q2 or Q3 2026. It is targeted that both sites will be included in the 2026/27 Land Sale Programme for private housing development.

1.3 Scope and Structure of this Report

1.3.1 In accordance with Clause 6.5.1 of the Brief, this Preliminary Traffic and Transport Assessment Report was prepared to present the following:

(a) to conduct a comprehensive review of the traffic data presently available, and to collect data to supplement the existing information;

(b) to identify all those roads and junctions that will have capacity problems in the road network within the AOI which are affected by the construction and operation of the Development(s) and the Infrastructure Works and recommend necessary improvement measures. The AOI covers critical road junctions and road networks being far from the Site(s) subject to the scale of development(s)

(c) to forecast traffic and pedestrian flow pattern generated and attracted by the Development(s);

(d) to liaise with relevant Departments/ bureaux to obtain traffic generations parameters to carry out preliminary TTIA study;

(e) to review the public transport demand, availability of existing public transport services and necessity of public transport facilities (e.g. Public Transport Interchange / Terminus) arising Development(s) at and in the vicinity of the Development(s) and recommend the required public transport services and the associated public transport facilities for the Development, including but not limited to the construction and operation phases.

(f) to develop the recommended schemes for (i) connecting the Site(s) to the existing road networks, (ii) provision of necessary public transport facilities including roadside laybys and (iii) pedestrian connectivity including but not limited to at-grade crossings, subways and/or footbridges considering the transportation needs for road users entering/leaving the Site(s);

(g) to assess the traffic implications of carrying out the works at the various stages and phases throughout the construction period, considering other related roadworks projects and developments in the AOI;

(h) to determine appropriate temporary traffic management schemes and measures to ameliorate the traffic and transport impact on the road networks (including cycle tracks, footpaths and crossing facilities) at various stages/ phases of the works;

(i) to review the existing pedestrian footway and cycle track in the vicinity of the Development(s);

(j) to propose pedestrian footways and vehicular access roads to the stakeholders (including nearby villages, graveyards, car parking facilities, etc.) at and in the vicinity of the Development(s), and propose necessary diversion/ re-provision;

(k) to propose cycle track, vehicular and pedestrian accesses for the Development(s) and determine the need for widening of existing roads and provision of roadside laybys;

(l) to assess the public parking demand with a service area, typically 500m-radius area and check if the public vehicle park in the Development(s) can also be designed to accommodate the public parking demand within the service area.

(m) to investigate the need and feasibility of providing a public transport interchange/ transport interchange hub and/or a bus-bus interchange as well as introduction of public transport services, such as long haul bus services/ road-based feeder service to nearby railway stations to support the connectivity of the Site;

(n) to review the capacity of the existing pedestrian circulation network to /from the Development(s) and any required improvement works and the possible pedestrian/road connection the Development(s);

(o) to examine the adequacy/inadequacy of the capacity of the existing/planned roads, pedestrian networks and major interchanges/ junctions within the AOI and recommend additional transport infrastructure and/ or mitigation measures with implementation programme, if any, to handle the additional traffic generated due to the implementation of the Developments(s)";

1.3.2 Following this introductory Section, this Preliminary TTIA Report has the following remaining Sections in addition to this introduction (Section 1):-

Section 2 – Existing Traffic Conditions: Describe the existing traffic conditions and available transport facilities;

Section 3 – The Proposed Development: Discuss the planning parameters of the development site, issues regarding the trips generated, site accesses and provisional requirement of car parking and loading/unloading facilities;

Section 4 – Traffic Forecasting Methodology: Discuss the major assumptions, methodology and other aspects in relation to the traffic forecasting for this TTIA;

Section 5 – Vehicular Traffic Impact Assessment: Discuss the traffic impact induced by development considering scenarios on proposed traffic circulation;

Section 6 – Pedestrian Impacts Assessment: Discuss the pedestrian demand of the Site and assesses the impact on major walkways/footpaths in the vicinity;

Section 7 – Summary and Conclusion

1.4 Abbreviations

Abbreviations	Term
AADT	Average Annual Daily Traffic
AOI	Area of Influence
ATC	Annual Traffic Census
BDTM	Base District Traffic Model
CEDD	Civil Engineering and Development Department
CoP	Code of Practice
DFC	Design Flow/ Capacity Ratio
EFS	Engineering Feasibility Study
FPC	Fee-Paying Carpark
GMB	Green Minibus
HCM	Highway Capacity Manual
HGV	Heavy Goods Vehicle
HKPF	Hong Kong Police Force
HKPSG	Hong Kong Planning Standards and Guidelines
LATM	Local Area Traffic Model
LGV	Light Goods Vehicle
LOS	Level of Services
L/UL	Loading/Unloading Bay
MOC	Method of Control
Mott	Mott MacDonald Hong Kong Limited
NFB	Non-Franchised Bus

Abbreviations	Term
O-D	Origin – Destination
OPS	On Ping Street
OZP	Outline Zoning Plan
PCU	Passenger Car Units
PlanD	Planning Department
PT	Public Transport
PVP	Public Vehicle Park
RC	Reserve Capacity
SYY	Short-Term Tenancy
STTL	Sha Tin Town Lot
TCKR	Tai Chung Kiu Road
TCS	Travel Characteristic Survey
TD	Transport Department
TO	Task Order
TPDM	Transport Planning and Design Manual
TPEDM	Territorial Population and Employment Data Matrix
TTIA	Transport and Traffic Impact Assessment
V/C	Volume/Capacity Ratio

2 EXISTING TRAFFIC CONDITIONS

2.1 Existing Road Network

2.1.1 The proposed private housing sites are bounded by Tai Chung Kiu Road, On Ping Street and On Sum Street. Its location is shown in the location plan **MMH/CE/TO4/PTTIA/FIG/1.1.**

2.1.2 The sites are currently well-served by a comprehensive road network to and from all districts. Some of the major roads within vicinity of the housing development are highlighted below:

Tai Chung Kiu Road

Tai Chung Kiu Road is a dual-3 carriageway and classified as primary distributor running in east-west direction. It connects On Sum Street and On Lai Street, from Che Kung Miu Road to Shek Mun Interchange.

On Sum Street

On Sum Street is a single-2 carriageway and classified as local distributor. It connects On Lai Street and Tai Chung Kiu Road to provide connectivity to various sites in Shek Mun.

On Ping Street

On Ping Street is a one-way street and classified as local distributor running in east west direction. It connects from On Lai Street to On Sum Street to provide access to both site STTL626 and STTL627.

2.1.3 Vehicles from the proposed sites will travel via On Ping Street and On Sum Street to reach Tai Chung Kiu Road. Westbound traffic on Tai Chung Kiu Road can connect to Sha Tin Road for access to urban Kowloon via Lion Rock Tunnel or reach Fo Tan Road for onward travel through Shing Mun Tunnel or Eagle's Nest Tunnel. Eastbound traffic can use Shek Mun Interchange to join Tate's Cairn Tunnel for access to Kowloon and other urban districts.

2.1.4 The swept path analysis of site STTL627 is shown in **MMH/CE/TO4/PTTIA/FIG/1.3.**

2.2 Existing Traffic Conditions

2.2.1 Based on the appraisal of the existing road network and traffic characteristics of both sites, the AOI is proposed as shown in **MMH/CE19/TO4/TTIA/FIG/2.1**. To appreciate the existing traffic conditions, comprehensive classified traffic counts were conducted at the following key junctions and road links within the AOI. The location of surveyed junctions is listed in **Table 2.2.1** and surveyed road link in **Table 2.2.2.**

2.2.2 The traffic surveys were conducted on a normal weekday on 4 December 2025 and 5 March 2026 during 0600 – 0900 & 1600 – 1900. The AM peak and PM peak hours of weekday were found to be 0730 – 0830 and 1730 – 1830 respectively.

Table 2.2.1: Location of Surveyed Junctions

Index	Location	Type
J1	Shek Mun Interchange	Roundabout
J2	On Sum Street / On Ping Street	Signalised
J3	Tai Chung Kiu Road / On Sum Street	Signalised
J4	On Lai Street / On Ping Street	Signalised
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised
J6	Tai Chung Kiu Road / Siu Lek Yuen Road	Signalised
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised
J8	Fo Tan Road / Yuen Wo Road	Signalised
J9	On Lai Street / On Sum Street	Signalised
J10	On Lai Street / On Kwan Street	Signalised
J11	On Yiu Street / On Kwan Street	Priority
J12	On Ming Street / On Muk Street	Signalised
J13	On Ming Street / On Yiu Street / On Muk Street	Roundabout

Table 2.2.2: Location of Surveyed Road Links

Index	Location	Bound
L1	Tai Chung Kiu Road	EB
		WB
L2	Fo Tan Road	NB
		SB

2.2.3 A series of capacity analysis based on the Transport Planning and Design Manual (TPDM) were carried out at road links junctions during the identified peak hours. Specifically:

- As stated in TC3/2020 published by TD, in general, a TIA is required if there is an existence or expected emergence of roads with a volume/capacity (V/C) ratio >=0.85, or priority junctions/roundabouts with a design flow/capacity (DFC) ratio >= 0.85, or signalised junctions with a reserve capacity (RC)<=15% during the peak periods within the Area of Influence. Any traffic improvement schemes should aim to restore the v/c ratio, DFC ratio and RC of the affected roads or junctions to <= 0.85, <=0.85 and >=15% respectively where practicable. V/C ratio exceeding 1.0 may be permissible under special circumstances such as the overloading will be short-term and will not lead to serious traffic congestion with long-term solution being implemented.
- A V/C ratio equal to or less than 1.0 indicates that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A V/C ratio above 1.0 indicates the onset of congestion. A V/C ratio above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic.

- For junction capacity assessments, the assessment criteria for signalized junction performance are the Reserve Capacity (RC). A negative RC indicates a very high degree of saturation of the junction which is unacceptable from traffic point of view.

2.2.4 **Table 2.2.3** shows the performance of the major junctions are identified. The flow diagram and detail calculation at existing year 2025 are shown in **Appendix A** and **D** respectively.

Table 2.2.3 Junction Performance during Existing Year 2025

Index	Junction Location	Type	RC / DFC (1)	
			AM	PM
J1	Shek Mun Interchange	Roundabout	0.93	0.64
J2	On Sum Street / On Ping Street	Signalised	85%	72%
J3	Tai Chung Kiu Road / On Sum Street	Signalised	24%	70%
J4	On Lai Street / On Ping Street	Signalised	>100%	>100%
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	1%	27%
J6	Tai Chung Kiu Road / Siu Lek Yuen Road	Signalised	26%	37%
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	8%	22%
J8	Fo Tan Road / Yuen Wo Road	Signalised	35%	44%
J9	On Lai Street / On Sum Street	Signalised	53%	48%
J10	On Lai Street / On Kwan Street	Signalised	>100%	>100%
J11	On Yiu Street / On Kwan Street	Priority	0.14	0.25
J12	On Ming Street / On Muk Street	Signalised	>100%	>100%
J13	On Ming Street / On Yiu Street / On Muk Street	Roundabout	0.23	0.16

Note:
(1) Figures shown represent "Reserve Capacity" (RC) for the signal-controlled junctions and "Design Flow / Capacity" (DFC) ratio for the roundabouts and priority junctions.

2.2.5 The result in **Table 2.2.3** indicates the assessed junctions, excepted J1, J5 and J7 are currently operating with spare capacity in year 2025.

2.2.6 The performance of the major road links is shown in **Table 2.2.4.**

Table 2.2.4: Road Link Performance during Existing Year 2025

Key Road Link			Capacity (veh/hr) (1)	Flow		V/C Ratio	
				AM	PM	AM	PM
L1	Tai Chung Kiu Road	EB	5,250	1,040	1,295	0.20	0.25
		WB		2,490	1,490	0.47	0.28
L2	Fo Tan Road	NB	5,600	1,990	1,655	0.36	0.30
		SB		1,655	1,540	0.30	0.28

Note:
(1) The capacity of road sections was determined by considering the number of lanes, road type, frontages and PCU factors, which is compatible with the definition adopted in the TD's ECTS Model as per the Consultant's knowledge and understanding.

2.2.7 As shown above, all junctions and road links are operating within their capacity except J1, J5 and J7.

2.2.8 On the other hand, existing ingress/egress traffic of existing STT Carpark at STTL626 has been surveyed. The surveyed result is listed in **Table 2.2.5**.

Table 2.2.5: Traffic generated by STTL626 carpark

Traffic Generation (AM) (pcu/hr)		Traffic Generation (PM) (pcu/hr)	
Generation	**Attraction**	**Generation**	**Attraction**
15	5	5	10

Note:
(1) Rounded to nearest 5 pcu/hr

2.3 Existing Pedestrian Network

2.3.1 The current provision for pedestrian access to the subject development is primarily facilitated by roadside footpaths and pedestrian crossings leading to major public transportation facilities, as shown in **MMH/CE/TO4/PTTIA/FIG/2.2**.

2.3.2 For the main pedestrian access to the public transport facilities on Tai Chung Kiu Road, roadside footpaths are provided on both sides of Tai Chung Kiu Road and On Sum Street and sufficient pedestrian crossings is provided between the corresponded roadside footpaths. **Figure MMH/CE/TO4/PTTIA/FIG/2.2** shows the assessed walkways, pedestrian crossing and pedestrian crossing waiting area and they are also listed in **Table 2.3.1, Table 2.3.2** and **Table 2.3.3** respectively.

Table 2.3.1: Location of Surveyed Walkway

Index	Walkway Location
P1	Eastern footpath of On Sum Street
P2	Southern footpath of Tai Chung Kiu Road
P3	Northern footpath of Tai Chung Kiu Road
P4	Western footpath of On Sum Street

Table 2.3.2: Location of Surveyed Pedestrian Crossing

Index	Pedestrian Crossing Location
C1 & C2	On Sum Street
C3	Tai Chung Kiu Road

Table 2.3.3: Location of Surveyed Pedestrian Crossing Waiting Area

Junction	Index	Location of Pedestrian Crossing Waiting Area
J3	A1	Tai Chung Kiu Road / On Sum Street

2.3.3 Pedestrian counts on some existing pedestrian footpath, crossings and wait areas that are likely to be affected by the developments had been carried out. Their existing capacities had been assessed by means of Level of Services (LOS) in the Highway Capacity Manual

(HCM-version 2000) Exhibit 18-3 and Exhibit 18-7. Based on Transport Planning and Design Manual Volume 6 Section 10, a brief description of the LOS conditions is reproduced in **Table 2.3.4** and **Table 2.3.5** below.

Table 2.3.4: Definition of Level of Service (LOS) for Pedestrian Walkway and Crossings

LOS	Ped. Flow Rate (ped/min/m)	Ped. Space (m^2/person)	Description
A	<=16	>=5.6	Pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.
B	16-23	3.7 – 5.6	Sufficient space is provided for pedestrians to freely select their walking speeds, to bypass other pedestrians and to avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians and to respond to their presence in the selection of walking paths.
C	23-33	2.2 – 3.7	Sufficient space is available to select normal walking speeds and to bypass other pedestrians primarily in unidirectional stream. Where reverse direction or crossing movement exit, minor conflicts will occur, and speed and volume will be somewhat lower.
D	33-49	1.4 – 2.2	Freedom to select individual walking speeds and bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflicts is high, and its avoidance requires changes of speeds and position. The LOS provides reasonable fluid flow; however considerable friction and interactions between pedestrians are likely to occur.
E	49-75	0.75 – 1.4	Virtually, all pedestrians would have their normal walking speeds restricted. At the lower range of this LOS, forward movement is possible only be shuffling. Space is insufficient to pass over slower pedestrians. Cross-and reverse-movement are possible only with extreme difficulties. Design volumes approach the limit of walking capacity with resulting stoppages and interruptions to flow.
F	>75	<0.75	Walking speeds are severely restricted. Forward progress is made only by shuffling. There are frequent and unavoidable conflicts with other pedestrians. Cross-and reverse-movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristics of queued pedestrians than of moving pedestrian streams.

Table 2.3.5: Definition of Level of Service (LOS) for Pedestrian Wait Area

LOS	Space (m^2/person)	Description
A	>1.2	Standing and free circulation through the queuing area is possible without disturbing others within the queue.
B	>0.9-1.2	Standing and partially restricted circulation to avoid disturbing others in the queue is possible.

LOS	Space (m^2/person)	Description
C	>0.6-0.9	Standing and restricted circulation through the queuing area by disturbing others in the queue is possible; this density is within the range of personal comfort.
D	>0.3-0.6	Standing without touching is possible: circulation is severely restricted within the queue and forward movement is only possible as a group; long-term waiting at this density is uncomfortable.
E	>0.2-0.3	Standing in physical contact with others is unavoidable; circulation in the queue is not possible; queuing can only be sustained for a short period without serious discomfort.
F	<=0.2	Virtually all persons within the queue are standing in direct physical contact with others; this density is extremely uncomfortable; no movement is possible in the queue; there is potential for panic in large crowds at this density.

2.3.4 Pedestrian surveys at the assessed footpaths/walkways, signalised crossings and wait area were conducted on 4 December 2025 during the morning peak period from 07:00 to 09:00. The peak hour was identified as 07:30 to 08:30. The survey results, as summarised in **Tables 2.3.6 to 2.3.8**, indicate that all assessed pedestrian facilities are currently operating at Level of Service (LOS) "A".

Table 2.3.6 Pedestrian Link Performance during Existing Year 2025

Critical Section	Total Footpath Width (m)	Effective Width (m)(1)	Observed Scenario (2025)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/15-min)(2)	Two-way Pedestrian Flow Rate (ped/min/m) (3)	LOS	Two-way Pedestrian Flow (ped/min)	Two-way Pedestrian Flow Rate (ped/min/m) (3)	LOS
P1	3.4	2.4	15	0.4	A	10	0.3	A
P2	3.5	2.5	75	2.0	A	30	0.8	A
P3	3	2	70	2.3	A	55	1.8	A
P4	3	2	25	0.8	A	10	0.3	A

Note:
(1) LOS has been calculated based on effective width, by generally assuming 0.5m lateral clearance on both sides of clear width.
(2) Rounded to nearest 5 for clarity.
(3) Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow (ped/hr) / 60 min / Effective Width.

Table 2.3.7 Assessment of Signalised Crossings for Existing Year 2025

Junction	Crossing Facility Number	AM Flow	PM Flow	Width (m)	Pedestrian Space (LOS) (1) (AM)	Pedestrian Space (LOS) (1) (PM)
J3	C1	60	35	2.4	A (Pedestrian Space = 45.6 m^2 / Ped)	A (Pedestrian Space = 78.1 m^2 / Ped)
	C2	60	35	3.9	A (Pedestrian Space = 244.4 m^2 / Ped)	A (Pedestrian Space = 419 m^2 / Ped)
	C3	360	155	5.3	A (Pedestrian Space = 16.7 m^2 / Ped)	A (Pedestrian Space = 38.9 m^2 / Ped)

Note:
(1) The detailed calculation of the pedestrian spaces is enclosed in **Appendix E**

Table 2.3.8 Assessment of Wait Area for Existing Year 2025

Junction	Wait Area	Effective Dimension	AM Peak		PM Peak	
			Space (m^2/person)	LOS	Space (m^2/person)	LOS
J3	A1	1.5m x 8.7m	12.05	A	20.08	A

2.3.5 According to the results of the assessment listed in **Table 2.3.6, Table 2.3.7** and **Table 2.3.8**, all the current pedestrian footpaths, signalized crossings and pedestrian wait areas are currently operating within their capacity.

2.4 Public Transport (PT) Facilities

2.4.1 The existing PT facilities and services serving the vicinity are indicating in **Figure MMH/CE/TO1/PTTIA/FIG/2.3.** The future residents of the development and social welfare facilities users are likely to use the bus stop on Tai Chung Kiu Road. Some of the residents or facilities users may use the nearby Shek Mun Station or other stations through feeder bus services.

2.4.2 **Table 2.4.1** provides an inventory on the public transport services available to the development site.

Table 2.4.1: Existing Public Transport Services

Route	Starting Point	Terminating Point	Service Period	Frequency at Peak Hour (Minutes / Departure Time)
Franchised Bus Service				
38B	Shek Mun Estate	Tsuen Wan (Riviera Gardens)	AM PM Peak Service	07:45
40X	Wu Kai Sha Station	Kwai Chung Estate	Full Day	10 -15
43S	Hong Kong Science Park	Shek Yam	AM PM Peak Service	07:50

Route	Starting Point	Terminating Point	Service Period	Frequency at Peak Hour (Minutes / Departure Time)
43X	Yiu On	Tsuen Wan West Station	Full Day	15 – 20
81C	Yiu On	Tsim Sha Tsui East (Mody Road)	Full Day	15 – 20
82C	Hong Kong Science Park	Kwong Yuen	AM PM Peak Service	10 – 20
82X	Ravana Garden	Wong Tai Sin (Circular)	Full Day	15 – 20
84M	Chevalier Garden	Lok Fu	Full Day	25 – 28
85K	Heng On	Sha Tin Station	Full Day	20 – 25
85X	Ma On Shan Town Centre	Hung Hom (Hung Luen Road)	Full Day	18 – 20
86C	Lee On	Cheung Sha Wan	Full Day	25 – 30
86K	Kam Ying Court	Shatin Station	Full Day	11 – 15
86S	Kam Ying Court	Shatin Station	AM PM Peak Service	10 – 20
87D	Kam Ying Court	Hung Hom Station	Full Day	17 – 18
89C	Heng On	Kwun Tong (Tsui Ping Road)	Full Day	25
263A	Hong Kong Science Park	Tuen Mun Station	AM PM Peak Service	10
281B	Shek Mun Estate	Tsim Sha Tsui East (Mody Road)	AM PM Peak Service	20 – 30
284	Shatin Central	Ravana Garden (Circular)	Full Day	15 – 20
286C	Lee On	Cheung Sha Wan (Hoi Tat Estate)	Full Day	20
289R	Wong Shek Pier	Shatin Central	Weekend Service	30
299X	Sai Kung	Shatin Central	Full Day	20
680	Lee On	Admiralty Station (East)	Full Day	18 – 22
980A	Shek Mun Estate	Wan Chai (Fleming Road)	AM PM Peak Service	10
A41P	Wu Kai Sha Station	Airport (GTC)	Full Day	30 – 35
N281	Kam Ying Court	Hung Hom Station	Overnight Service	25 – 30
N680	Kam Ying Court	Central (Macau Ferry)	Overnight Service	20 – 30

Route	Starting Point	Terminating Point	Service Period	Frequency at Peak Hour (Minutes / Departure Time)
NA40	Wu Kai Sha Station	HZMB Hong Kong Port	Overnight Service	10 – 20
N42	Yiu On	Tung Chung Station	Overnight Service	60
B8	Tai Wai Station	Heung Yuen Wai Port	Full Day	10 – 15
682	Wu Kai Sha Station	Chai Wan (East)	Full Day	20 – 25
Green Minibus Services				
67K	A Kung Kok	Sha Tin Station	Full Day	10 – 20
803	Lee On Estate	Hin Keng Estate	Full Day	5 – 15
806A	Wan Tau Tong	Wong Nai Tau	Full Day	12 – 20
806B	Wan Tau Tong	Shek Mun Estate	Full Day	15 – 20
806X	Wan Tau Tong	Wong Nai Tau	Full Day	30
810	Villa Athena	Sha Tin Town Centre	Full Day	6 – 15
810A	Whitehead	Sha Tin Town Centre	AM PM Peak Service	30
811B	Yiu On Estate	Fo Tan Industrial Area	AM PM Peak Service	10 – 20
811S	Yiu On Estate	Sui Wo Court	Full Day	20 – 30

2.4.3 Besides, observations were carried out at the major bus stops likely to be utilized by future residents of the proposed development. Based on our on-site observations, the bus routes mentioned above were found to be not crowded and were operating with sufficient spare capacity, indicating that they can accommodate additional passenger demand from the future development.

2.5 Existing Parking Facilities

2.5.1 The vicinity of the Site offers several public parking options, as listed in **Table 2.5.1**. The location of these parking sites is shown in **Figure MMH/CE/TO4/PTTIA/FIG/3.3**. These parking facilities are conveniently situated within walking distance from both Sites. A parking survey was conducted on 4 December 2025 and 5 March 2026 for the parking facilities within a typically 300-m radius of the study area, as described in **Section 5.3**.

Table 2.5.1: Existing Parking Within the Vicinity

Name	Private Cars	Light Goods Vehicle	Medium & Heavy Goods Vehicle	Motorcycle
Provision of Parking Spaces at STTL626:				
On Ping Street STT Carpark (STTL626)	93	49	61	-
Provision of Parking Spaces in other carparks:				
On Lai Street STT Carpark (ST 2067)	123	-	-	-
On Sum Street On-Street Motorcycle Parking Spaces	-	-	-	20
On Ping Street & On Lai Street Nighttime On-Street Parking	-	-	27	-
Grandtech Centre	-	-	77	-
Total number of spaces in other carparks:	**123**	-	**104**	**20**

2.5.2 The operating hours of the assessed car parks are summarised in **Table 2.5.2**. Further assessment results will be stated in **Section 5.3**.

Table 2.5.2: Operating Hours of Existing Parking within the vicinity

Name	Operating Hours
On Ping Street STT Carpark (STTL626)	24 Hours
On Lai Street STT Carpark (ST 2067)	24 Hours
On Sum Street On-Street Motorcycle Parking Spaces	24 Hours
On Ping Street & On Lai Street Nighttime On-Street Parking	21:00 – 07:00

2.5.3 The assessed parking facilities include both 24-hour car parks and time-restricted parking facilities. Accordingly, the parking assessment considers parking conditions during both daytime and nighttime periods, considering car parks operating throughout the day as well as nighttime on-street parking spaces available along On Ping Street and On Sum Street.

3 THE PROPOSED DEVELOPMENT

3.1 Proposed Development Parameters

3.1.1 The development parameters of the proposed development are listed in **Table 3.1.1.**

Table 3.1.1 Development Parameter of Proposed Development of Both Sites for TTIA

Item	Development Parameters (1)	
	STTL626	STTL627
Private Housing	962 flats	494 flats
Site Area	0.80 ha	0.41 ha
GFA for Retail	1,603 m^2	823 m^2
Flat Size	50 m^2 (60 m^2 adopted for conservative approach assessment)	
Social Welfare Facilities (2)	Nil.	Integrated Children & Youth Services Centre Sub-Base
Target Population Intake Date	2032	2032

Note:
(1) The development parameters are based on the target design parameters in **Table 1.1** and the latest optimal scheme.
(2) According to information provided by SWD.

3.2 Pedestrian Access Arrangement

3.2.1 The existing pedestrian footpaths along Tai Chung Kiu Road and On Sum Street provide adequate access to the Site. The footpath widths are approximately 3.0 m on the north side and 3.5 m on the south side of Tai Chung Kiu Road, as well as 3.0 m on the west side and 3.4 m on the east side of On Sum Street. These footpaths connect to the bus stops along Tai Chung Kiu Road, facilitating pedestrian access to public transport services serving other districts. Detailed pedestrian assessment will be presented in **Section 6**.

3.3 Internal Parking Facilities

3.3.1 Reference was made to Chapter 8 of HKPSG loading/unloading requirements. The proposed provision of parking facilities for the private housing development is shown in **Table 3.3.1** for Site STTL626**, Table 3.3.2** for STTL627 and **Table 3.3.3** as a summary. The parking facilities that will be provided, and the number of storeys of the parking facilities, will be subject to the detailed layout from the developer at a later stage.

Table 3.3.1 Proposed Parking and Load/Unloading Provision for Site STTL626

Facilities	HKPSG Standard (1)				Proposed Provision
Private Housing Development					
Private Car Parking	Parking Requirement for Private Car = GPS x R1 x R2 x R3				149 - 260
	Global Parking Standard (GPS)			1 car space per 4 -7 flat	
	Demand Adjustment Ratio (R1)	Flat Size (FS) (m^2) (GFA)	FS<=40	0.5	
			40<= FS <=70	**1.2**	
			70<= FS <=100	2.4	
			100 < FS <=130	4.1	
			130 < FS <=160	5.5	
			FS >160	7	
	Accessibility Adjustment Ratio (R2)	Within a 500-m radius of rail station		0.75	
		Outside a 500-m radius of rail station		**1**	
	Development Intensity Adjustment Ratio (R3)	Domestic Intensity Plot Ratio (PR)	0.00< PR <=1.00	1.3	
			1.00< PR <=2.00	1.1	
			2.00< PR <=5.00	1	
			5.00< PR <=8.00	**0.9**	
			PR>8.00	0.75	
Visitor Parking (2)	5 visitors' spaces per block				15
Loading/Unloading Bay (2)	Minimum of 1 loading/unloading bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay for each housing block or as determined by the Authority.				3
Motorcycle Parking Space	1 per 100-150 Flats (An additional 25% is allocated on top of the HKPSG required provision for motorcycle parking space.)				7 - 10 (9 - 13)
Bicycle Parking Space	within a 0.5-2km radius of a rail station, 1 per 15 flats with flat size <70m2				65
Non-Domestic					
Private Car Parking	1 car space per 150 - 300m² GFA.				6 - 11
Loading/Unloading Bay	1 loading/ unloading bay for goods vehicles for every 800 to 1 200m², or part thereof, GFA.				2 - 3
Motorcycle Parking Space	Additional parking spaces at the rate of 5 to 10% of the total provision for private cars				1 - 2

Notes:
(1) Parking Requirement According HKPSG Standard 2021 Vol. 8. for parking in private housing development.
(2) Subject to change according to the layout plan proposed in optimal scheme.

Table 3.3.2 Proposed Parking and Load/Unloading Provision for Site STTL627

Facilities	HKPSG Standard (1)				Proposed Provision
Private Housing Development					
Private Car Parking	Parking Requirement for Private Car = GPS x R1 x R2 x R3				58 - 101
	Global Parking Standard (GPS)			1 car space per 4 -7 flat	
	Demand Adjustment Ratio (R1)	Flat Size (FS) (m2) (GFA)	FS<=40	0.5	
			40<= FS <=70	1.2	
			70<= FS <=100	2.4	
			100 < FS <=130	4.1	
			130 < FS <=160	5.5	
			FS >160	7	
	Accessibility Adjustment Ratio (R2)	Within a 500-m radius of rail station		0.75	
		Outside a 500-m radius of rail station		1	
	Development Intensity Adjustment Ratio (R3)	Domestic Intensity Plot Ratio (PR)	0.00< PR <=1.00	1.3	
			1.00< PR <=2.00	1.1	
			2.00< PR <=5.00	1	
			5.00< PR <=8.00	0.9	
			PR>8.00	0.75	
Visitor Parking (2)	5 visitors' spaces per block				10
Loading/Unloading Bay (2)	Minimum of 1 loading/unloading bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay for each housing block or as determined by the Authority.				2
Motorcycle Parking Space	1 per 100-150 Flats (An additional 25% is allocated on top of the HKPSG required provision for motorcycle parking space.)				4 - 5 (5 - 7)
Bicycle Parking Space	within a 0.5-2km radius of a rail station, 1 per 15 flats with flat size <70m^2				33
Non-Domestic					
Private Car Parking	1 car space per 150 - 300m² GFA.				3 - 6
Loading/Unloading Bay	1 loading/ unloading bay for goods vehicles for every 800 to 1 200m², or part thereof, GFA.				1 - 2
Motorcycle Parking Space	Additional parking spaces at the rate of 5 to 10% of the total provision for private cars				1

Notes:
(1) Parking Requirement According HKPSG Standard 2021 Vol. 8. for parking in private housing development.
(2) Subject to change according to the layout plan proposed in optimal scheme.

Table 3.3.3 Summary of Proposed Ancillary Parking and Load/Unloading provision

Type	STTL 626	STTL 627
Ancillary Parking		
Private Car Parking	149 - 260	58 - 101
Visitor Parking	15	10
Loading/Unloading Bay	3	2
Motorcycle Parking	9 - 13	5 - 7
Bicycle Parking	65	33
Private Car Parking (Non-Domestic)	6 - 11	3 - 6
Loading/Unloading Bay (Non-Domestic)	2 - 3	2
Motorcycle Parking (Non-Domestic)	1 - 2	1

4 TRAFFIC FORECASTING METHODLOGY

4.1 Overview

4.1.1 The traffic forecasts of this Study involve development of a Local Area Traffic Model (LATM) based on traffic counts obtained in this Project and the latest planning dataset (2021-based TPEDM) received under this Study, with the necessary adjustments on trip matrices and road network to consider effects of interface projects.

4.1.2 Geographically, this LATM intends to provide traffic forecasts mainly for the Sha Tin / Ma On Shan areas at district and local levels. Traffic forecasts for design years 2036 (i.e. 4 years after population intake at 2032) have been prepared based on well-validated traffic models. The traffic flow of reference and design scenario at Year 2036 are presented in **Appendix A.**

4.2 Base Year Model Development and Model Validation

4.2.1 The traffic impact assessments would be appraised with the aids of the LATM which was developed primarily based on sub-regional traffic model 2019-based BDTM (2024 update) NTE1 Region developed by TD, with project-specific updates as discussed below.

4.2.2 The outline approach to the base year LATM is summarized as follows: -

i) Develop base year road network and initial matrices based on all data available.

ii) Undertake initial network calibration and assignments to check routings and network performance; and

4.2.3 To develop the base year LATM for this Study, the road network within the AOI was updated and refined in more details to ensure the model could provide sufficient detailed turning movement flow for this Study. The LATM's network was checked with the latest traffic aids figures, signal plans as well as site inventory records.

4.2.4 Traffic zones of the LATM were refined and disaggregated with sufficient local details due to the refinement of the road network. The zone disaggregation of the LATM zone system was undertaken by means of population by street block data and employment estimates. Some traffic zones would be reserved for the planned/committed/proposed developments within the study area.

4.2.5 The road network within the AOI was checked and validated against 2025 base year flows to ensure the base year LATM satisfactorily replicated the existing traffic flows and patterns before the model was used to produce design year traffic.

4.2.6 GEH (named after Geoff E. Havers, who developed the formulation) is a measure of the statistical error between the observed flow and modelled flow on a specific link. In addition to providing a general percentage comparison, the GEH is also calculated for analysis of the comparison results. GEH is defined by: -

$$\sqrt{\frac{(V_2 - V_1)^2}{\frac{1}{2}(V_1 + V_2)}}$$

where V_1 and V_2 are observed flow and modelled flow respectively.

4.2.7 Based on the surveyed traffic flows at AM and PM Peaks, the LATM for each peak period had been validated based on the following well-used criteria which are consistent to the practice of development of TD's latest BDTM and hence the recent practice of other district/regional TIA studies. The LATM validation criteria adopted in this study are listed in **Table 4.2.1.**

Table 4.2.1: LATM Validation Criteria Outline

Validation Guideline	Validation Target
Total Screenline Flows	100% within ± 10%
All Count Locations (By entry/exit flows of each junction approach, or by link flows by direction)	GEH 5 or less on 85% of links GEH 10 or less on 100% of links
Screenline Link Flows	85% within ± 10%. 100% within ± 20%

4.2.8 All the model road links and major junctions were validated by successful fulfilling the validation criteria as stipulated in **Table 4.2.1**. The validation is therefore completed satisfactorily. The LATM validation results are summarised in **Table 4.2.2**.

Table 4.2.2: LATM Validation Summary

Validation Criteria	Target	% of Link Flows within Criteria	
		AM	PM
Screenline Link Flows			
% of links within ±10%	85%	100%	97%
% of links within ±20%	100%	100%	100%
All Count Locations - Screenline Link Flows			
% of link within GEH 5 or less	85%	96%	95%
% of link within GEH 10 or less	100%	100%	100%
All Count Locations – Junction Entry/Exit Flows			
% of link within GEH 5 or less	85%	95%	99%
% of link within GEH 10 or less	100%	100%	100%

4.2.9 The validated trip matrices have then been projected to the required design year, based on the matrices development patterns exhibited in BDTM and the population & employment

growths exhibited by the latest 2021-based TPEDM. Zone-to-zone growth factors had been applied to different Origin-Destination (O-D) pairs to achieve this task.

4.2.10 Furthermore, necessary adjustments on the trip matrices and road network had also been made to consider traffic impacts by interfacing projects. See **Section 4.3** below for major assumptions.

4.3 Assessment Scenarios & Major Assumptions for Future Year Model

4.3.1 It is anticipated that the proposed development will be completed in 2032 tentatively with the working population intake. To assess the potential traffic impact assessment, a traffic forecast for the Design Year 2036 (4 years after completion of project) would be adopted as the design year (operation stage) for the TTIA as shown in **Table 4.3.1** below.

Table 4.3.1 Modelling Scenarios

Year	Scenario Description	
2025	Base Case	2025 traffic demand on the existing road network
2036	Reference Case	2036 background traffic flow + traffic demand from other completed/ planned development in the vicinity
	Design Case	2036 Reference Case + traffic demand induced by the subject development

4.3.2 The LATM has also included the following strategic highway network assumptions as listed in **Table 4.3.2**.

Table 4.3.2 List of Strategic Highway Network Assumption in 2031

Road Network Assumption	Configuration
Route 6 (formerly Route 11) - Trunk Road T2 (Kai Tak - Cha Kwo Ling Link)	Dual 2
Improvement to Fan Kam Road	Single 2
Widening of Gascoigne Road Flyover	Dual 2
Dualling of Hiram's Highway between Marina Cove and Sai Kung Town	Dual 2 / Single 4 / Single 2 (1)
Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road	Single Lane Slip Road
Improvement works at Tsuen Tsing Interchange	Single Lane Slip Road
Widening of Fanling Highway between Pak Shek Au Interchange and Po Shek Wu Interchange	Dual 4
Improvement to So Kwun Po Interchange	Single 2
Improvement to Po Shek Wu interchange	Single Lane Slip Road
Lantau Road P1 between Sham Shui Kok and Yam O	Dual 2
Upgrading of Deep Bay Road	Single 2
Extension Works to Major Roads in Tuen Mun	Single Lane Slip Road
Nim Wan Road (South)	Single 2
Upgrading of Nim Wan Road (North)	Single 2
Upgrading of Remaining Sections of Kam Tin Road and Lam Kam Road	Single 2
Widening of T6 Bridge of Tate's Cairn Highway	Dual 3
Fanling Bypass	Dual 2
Trunk Road T4 and Associated Works	Dual 2
Road P2, D2 and D3 in Kwu Tung North New Development Area	Dual 2 / Single 2 (1)

Note:
(1) The configuration of these proposed highways varies at different sections of the road.

Table 4.3.3 List of Strategic Highway Network Assumption in 2036

Road Network Assumption	Configuration
Tuen Mun Bypass (TMB)	Dual 2
Widening of Tsuen Wan Road and the Associated Junction Improvement Works	Dual 4 / Dual 5 (1)
Improvement of Lion Rock Tunnel	Dual 3
Route 11 (section between Yuen Long and North Lantau)	Dual 2 / Dual 3 / Dual 4 (1)
Tsing Yi - Lantau Link	Dual 3
Widening of Yuen Long Highway (section between Lam Tei and Tong Yan San Tsuen)	Dual 4
Northern Metropolis Highway - San Tin Section	Dual 2 / Dual 3
Hong Kong Island West-Northeast Lantau Link	Dual 2 / Dual 3 / Dual 4 (1)

Notes:
(1) The configuration of these proposed highways varies at different sections of the road.

4.3.3 In addition, with reference to the underlying assumptions in TPEDM and BDTM, the following development had been incorporated in the LATM as appropriate.

- STTL 576 - Comprehensive Development at Nos. 1-11 Au Pui Wan Street, Sha Tin Town Lot No. 576, Fo Tan (Phase 2)
- Private Housing Development on Sha Tin Wai Road, between 15 and 17 Yuen Shun Circuit
- Private Housing Development on Chap Wai Kon Street, adjacent to Siu Lek Yuen Fire Station, Yuen Shun Circuit
- Commercial development between Junction of Yuen Fong Street and Yuen Shun Circuit
- Redevelopment of 2 Yuen Shun Circuit, Yuen Chau Kok, Sha Tin
- Redevelopment of Prince of Wales Hospital project and Modification and Upgrading of Sha Tin Transfer Station project.
- Proposed Public Housing Development to the West of Ex-Fo Tan Cottage Area

4.3.4 The location of the proposed developments is shown in **Figure MMH/CE/TO4/PTTIA/FIG/3.4**.

4.3.5 Due to the Redevelopment of Prince of Wales Hospital project, the induced traffic by the redevelopment has been considered. The trip rates adopted for the redevelopment are based on referenced traffic flows at existing Prince of Wales Hospital. **Table 4.3.4** to **4.3.6** presented the referenced data, trip rate and the traffic induced by the redevelopment.

Table 4.3.4 Referenced Data at Existing Prince of Wales Hospital

Development	Parameter	AM		PM	
		Gen.	Att.	Gen.	Att.
Existing Prince of Wales Hospital	1,600 beds	273	525	527	340

Table 4.3.5 Adopted Trip Rate

Development Type	Unit	AM		PM	
		Gen.	Att.	Gen.	Att.
Hospital	pcu/bed	0.171	0.328	0.329	0.213

4.3.6 **Table 4.3.4** and **4.3.5** above presented the derivation of the trip rate adopted for the redevelopment. **Table 4.3.6** presented the additional traffic induced by the redevelopment, which has been incorporated in the LATM.

Table 4.3.6 Trip Generation by Redevelopment of Prince of Wales Hospital

Parameters	AM Generation	AM Attraction	PM Generation	PM Attraction
	(pcu/hr) (1)			
~700 beds (2)	120	230	230	150

Note:
(1) Rounded to nearest 5 pcu/hr
(2) Additional beds derived from the increase in bed provision from 1,600 beds (existing PWH as stated in **Table 4.3.4**) to approximately 2,300 beds after redevelopment according to information in public domain.

5 VEHICULAR TRAFFIC IMPACT ASSESSMENT

5.1 Development Parameters and Traffic Generation for Vehicular Traffic Impact Assessment

5.1.1 Based on the latest planning assumptions, the proposed development layout and the results of various technical assessments, it is estimated that the two sites would provide a total of 1,456 residential units, as stated in **Section 3.1**. This is lower than the development assumptions adopted in this assessment, which are based on 1,400 flats (i.e. 1,540 flats with 10% design buffer). As such, the assessment assumptions are considered conservative. The assessment results are therefore expected to represent a robust evaluation of the traffic impacts arising from the ultimate development.

5.1.2 The development parameters adopted for TTIA are listed in **Table 5.1.1.**

Table 5.1.1 Development Parameter for TTIA

Item	Development Parameters	
	STTL626	STTL627
Private Housing (1)	1,000 flats	410 flats
GFA for Retail	1,603 m^2	823 m^2
Flat Size	50 m^2 (60 m^2 adopted for conservative approach assessment)	

Note:
(1) The development parameters adopted are based on the Study Brief of the subject task order, which are supplemented in **Appendix C**.

5.1.3 The amount of trip generation from/attracted to the proposed housing development was calculated based on "Table 1: Traffic Rates for Residential Developments at 95% Confidence Level" in Annex C, Vol. 1 of the Transport Planning and Design Manual (TPDM).

5.1.4 Social Welfare facilities are mainly serving the residents in the vicinity, and these facilities would only induce minimal trips during peak hours. Therefore, 10% of traffic generation of private housing is considered. Based on the above, the adopted rate and associated trips of proposed housing development are shown in **Table 3.1.2** and **Table 3.1.3** respectively.

Table 5.1.2 Adopted Trip Rates

Development Type	Unit	AM		PM	
		Gen.	Att.	Gen.	Att.
Private Housing: (Average Flat Size: 60m^2)	pcu/hr/flat	0.0718	0.0425	0.0286	0.0370

Table 5.1.3 Trip Generation by Site STTL626 & STTL627

Site	Development Type	Estimated Flat No.	AM Generation	AM Attraction	PM Generation	PM Attraction
			(pcu/hr)			
STTL626	Private Housing (1)	1,000 (i.e. 1,100 with 10% buffer)	80	50	35	45
STTL627		410 (i.e. 451 with 10% buffer)	35	20	15	20
Other Facilities (2)			10	5	5	5
Total			125	75	55	70

Notes:
(1) Assumed additional of 10% traffic generations for conservative approach.
(2) Other facilities consider a 5% of additional traffic generation for social welfare and commercial facilities.
(3) Rounded to the nearest 5 for clarity.

5.2 Traffic Impact Assessment for Design Year 2036 (Operation Stage)

Junction Capacity Assessment

5.2.1 Junction capacity assessments were undertaken at the critical junctions in the vicinity based on the two scenarios indicated in **Section 4.3**, and the results are summarised in **Table 5.2.1**. The flow diagram and detailed calculation are shown in **Appendix A** and **D** respectively.

Table 5.2.1 2036 Design Year Junction Performance

Index	Junction	Junction Type	R.C. / DFC (1)			
			2036 Reference		2036 Design	
			AM	PM	AM	PM
J1	Shek Mun Interchange	Roundabout	0.82	0.57	0.84	0.57
J2	On Sum Street / On Ping Street	Signalised	84%	74%	57%	62%
J3	Tai Chung Kiu Road / On Sum Street	Signalised	38%	78%	29%	67%
J4	On Lai Street / On Ping Street	Signalised	>100%	>100%	>100%	>100%
J5 (2)	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	20%	42%	16%	38%
J6	Tai Chung Kiu Road / Siu Lek Yuen Road	Signalised	38%	60%	33%	51%
J7 (2)	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	23%	41%	21%	39%
J8	Fo Tan Road / Yuen Wo Road	Signalised	36%	57%	35%	56%
J9	On Lai Street / On Sum Street	Signalised	58%	59%	58%	59%

Index	Junction	Junction Type	R.C. / DFC (1)			
			2036 Reference		2036 Design	
			AM	PM	AM	PM
J10	On Lai Street / On Kwan Street	Signalised	>100%	>100%	>100%	>100%
J11	On Yiu Street / On Kwan Street	Priority	0.15	0.27	0.15	0.27
J12	On Ming Street / On Muk Street	Signalised	>100%	>100%	>100%	>100%
J13	On Ming Street / On Yiu Street / On Muk Street	Roundabout	0.24	0.17	0.24	0.17

Notes:
(1) Figures shown represent "Reserve Capacity" (RC) for the signal-controlled junctions and "Design Flow / Capacity"(DFC) ratio for the roundabout.
(2) The junction performance of J5 and J7 has included the latest improvement schemes. The details of the improvement schemes are attached in **Appendix B**.

5.2.2 The results in **Table 5.2.1** show that majority of the assessed junctions would be operating satisfactorily with spare capacity during both AM and PM peak hours.

5.2.3 It is noted that the improvement works associated with the J5 scheme have not yet been implemented in the 2025 base year condition. Nevertheless, these planned improvement measures have been incorporated into the subsequent assessment scenarios to reflect the latest planned traffic arrangement by others. The layout of the improvement scheme and performance before improvement scheme is attached to **Appendix B** for reference.

5.2.4 The J5 improvement scheme introduces an additional westbound right-turn movement from Tai Chung Kiu Road into On King Street. As a result, westbound traffic on Tai Chung Kiu Road would no longer need to divert via On Lai Street and On Sum Street before reaching On King Street. Thus, reducing unnecessary circulation through the intermediate junctions. The works for the J5 improvement scheme is undertaken by HyD.

5.2.5 The J7 improvement scheme widens Fo Tan Road in the southbound direction towards Sha Tin Road from two lanes to three lanes, with the objective of enhancing traffic capacity and improving traffic flow along the corridor. The works agent for the J7 improvement scheme to be confirmed.

5.2.6 The junction performance at J5 and J7 with and without planned improvement schemes are shown in **Table 5.2.2** below.

Table 5.2.2 Junction Performance for Year 2036 with and without Planned Improvement Schemes

Index	Junction	Junction Type	R.C. / DFC (1)			
			2036 Reference		2036 Design	
			AM	PM	AM	PM
Without Planned Improvement Scheme						
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	10%	40%	5%	35%
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	16%	32%	14%	30%
With Planned Improvement Scheme						
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	20%	42%	16%	38%
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	23%	41%	21%	39%

Notes:
(1) Figures shown represent "Reserve Capacity" (RC) for the signal-controlled junctions and "Design Flow / Capacity"(DFC) ratio for the roundabout.

5.2.7 Road link capacity assessment has also been carried out to examine the V/C ratio of the assessed road links based on the two scenarios indicated in **Section 4.3**. Results of road link assessment are shown in **Table 5.2.3** below.

Table 5.2.3 2036 Design Year Road Link Performance

Index	Dir.	Capacity (pcu/hr) (1)	2036 Reference Case		2036 Design Case		2036 Reference Case		2036 Design Case	
			Flow		Flow		V/C		V/C	
			AM	PM	AM	PM	AM	PM	AM	PM
L1	EB	5,250	980	1,160	1,040	1,235	0.19	0.22	0.20	0.24
	WB		2,165	1,260	2,285	1,305	0.41	0.24	0.44	0.25
L2	NB	5,600	1,750	1,450	1,795	1,470	0.31	0.26	0.32	0.26
	SB		1,685	1,435	1,715	1,460	0.30	0.26	0.31	0.26

Note:
(1) The capacity of road sections was determined by considering the number of lanes, road type, frontages and PCU factors, which is compatible with the definition adopted in the TD's ECTS Model as per the Consultant's knowledge and understanding.

5.2.8 The results in **Table 5.2.3** show that the assessed road links would be operated satisfactory within the capacity.

5.3 Sensitivity Test for J7 at Design Year 2036 (Operation Stage)

5.3.1 It is noted that the planned public housing development at the ex-Cottage Area located at Fo Tan, Sha Tin, as listed in **Section 4.3.3**, is subject to confirmation. With assumptions of 3,104

SSF and associated G/IC facilities, the development is estimated to generate and attract total of 545 pcu/hr during the AM peak hour and total of 419 pcu/hr during the PM peak hour.

5.3.2 A sensitivity test for preliminary forecast of junction performance for J7 without the above-mentioned induced traffic and the corresponding planned junction improvement scheme is carried out. Results of sensitivity test for J7 are shown in **Table 5.3.1** below.

Table 5.3.1 Sensitivity Test of Junction Performance for J7 at Year 2036

Junction Index	Scenario (1)	Junction Type	R.C.	
			2036 Design	
			AM	PM
J7	With Planned Development of Ex-Cottage Area (2)	Signalised	14%	30%
	Without Planned Development of Ex-Cottage Area		22%	39%

Notes:
(1) Induced traffic by the subject sites are incorporated under both scenarios.
(2) Based on figures in **Table 5.1.2.**

5.3.3 The assessment results indicate that the R.C. at Junction J7 during both the AM and PM peak hours would exceed 15% without the induced traffic by ex-Cottage Area and the corresponding planned junction improvement scheme.

5.4 Traffic Impact Assessment during Construction Stage

5.4.1 It is anticipated that the proposed development will be completed by year 2032. To assess the impact of construction traffic on the local road network, year 2032 was adopted for the design year for the construction traffic impact assessment. The construction works for housing development after completion of infrastructure will be also considered in the assessment.

Construction Traffic Generation

5.4.2 To minimise the construction traffic impact, appropriate temporary traffic management measures should be implemented based on the latest "Code of Practice for the Lighting, Signing and Guarding of Road Works". Traffic lanes and footpaths would be maintained throughout various stages of the temporary traffic arrangement in the construction stage. Provision of traffic wardens is also suggested when necessary. The temporary traffic arrangements at all stages should avoid causing impact on public transport service, such as route diversion, temporary re-location, suspension of the bus stop(s) and temporary reduction in traffic lanes. If unavoidable, the bus company should be fully consulted with their agreement.

5.4.3 The total amount of construction traffic generated for both sites are estimated based on the forecasted construction activities during the construction period. The peak volume of construction traffic is mainly delivery trucks. The anticipated construction traffic generation is summarised in **Table 5.4.1**.

Table 5.4.1 Adopted Trip Generation/Attraction for the Delivery Vehicle

Item	Traffic Generation (pcu/hr)	
	Generation	Attraction
Delivery Vehicle (1)	20	20

Note:
(1) Heavy Goods Vehicle with pcu factor of 2.5 adopted.

5.4.4 Considering most of the traffic volume due to construction vehicles of the construction works are minimal. It is planned that most of the demolition/construction materials will go/leave via Tai Chung Kiu Road. The preliminary construction traffic route is shown in **Figure MMH/CE19/TO4/TTIA/FIG/3.2.**

5.4.5 It is preliminary assumed that construction traffic routes are to nearby barging point to shorten the construction traffic route and minimise traffic impact, which subject to further study in detailed design stage.

Junction Performance during Construction Period

5.4.6 The construction traffic generation from the construction activities is insignificant comparing with the trip generation/ attraction induced by the housing development. The assessment results of junctions and road links are tabulated in **Table 5.4.2** to **5.4.4**. The flow diagram and detailed calculation are shown in **Appendix A** and **D** respectively.

Table 5.4.2 Junction Performance for Year 2032

Index	Junction	Method of Control	R.C. / DFC (1)			
			2032 Reference		2032 Construction	
			AM	PM	AM	PM
J1	Shek Mun Interchange	Roundabout	0.81	0.54	0.81	0.55
J2	On Sum Street / On Ping Street	Signalised	85%	77%	80%	72%
J3	Tai Chung Kiu Road / On Sum Street	Signalised	38%	82%	37%	79%
J4	On Lai Street / On Ping Street	Signalised	>100%	>100%	>100%	>100%
J5 (2)	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	21%	45%	20%	44%
J6	Tai Chung Kiu Road / Siu Lek Yuen Road	Signalised	38%	63%	36%	62%
J7 (2)	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	20%	34%	20%	34%
J8	Fo Tan Road / Yuen Wo Road	Signalised	36%	59%	36%	59%
J9	On Lai Street / On Sum Street	Signalised	57%	61%	57%	61%
J10	On Lai Street / On Kwan Street	Signalised	>100%	>100%	>100%	>100%
J11	On Yiu Street / On Kwan Street	Priority	0.15	0.25	0.15	0.25
J12	On Ming Street / On Muk Street	Signalised	>100%	>100%	>100%	>100%
J13	On Ming Street / On Yiu Street / On Muk Street	Roundabout	0.24	0.16	0.24	0.16

Notes:

(1) Figures shown represent "Reserve Capacity" (RC) for the signal-controlled junctions and "Design Flow / Capacity"(DFC) ratio for the roundabout.

(2) The junction performance of J5 and J7 has included the latest improvement schemes. The details of the improvement schemes are attached in **Appendix B**.

Table 5.4.3 Junction Performance for Year 2032 with and without Planned Improvement Schemes

Index	Junction	Junction Type	R.C. / DFC (1)			
			2032 Reference		2032 Design	
			AM	PM	AM	PM
Without Planned Improvement Scheme						
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	10%	43%	10%	42%
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	20%	34%	20%	34%
With Planned Improvement Scheme						

Index	Junction	Junction Type	R.C. / DFC (1)			
			2032 Reference		2032 Design	
			AM	PM	AM	PM
J5	Tai Chung Kiu Road / On Lai Street / On King Street	Signalised	21%	45%	20%	44%
J7	Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	Signalised	27%	44%	27%	44%

Notes:
(1) Figures shown represent "Reserve Capacity" (RC) for the signal-controlled junctions and "Design Flow / Capacity"(DFC) ratio for the roundabout.

Table 5.4.4 2032 Design Year Road Link Performance

Index	Dir.	Capacity (pcu/hr) (1)	2032 Reference Case		2032 Construction Case		2032 Reference Case		2032 Construction Case	
			Flow		Flow		V/C		V/C	
			AM	PM	AM	PM	AM	PM	AM	PM
L1	EB	5,250	975	1,135	985	1,145	0.19	0.22	0.19	0.22
	WB		2,160	1,235	2,170	1,245	0.41	0.24	0.41	0.24
L2	EB	5,600	1,675	1,425	1,675	1,425	0.30	0.25	0.30	0.25
	WB		1,670	1,400	1,670	1,400	0.30	0.25	0.30	0.25

Notes:
(1) The capacity of road sections was determined by considering the number of lanes, road type, frontages and PCU factors, which is compatible with the definition adopted in the TD's ECTS Model as per the Consultant's knowledge and understanding.
(2) The effect of Trunk Road T4 has been incorporated by assumption in the LATM.

5.4.7 In **Table 5.4.2** to **Table 5.4.4**, all the assessed key junctions and road links within the AOI would be operating with spare capacity in 2032 during construction stage, it is anticipated that negligible traffic impact will be induced.

5.5 Impact to the Parking Provision

Parking Survey

5.5.1 The existing public car parks in the vicinity of the site within 300-m catchment is shown in **Figure MMH/CE19/TO4/TTIA/FIG/3.3** and parking survey is conducted on 4 December 2025 and 5 March 2026, and the parking utilization rate of the daytime and night-time survey result is summarised in **Table 5.5.1** and **5.5.2** below.

Table 5.5.1 Observed Occupied Parking Space during daytime

Location	Observed Occupied Parking Space (1) [Observed Occupancy (%)]				
	Private Vehicle	LGV	M/HGV	Motorcycle	Total Occupied Parking Space
Existing Carpark at STTL 626					
Existing STT Car Park	56 [60%]	26 [53%]	39 [61%]	-	121 [59%]
Other Carpark					
On Lai Street STT Parking	63 [51%]	-	-	-	63 [51%]
On Sum Street On-Street Motorcycle Parking Spaces	-	-	-	8 [40%]	8 [40%]
Grandtech Centre	-	-	34 [44%]	-	34 [44%]

Note:
(1) Indicated the maximum number of occupied spaces observed during the survey periods as conservative approach.

Table 5.5.2 Observed Occupied Parking Space during Night-time

Location	Observed Occupied Parking Space (1) [Observed Occupancy (%)]				
	Private Vehicle	LGV	M/HGV	Motorcycle	Total Occupied Parking Space
Existing Carpark at STTL 626					
Existing STT Car Park	68 [73%]	30 [61%]	33 [52%]	-	131 [64%]
Other Carparks					
On Lai Street STT Parking	**78** [63%]	-	-	-	78 [63%]
On Sum Street On-Street Motorcycle Parking Spaces	-	-	-	**12** [60%]	12 [60%]
On Ping Street & On Lai Street Night-time On-Street Parking	-	3 (2) [-]	**6** [22%]	-	6 [22%]
Grandtech Centre	-	-	**35** [45%]	-	35 [45%]

Notes:
(1) Indicated the maximum number of occupied spaces observed during the survey periods as conservative approach.
(2) On Ping Street & On Sum Street Night-time On-Street Parking are for M/HGV only, while other parked vehicles including observed LGVs are considered as illegal parking which are considered in **Table 5.4.4** below.

5.5.2 Overall, the survey results in **Table 5.5.1** and **5.5.2** indicate that there are parking spaces remains available within the vicinity during both daytime and nighttime periods. The remaining parking spaces at other carparks are summarized in **Table 5.5.2a** below.

Table 5.5.2a Summary of Remaining Parking Spaces at Other Carparks

Location	Remaining Parking Space [Capacity – Occupied Parking Space] (1)			
	Private Vehicle	LGV	M/HGV	Motorcycle
On Lai Street STT Parking	45 [123 - 78]	-	-	-
On Sum Street On-Street Motorcycle Parking Spaces	-	-	-	8 [20 - 12]
On Ping Street & On Lai Street Night-time On-Street Parking	-	-	21 [27 - 6]	-
Grandtech Centre	-	-	42 [77 - 35]	-

Notes:
(1) The capacity of carparks refers to **Table 2.5.1**, while the occupied parking spaces refer to peak value among **Table 5.4.1** and **5.4.2** for conservative assessment.

Illegal Parking Survey

5.5.3 In addition to the formal parking survey results presented in **Section 5.5.2**, observations were made on the occurrence of nearby illegal parking during the survey periods. The result of nearby illegal parking is shown in **Table 5.5.3** to **5.5.4a.**

Table 5.5.3 Daytime Illegal Parking Activities within the Vicinity

Location	Private Vehicle	LGV	M/HGV	Motorcycle
On Sum Street	5	4	3	0
On Lai Street	5	5	2	0
On Ping Street	4	4	3	0
On Yiu Street	2	4	3	0
On Kwan Street	3	5	2	0
On Muk Street	6	5	3	0
On Muk Street (Outside HKBU CIE)	2	2	0	0
Total	27	**29**	**16**	0

Table 5.5.4 Night-time Illegal Parking Activities within the Vicinity

Location	Private Vehicle	LGV	M/HGV	Motorcycle
On Sum Street	8	2	6	0
On Lai Street	7	1	2	0
On Ping Street	12	2	2	0
On Yiu Street	8	0	2	0
On Kwan Street	12	5	2	3
On Muk Street	8	0	1	0
On Muk Street (Outside HKBU CIE)	9	2	0	0
Total	**64**	12	15	**3**

Table 5.5.4a Summary of Peak Illegal Parking Activities within the Vicinity

Peak Illegal Parking Activities	Private Vehicle	LGV	M/HGV	Motorcycle
Total	64	29	16	3

5.5.4 As shown in **Tables 5.5.3** to **5.5.4a**, illegal parking activities were observed along On Sum Street, On Lai Street, On Ping Street, On Yiu Street, On Kwan Street and On Muk Street during both daytime and nighttime periods.

Evaluation on Adequacy of Public Vehicle Parking

5.5.5 To further assess the adequacy of public vehicle parking provision within the vicinity, the parking demand and supply were examined based on the peak survey results as shown in **Table 5.5.2a** and **5.5.4a**, as well as reference of Night-time Overall Parking Utilization Rates for STT Sites by District (As at End-2025) for conservative approach.

5.5.6 The adequacy of parking provision is then evaluated by comparing the total parking demand with the future public vehicle parking provision, together with the available vacancy at nearby parking facilities as shown in **Table 5.5.5** and **5.5.6** below.

Table 5.5.5 Summary of Demand for Public Vehicle Parking

Index	Item	Private Vehicle	LGV	M/HGV	Motorcycle
[A]	No. of Parked Vehicles in Existing STT Car Park on Subject Site STTL626 (1)	90	16	45	-
[B]	No. of On-Street Illegal Parking (2)	64	29	16	3
[C]	Total Parking Demand [A]+[B]	**154**	**45**	**61**	**3**
[D]	Vacancy of On Lai Street STT Parking (3)	45	-	-	-
[E]	Vacancy of On Sum Street On-Street Motorcycle Parking (3)	-	-	-	8
[F]	Vacancy of On Ping Street and On Lai Street Night-time On-Street Parking (3)	-	-	21	-
[G]	Vacancy of Grandtech Centre (3)	-	-	42	-
[H]	No. of Parking Spaces Required [C]-[D]-[E]-[F]-[G]	**109**	**45**	**0**	**0**

Note:
(1) Reference made to Night-time Overall Parking Utilization Rates for STT Sites by District (As at End-2025) provided by TD.
(2) Refer to Table 5.4.4a.
(3) Refer to Table 5.4.2a.

Table 5.5.6 Summary of Public Vehicle Park (PVP) Provision

Item	Private Vehicle (1)	LGV (1)	M/HGV	Motorcycle
Future provision of public vehicle parking	110	45	-	15

Note:
(1) Rounded to 5 for clarity.

5.5.7 Based on the assessment of public vehicle parking demand and provision as summarised in **Table 5.5.5** and **5.5.6**, and having regard to the actual parked vehicles on night-time survey data provided by TD and subsequent closure of the existing STT car park at the subject site (STTL626), it is recommended that a total provision of 110 private vehicle parking spaces, 45 LGV parking spaces and 15 motorcycle parking spaces can be provided. The recommended provision is considered adequate to cater for the assessed demand of private vehicles and LGVs within the vicinity.

5.5.8 The provision of 15 motorcycle public vehicle parking spaces, representing approximately 10% of the total private car parking provision, is proposed in response to the rapid growth in newly registered motorcycles in the post-pandemic period. This level of provision is considered appropriate to meet the rising demand for motorcycle parking within the Shek Mun area.

5.5.9 For M/HGVs and coaches, the provision is not feasible due to insufficient site area. Hence, it is not suggested to provide parking for M/HGV and coaches within the site. It is observed that there are parking spaces with available vacancy within the vicinity based on **Table 5.5.5**, and the assessed demand could be absorbed by nearby other private parking facilities.

5.5.10 The need and arrangement for any reprovision of these parking spaces will be subject to the agreement and decision of the relevant authorities.

6 PEDESTRIAN IMPACTS ASSESSMENTS

6.1 Major Pedestrian Routings

6.1.1 As mentioned in **Section 3**, the site is in a walkable distance to Tai Chung Kiu Road bus stop for public transport to various destinations. The major pedestrian routing to the nearest bus stops is shown in **Figure MMH/CE/TO4/PTTIA/FIG 2.2**.

6.2 Development Pedestrian Forecasts

6.2.1 The pedestrian generation and attraction rates (in pedestrian/flat/hr) adopted according to the surveyed pedestrian flows for private housing development and retail in Sha Tin, which are summarized in **Table 6.2.1**. The adopted trip generation rates for private housing development and retail are also summarized in **Table 6.2.2**.

Table 6.2.1: Pedestrian Flow Survey for Trip Generation Rate

Development	Type	Development Parameters	Trip Rate Unit	AM Peak		PM Peak	
				Gen.	Att.	Gen.	Att.
Ravana Garden	Residential	1,147 flats	Ped/hr/flat	**0.75**	**0.31**	**0.29**	0.47
Garden Vista	Residential	840 flats	Ped/hr/flat	0.69	0.23	0.28	**0.52**
Fortune City One	Retail	38,505m^2 GFA	Ped/hr/100 m^2	**0.45**	**1.92**	**1.23**	**1.41**

Table 6.2.2: Adopted Trip Generation Rate

Development Type	Unit	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Private Housing	Ped/hr/flat	0.75	0.31	0.29	**0.75** (1)
Retail	Ped/Hr/100 m^2	0.45	1.92	1.23	1.41

Note:
(1) Trip Generation Rate of PM Peak adopted the same rate as AM Peak for conservative approach.

6.2.2 The pedestrian flows generated to/from the sites, as indicated in **Table 6.2.3** below.

Table 6.2.3: Pedestrian Trip Generation to/from Site STTL626 and STTL627

Development Type	No. of Flats / Area	Unit	AM Peak (1)		PM Peak (1)	
			Generation	Attraction	Generation	Attraction
Private Housing	1,410 Flats	Ped/hr	1055	430	400	1050
Retail	2,426m^2	Ped/hr	10	45	30	35
Private Housing with 10% Design Buffer			1160	475	440	1155
Retail with 10% Design Buffer			10	50	35	40
Total			1170	525	475	1195

Note:

(2) Rounded to 5 for clarity.

6.2.3 For public transport (PT) trip rate, with reference to the modal split assumptions adopted modal split from population data of the adjacent area, as surveyed by the Census & Statistics Department 2021. It is approximately estimated that the pedestrian modal splits for the Site would be as **Table 6.2.4** below:

Table 6.2.4: Modal Split for Sha Tin District

Year		Working Population with Fixed Place of Work and Study in Hong Kong(1)				
		Number of Persons				
		2021				
Main Mode of Transport to Place of Work or Study(2)		Mass Transit Railway (Local line)	Bus	On Foot Only	Public Light Bus	Total
District Council District	Place of Work or Study					
Sha Tin	Work in the same district	18 774	15 717	39 065	8 821	82 377
	Work in another district (Hong Kong Island)	28 940	18 274	-	594	47 808
	Work in another district (Kowloon)	57 340	30 517	-	892	88 749
	Work in another district (New Towns)	30 870	22 995	4 459	6 943	65 267
	Work in another district (Other areas in the New Territories)	4 314	5 277	154	494	10 239
	Sub-Total	140 238	92 780	43 678	17 744	294 440
	Percentage (3)	**48%**	**32%**	**15%**	**6%**	**100%**

Notes:
(1) Referring to the Result of 2021 Population Census – Table B203 and Table C204.
(2) As Mass Transit Railway (Light Rail) is not available and ferry/ vessel is not a common mode of transport in Sha Tin District, these two modes of transport will not be shown in this table.
(3) Rounded to nearest whole number for clarity.

6.2.4 Based on the pedestrian trip generation from **Table 6.2.3** and modal split from **Table 6.2.4**, the pedestrian trips for PT from the proposed development are shown in **Table 6.2.5** below.

Table 6.2.5: Pedestrian Trip Rate for PT Services to/from Site STTL626 and STTL627

Mode of Transport	Modal Split (1)	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Railway	48%	560	250	225	570
Franchised bus	32%	370	165	150	375
On Foot Only	15%	175	80	70	175
Public Light Bus	6%	70	30	30	70
Total	100%	1170	525	475	1195

Notes:
(1) Rounded to nearest whole number for clarity.

6.2.5 For this preliminary TTIA, it is assumed that railway access by future residents will primarily occur through transfer arrangements via feeder bus and green minibus services operating along Tai Chung Kiu Road, which provide connectivity to Shek Mun Station or other railway stations.

6.2.6 Given that the walking distance to Shek Mun Station is approximately 7 minutes, it is assumed that around 25% of railway-bound trips would be made directly on foot, with reference to the 2022 Travel Characteristics Survey published by the Transport Department. The remaining 75% of railway-bound trips are therefore assumed to be made via interchange, followed by transfer to the railway mode.

6.3 Pedestrian Assessments

6.3.1 **Table 6.3.1** presents the forecast pedestrian flows under the without development scenario for the AM and PM peak hours. **Tables 6.3.2 and 6.3.3** then summarise the corresponding performance of the signalised crossings and the pedestrian waiting area, respectively.

Table 6.3.1: Forecasted Pedestrian Flows and Pedestrian Assessment in Design Year 2036

Critical Section	Total Footpath Width (m)	Effective Width (m)(1)	Reference Scenario (2036)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (2)	Two-way Pedestrian Flow Rate	LOS	Two-way Pedestrian Flow	Two-way Pedestrian Flow Rate	LOS
			(ped/15-min)	(ped/min/m) (3)		(ped/min)	(ped/min/m) (3)	
P1	3.4	2.4	15	0.4	A	10	0.2	A
P2	3.5	2.5	80	2.1	A	30	0.6	A
P3	3	2	75	2.5	A	60	1.3	A
P4	3	2	30	1.0	A	15	0.3	A

Notes:
(1) LOS has been calculated based on effective width, by generally assuming 0.5m lateral clearance on both sides of clear width.
(2) Rounded to nearest 5 for clarity.
(3) Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow (ped/hr) / 60 min / Effective Width.

Table 6.3.2 Assessment of Signalised Crossings for Year 2036 without development

Junction	Crossing Facility Number	AM Flow	PM Flow	Width (m)	Pedestrian Space (LOS) (1) (AM)	Pedestrian Space (LOS) (1) (PM)
J3	C1	65	40	2.4	A (Pedestrian Space = 42.0 m^2 / Ped)	A (Pedestrian Space = 68.4 m^2 / Ped)
	C2	65	40	3.9	A (Pedestrian Space = 226 m^2 / Ped)	A (Pedestrian Space = 367 m^2 / Ped)
	C3	380	165	5.3	A (Pedestrian Space = 15.9 m^2 / Ped)	A (Pedestrian Space = 36.6 m^2 / Ped)

Note:
(1) The detailed calculation of the pedestrian spaces is enclosed in **Appendix E**

Table 6.3.3 Assessment of Wait Area for Year 2036 without development

Junction	Wait Area	Effective Dimension	Design Scenario (2036)			
			AM Peak		PM Peak	
			Space (m^2/person)	LOS	Space (m^2/person)	LOS
J3	A1	1.5m x 8.7m	11.40	A	19.01	A

6.3.2 **Table 6.3.1** indicates that all existing footpaths will operate at LOS "A" in the AM and PM peak hours under the future without-development scenario. The corresponding assessments of the signalised crossings and the pedestrian waiting area (**Tables 6.3.2 and 6.3.3**) show that these facilities will also operate within capacity. **Table 6.3.4** then presents the forecast pedestrian flows for the with-development scenario for the AM and PM peak hours.

Table 6.3.4: Forecasted Pedestrian Flows and Pedestrian Assessment in Design Year 2036 with development

Critical Section	Total Footpath Width (m)	Effective Width (m)(1)	Design Scenario (2036)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (2)	Two-way Pedestrian Flow Rate	LOS	Two-way Pedestrian Flow	Two-way Pedestrian Flow Rate	LOS
			(ped/15-min)	(ped/min/m) (3)		(ped/min)	(ped/min/m) (3)	
P1	3.4	2.4	95	2.6	A	90	1.8	A
P2	3.5	2.5	295	7.9	A	120	2.3	A
P3	3	2	170	5.7	A	280	6.2	A
P4	3	2	30	1.0	A	15	0.3	A

Note:
(1) LOS has been calculated based on effective width, by generally assuming 0.5m lateral clearance on both sides of clear width.
(2) Rounded to nearest 5 for clarity.
(3) Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow (ped/hr) / 60 min / Effective Width.

Table 6.3.5 Assessment of Signalised Crossings for Year 2036 with development

Junction	Crossing Facility Number	AM Flow	PM Flow	Width (m)	Pedestrian Space (LOS) (1) (AM)	Pedestrian Space (LOS) (1) (PM)
J3	C1	940	905	2.4	C (Pedestrian Space = 2.3 m^2 / Ped)	C (Pedestrian Space = 3.0 m^2 / Ped)
	C2	940	905	3.9	A (Pedestrian Space = 15.6 m^2 / Ped)	A (Pedestrian Space = 16.2 m^2 / Ped)
	C3	765	1040	5.3	A (Pedestrian Space = 7.9 m^2 / Ped)	A (Pedestrian Space = 5.8 m^2 / Ped)

Note:
(1) The detailed calculation of the pedestrian spaces is enclosed in **Appendix E**

Table 6.3.6 Assessment of Wait Area for Year 2036 without development

Junction	Wait Area	Effective Dimension	Design Scenario (2036)			
			AM Peak		PM Peak	
			Space (m^2/person)	LOS	Space (m^2/person)	LOS
J3	A1	1.5m x 8.7m	1.44	A	0.60	C

6.3.3 **Tables 6.3.4 to 6.3.6** summarise the forecast performance of the assessed pedestrian facilities under the future with-development scenario for the AM and PM peak hours. As shown in **Table 6.3.4**, all assessed footpaths are forecast to operate at LOS 'A' in both peak periods.

6.3.4 The signalised crossing assessment results (**Table 6.3.5**) indicate that the crossings at Junction J3 will continue to operate within capacity under the with-development scenario, with the assessed LOS ranging from "A" to "C" across the AM and PM peak hours.

6.3.5 For the pedestrian waiting area (**Table 6.3.6**), the forecast performance remains generally satisfactory. While the waiting area is assessed as LOS 'A' in the AM peak hour, the PM peak hour is assessed as LOS 'C', indicating restricted circulation may occur, but the density remains within the range of personal comfort. Overall, the proposed development is therefore expected to have minimal impact on the performance of the assessed footpaths and crossings, with a localized reduction in the waiting area performance during the PM peak hour.

6.4 Outline on Public Transport Impact of the Development

6.4.1 Based on the modal split assumptions stated in **Table 6.2.5** above, **Table 6.4.1** to **Table 6.4.3** calculates the approximate public transport demand generated/attracted by the Sites:

Table 6.4.1 Preliminary Public Transport Demand from the Site STTL626

Main Mode (2)	AM Peak Trip Generation (pax/hr) (1)	PM Peak Trip Attraction (pax/hr) (1)
Franchised bus	260	265
Public Light Bus	50	50
Railway (Through Feeder Services)	295	300
Railway (Through Walking)	100	100
Total	**705**	**715**

Note:
(1) Rounded to nearest 5 for clarity.
(2) The public transport demand is estimated based on the pedestrian trip rates presented in Table 6.2.5 and has been apportioned in accordance with the residential distribution of STTL 626 and STTL 627.

Table 6.4.2 Preliminary Public Transport Demand from the Site STTL627

Main Mode (2)	AM Peak Trip Generation (pax/hr) (1)	PM Peak Trip Attraction (pax/hr) (1)
Franchised bus	105	110
Public Light Bus	20	20
Railway (Through Feeder Services)	120	125
Railway (Through Walking)	40	40
Total	**285**	**295**

Note:
(1) Rounded to nearest 5 for clarity.
(2) The public transport demand is estimated based on the pedestrian trip rates presented in Table 6.2.5 and has been apportioned in accordance with the residential distribution of STTL 626 and STTL 627.

Table 6.4.3 Preliminary Public Transport Demand from Both Sites

Main Mode (2)	AM Peak Trip Generation (pax/hr) (1)	PM Peak Trip Attraction (pax/hr) (1)
Franchised bus	370	375
Public Light Bus	70	70
Railway (Through Feeder Services)	420	425
Railway	140	140

Main Mode (2)	AM Peak Trip Generation (pax/hr) (1)	PM Peak Trip Attraction (pax/hr) (1)
(Through Walking)		
Total	**1000**	**1010**

Note:
(1) Rounded to nearest 5 for clarity.
(2) The public transport demand is estimated based on the pedestrian trip rates presented in Table 6.2.5 and has been apportioned in accordance with the residential distribution of STTL 626 and STTL 627.

6.4.2 Based on the assessment of STTL 626 and STTL 627 (**Table 6.4.3**), the total peak-hour demand for franchised bus services is estimated at 370 pax/hr (AM) and 375 pax/hr (PM). For railway services through feeder, the demand reaches 420 pax/hr (AM) and 425 pax/hr (PM)

6.4.3 As Referring to **Section 2.4**, it is noted that there are numerous franchised bus routes in the vicinity of the development sites on Tai Chung Kiu Road. It is also assumed that most of the railway mode users will take feeder bus for connecting to nearby Shek Mun Station or other railway stations due to the long walking distance.

6.4.4 Considering the latest government policy on promoting the use of electric /new energy buses, bus capacity would be assumed as 90 passengers per bus (75% of the maximum capacity: 120 passengers) and 14 passengers per public light bus (75% of the maximum capacity: 19 passengers). The additional bus demand, including and feeder services, generated/attracted by the Site is shown in **Table 6.4.4**, where additional public light bus demand is shown in **Table 6.4.5**.

Table 6.4.4 Preliminary Bus and Feeder Bus Demand from the Site

Item		AM Peak Generation	PM peak Attraction
(A)	Two-way Pedestrian Trip (1)	790	810
(B)	Capacity per bus (double-decked)	90	
(C) = (A) ÷ (B)	Additional Bus Trips Required (Trips / hour)	Approximate 9 nos.	Approximate 9 nos.

Note:
(1) Rounded to nearest 5 for clarity.

Table 6.4.5 Preliminary Public Light Bus Demand from the Site

Item		AM Peak Generation	PM peak Attraction
(A)	Two-way Pedestrian Trip (1)	70	70
(B)	Capacity per Public Light Bus	14	
(C) = (A) ÷ (B)	Additional Public Light Bus Trips Required (Trips / hour)	Approximate 5 nos.	Approximate 5 nos.

Note:
(1) Rounded to nearest 5 for clarity.

6.4.5 Based on **Table 6.4.4**, the Site is forecast to generate approximately 790 and 810 public transport passenger trips during the AM and PM peak hour respectively. Adopting a conservative bus capacity of 90 passengers per double-deck bus, this translates to an estimated requirement of around 9 additional bus trips per hour during both AM and PM peak to accommodate the demand.

6.4.6 Based on **Table 6.4.5**, the Site is forecast to generate approximately 70 public transport passenger trips during both AM and PM peak hour. Adopting a conservative capacity of 14 passengers per public light bus, this translates to an estimated requirement of around 5 additional public light bus trips per hour during both AM and PM peak to accommodate the demand.

6.4.7 The induced amount of the additional bus trip is included in the junction capacity assessment for year 2036 design case. The additional bus trip induced would not generate an insurmountable impact on the capacity of the assessed junctions.

6.5 Capacity Assessment of the Current Bus Laybys

6.5.1 To evaluate the adequacy of existing and proposed bus stops provided in the vicinity of subject sites, Poisson Distribution for arrival pattern and multi-servers queuing (M/M/N) theory was applied to determine the queues induced due to the buses reaching the bus bays**.** **Table 6.5.1** describes the locations of the assessed bus laybys.

Table 6.5.1: Location of Assessed Bus Laybys

Bus Stops/Laybys Location	Nos. of Stops or Laybys
Tai Chung Kiu Road NB	2
Tai Chung Kiu Road SB	4

6.5.2 A public transport survey was conducted on 9 March 2026 and 23 March 2026 to assess bus and green minibus (GMB) services at the assessed bus lay-bys. The arrival rate (λ) was derived based on the observed number of bus and GMB arrivals during the survey periods. The additional bus trips generated by the proposed development were subsequently added to the observed arrival rates for assessment purposes. The directional distribution of public transport demand was assumed with reference to the TPEDM data, as summarised in **Table 6.5.2**.

6.5.3 During the AM peak hour, additional bus trips towards the urban area would use the Tai Chung Kiu Road southbound (SB) bus lay-by, while trips towards the north would use the northbound (NB) bus lay-by. During the PM peak hour, additional bus trips from the urban area would use the NB bus lay-by, whereas trips from the north would use the SB bus lay-by. The additional bus trips added to the existing arrival rates are summarised in **Table 6.5.3.**

Table 6.5.3: Additional Bus Trips on Bus Laybys

Bus Stops/Laybys Location	Additional AM Bus Trips	Additional PM Bus Trips
Tai Chung Kiu Road NB	1	8
Tai Chung Kiu Road SB	8	1

6.5.4 The Service Rate (μ) was obtained by the observation of total dwell time of each arrival. **Table 6.5.4** describe the existing Arrival Rate (λ) and Service Rate (μ) of the assessed bus laybys.

Table 6.5.4: Arrival Rate and Service Rate of the Assessed Laybys

Bus Stops/Laybys Location	AM Peak Arrival Rate (λ) (Trips/hr)	AM Peak Service Rate (μ) (Trips/hr) (1)	PM Peak Arrival Rate (λ) (Trips/hr)	PM Peak Service Rate (μ) (Trips/hr) (1)
Tai Chung Kiu Road NB	39	118.8	75	118.9
Tai Chung Kiu Road SB	99	121.2	67	71.8

Notes:
(1) Service Rate = 3,600 (sec) / [Total Observed Dwell Time (sec) / Total No. of Observed Bus Arrival].

6.5.5 The queuing situation can be assessed based on a single channel queuing system; thus Poisson distribution and muti-server queuing (M/M/N) theory is used.

6.5.6 The probability that vehicles are in the bus lay-by system is given by:

For $e = \frac{\lambda}{\mu}$,

$$P(n) = \frac{1}{\sum_{n=0}^{N-1} \frac{e^n}{n!} + \frac{e^N}{N!\left(1 - \frac{e}{N}\right)}} \qquad \text{for } n = 0$$

$$P(n) = \frac{e^n}{n!} P(0) \qquad \text{for } 0 < n \le N$$

$$P(n) = \frac{e^n}{N^{n-N} N!} P(0) \qquad \text{for } n > N$$

where: $P(n)$ = Probability of n vehicles in the system

e = λ / μ

λ = Peak hourly arrival/leaving rate

μ = Service rate

n = Number of vehicles in the system

N = Number of bus lay-by

6.5.7 Probability of formation of queue

$$P_q = 1 - \sum_{n=0}^{N} P(n)$$

Overall queuing assessment for proposed bus lay-by is summarized in **Table 6.5.5** and **6.5.6** for the queue formation of existing condition.

Table 6.5.5: Queuing Assessment for Bus Laybys on Tai Chung Kiu Road during AM Peak

n	λ	μ	e	N	P(n)	Accumulation
Tai Chung Kiu Road NB						
0	39	118.8	0.3283	2	0.718004	0.718004
1	39	118.8	0.3283	2	0.235708	0.953713
2	39	118.8	0.3283	2	0.038690	0.992402
					P(n≥3) = 1- 0.992402	0.007598 (0.7598%)
Tai Chung Kiu Road SB						
0	99	121.2	0.8168	4	0.441583	0.441583
1	99	121.2	0.8168	4	0.360699	0.802282
2	99	121.2	0.8168	4	0.147315	0.949597
3	99	121.2	0.8168	4	0.040111	0.989707
4	99	121.2	0.8168	4	0.008191	0.997898
					P(n≥4) = 1- 0.997898	0.002102 (0.2102%)

Table 6.5.6: Queuing Assessment for Bus Laybys on Tai Chung Kiu Road during PM Peak

n	λ	μ	e	N	P(n)	Accumulation
Tai Chung Kiu Road NB						
0	75	118.9	0.6308	2	0.520460	0.520460
1	75	118.9	0.6308	2	0.328297	0.848757
2	75	118.9	0.6308	2	0.103542	0.952299
					P(n≥3) = 1- 0.952299	0.047701 (4.7701%)
Tai Chung Kiu Road SB						
0	67	71.8	0.9331	4	0.392902	0.392902
1	67	71.8	0.9331	4	0.366636	0.759538

n	λ	μ	e	N	P(n)	Accumulation
2	67	71.8	0.9331	4	0.171063	0.930601
3	67	71.8	0.9331	4	0.053209	0.983810
4	67	71.8	0.9331	4	0.012413	0.996223
					P(n≥4) = 1-0.996223	0.003777 (0.3777%)

6.5.8 It is anticipated that the probability for formation of traffic queue of Bus Lay-by is below 5%, it is very small and would not form traffic queue most of the time.

6.5.9 To summarise, the existing bus laybys on Tai Chung Kiu Road operates in good conditions and would not cause queue back with the addition of additional bus service.

6.6 Summary

6.6.1 As identified in this Section, the proposed development would not induce unacceptable pedestrian and public transport impacts to the vicinity according to the public transport demand assessment.

7 SUMMARY AND CONCLUSIONS

7.1 Summary

7.1.1 This report summarised the analysis, findings, and recommendations for the PTTIA for the proposed housing development at 2 sites in On Ping Street, Shek Mun.

7.1.2 A series of capacity analysis based on the TPDM were carried out at the critical junctions and road links within the AOI to evaluate the existing and future traffic condition.

7.1.3 A well validated LATM was developed to provide quantitative input to the road capacity analysis of the major road corridors and junctions in the design year. The assessed junctions and road links show that all of them within AOI operate satisfactory which is within the spare capacity in 2036 during operation stage.

7.1.4 The required internal parking provision of the proposed housing development was estimated based on the HKPSG standard. To cater the anticipated public transport demand, nearby public transport services was also assessed for the situation of proposed housing development.

7.1.5 Pedestrian facilities in Shek Mun Area are well-served to handle the pedestrian demand induced by the proposed housing development. The existing footpath could handle the pedestrians demand to nearby bus stop to various district in a walkable distance.

7.1.6 It is observed that there are sufficient parking spaces for private cars and light goods vehicles in Shek Mun. Nevertheless, to address the impacts of displacing the existing STT carpark at STTL626 due to development, a preliminary proposal of PVP (to be provided within the housing development) is given in this TTIA for departmental considerations.

7.1.7 The proposed housing development will have manageable traffic impact on the nearby junctions, road links and transport facilities. therefore, the result of this preliminary TTIA show that the proposed housing development is technically feasible from the traffic point of view.

FIGURES

HONG KONG JOCKEY CLUB SHA TIN RACECOURSE

SHING MUN RIVER CHANNEL

PICTORIAL GARDEN

SHEK MUN INTERCHANGE

TATE'S CAIRN HIGHWAY

A KUNG KOK STREET

A KUNG KOK SHAN STREET

GARDEN VISTA

STTL 626

SHEK MUN FRESH WATER BOOSTER PUMPING STATION

STTL 627

ON SUM STREET SUBSTATION

RAVANA GARDEN

TAI CHUNG KIU ROAD

ON PING STREET

COURTYARD BY MARRIOTT HONG KONG SHA TIN

ON SUM STREET

ON YIU STREET

ON LAI STREET

ON KWAN STREET

KINGS WING PLAZA 2

ON MUK STREET

ON MING STREET

ON HING LANE

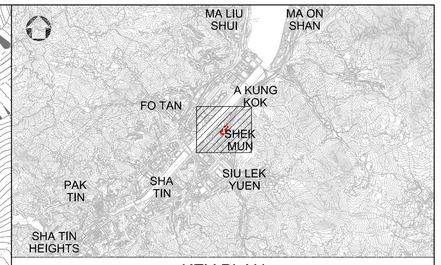
SHING MUN RIVER PROMENADE GARDEN NO.2

ON MUK STREET GARDEN

SIU LEK YUEN ROAD

TAK KEI STREET

KINGS WING PLAZA 1



KEY PLAN

LEGEND:

APPLICATION SITE BOUNDARY

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JAN 2026	TL	FIRST ISSUE	IC	DN

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Title

GENERAL LAYOUT PLAN

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	
Scale at A1 1:2000		Status PRE		Rev P1	

Drawing Number

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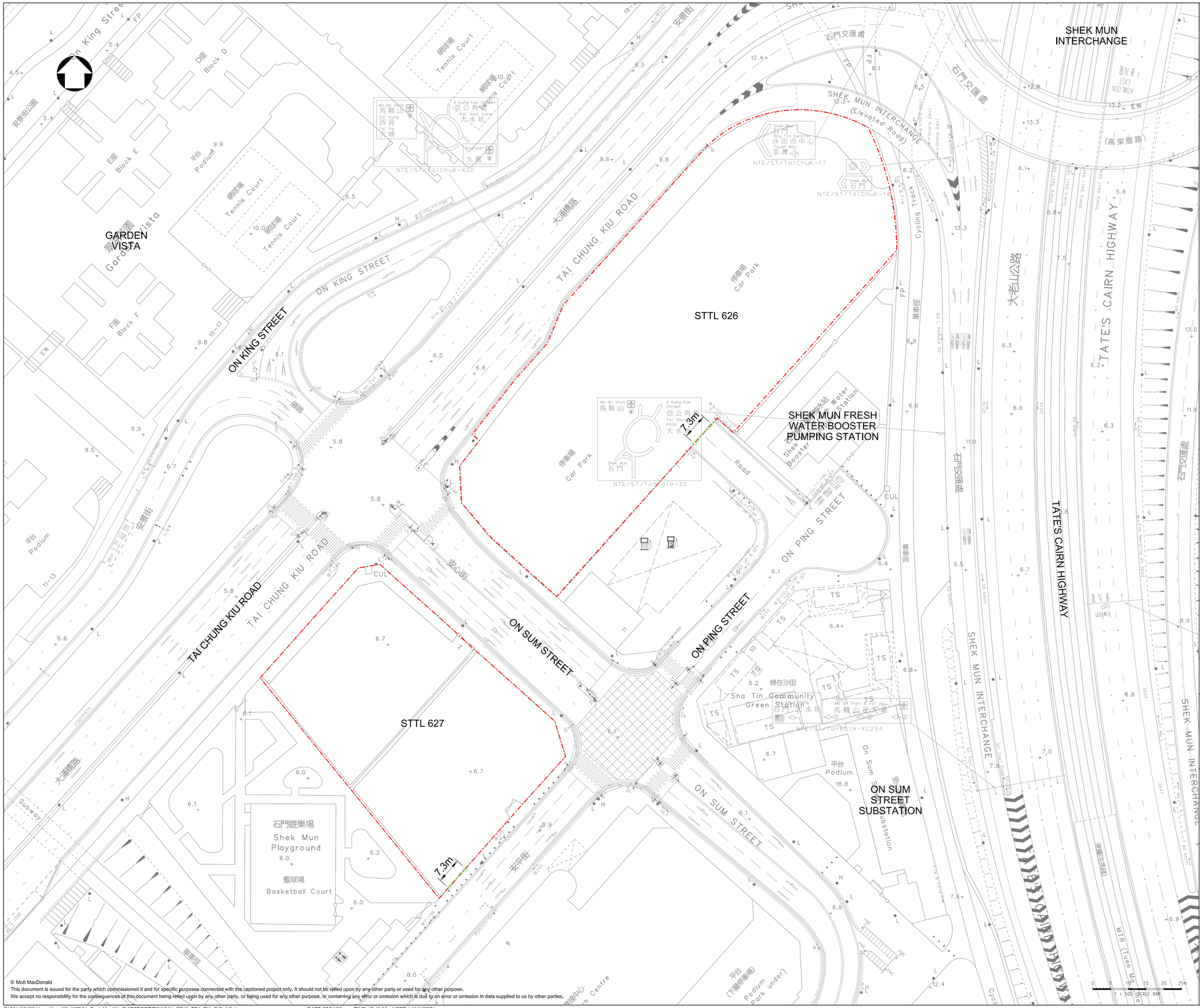

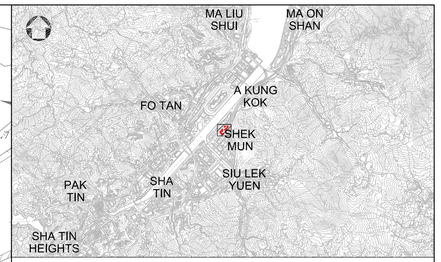

KEY PLAN

LEGEND:

APPLICATION SITE BOUNDARY

SITE ACCESS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

LOCATION OF PROPOSED SITE ACCESS

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
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1:500	PRE	P1

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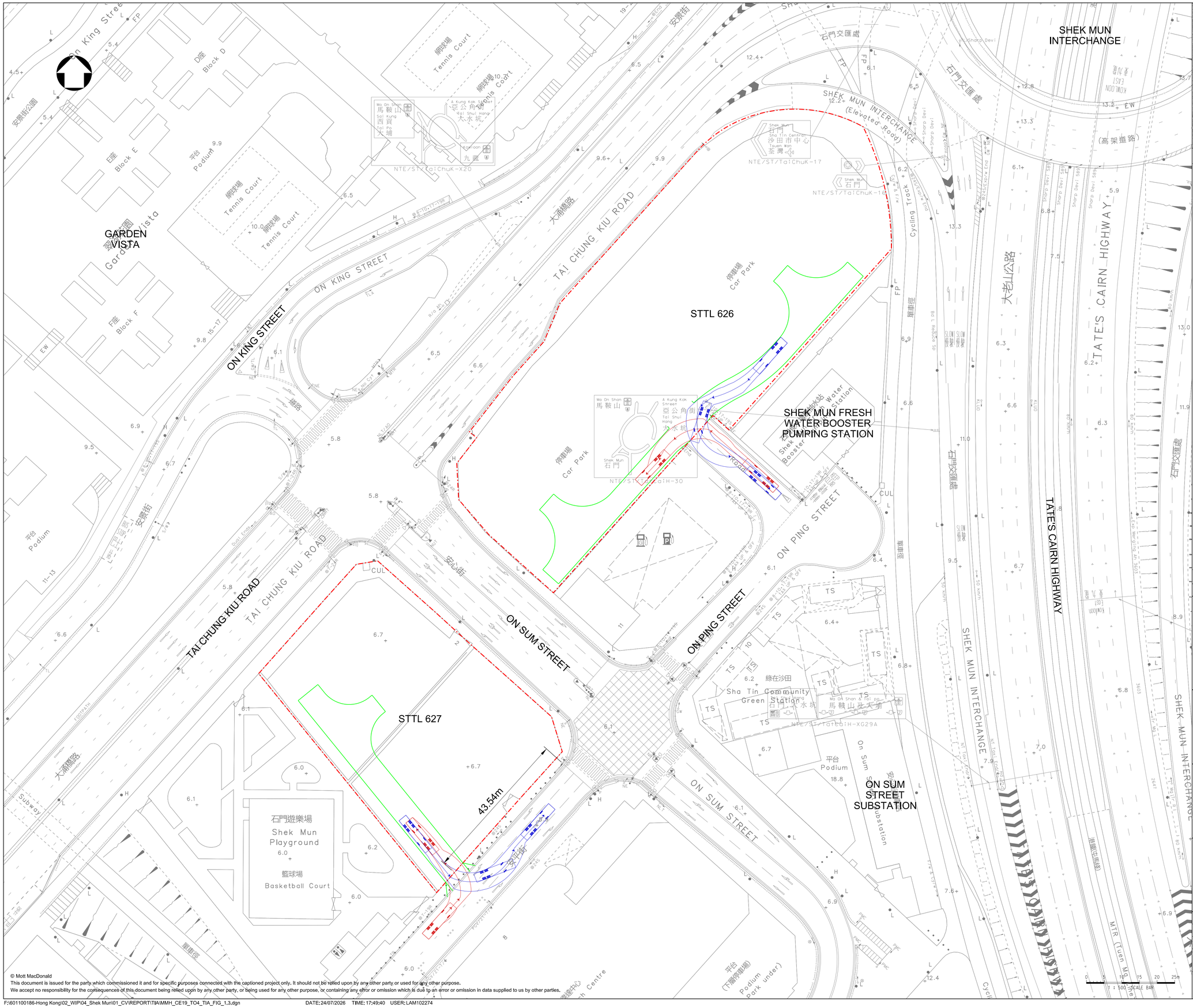

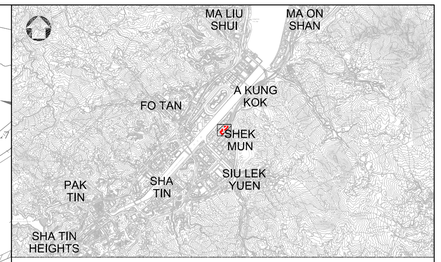

KEY PLAN

LEGEND:

APPLICATION SITE BOUNDARY

SITE ACCESS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

SWEPT PATH ANALYSIS FOR STTL627 SITE ACCESS

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	

Scale at A1	Status	Rev
1:500	PRE	P1

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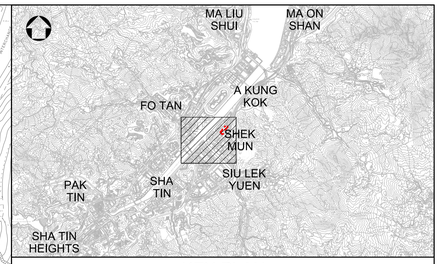
THE PALAZZO
TAI PO ROAD - SHA TIN
HONG KONG JOCKEY CLUB SHA TIN RACECOURSE
PICTORIAL GARDEN
SHEK MUN INTERCHANGE
J01
GARDEN VISTA
SHEK MUN FRESH WATER BOOSTER PUMPING STATION
J03
J02
ON SUM STREET SUBSTATION
SHING MUN RIVER CHANNEL
YUEN WO ROAD
RAVANA GARDEN
TAI CHUNG KIU ROAD
COURTYARD BY MARRIOTT HONG KONG SHA TIN
ON PING STREET
J05
J04
ON SUM STREET
ON YIU STREET
J11
TATE'S CAIRN HIGHWAY
J09
L01
SHING MUN RIVER PROMENADE GARDEN NO.2
J06
ON MUK STREET GARDEN
J08
YUEN WO ROAD
ON LAI STREET
ON KWAN STREET
KINGS WING PLAZA 2
J10
J13
ON MUK STREET
FO TAN ROAD
SHA TIN ROAD
L02
TAI CHUNG KIU ROAD
TAK KEI STREET
JOCKEY CLUB KITCHEE CENTRE
KINGS WING PLAZA 1
TAK WING STREET
TAK LEE STREET
SIU LEK YUEN ROAD
FORTUNE CITY ONE PLUS
J07
PAK TAK STREET
NGAN SHING STREET
SIU LEK YUEN ROAD PLAYGROUND
J12
ON MUK LANE
ON MING STREET
SHEK MUN ESTATE
FORTUNE CITY ONE
PO SHING STREET
LOK SHING STREET
SHEK MUN SHOPPING CENTRE
BELAIR GARDENS

0 50 100m
1:2,000 SCALE BAR



KEY PLAN

LEGEND:

- APPLICATION SITE BOUNDARY
- AREA OF INFLUENCE (AOI)
- J01 ASSESSED JUNCTION
- L01 ASSESSED ROAD LINK

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

AREA OF INFLUENCE AND LOCATION OF MAJOR JUNCTIONS AND ROAD LINKS

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	

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1:2000	PRE	P1

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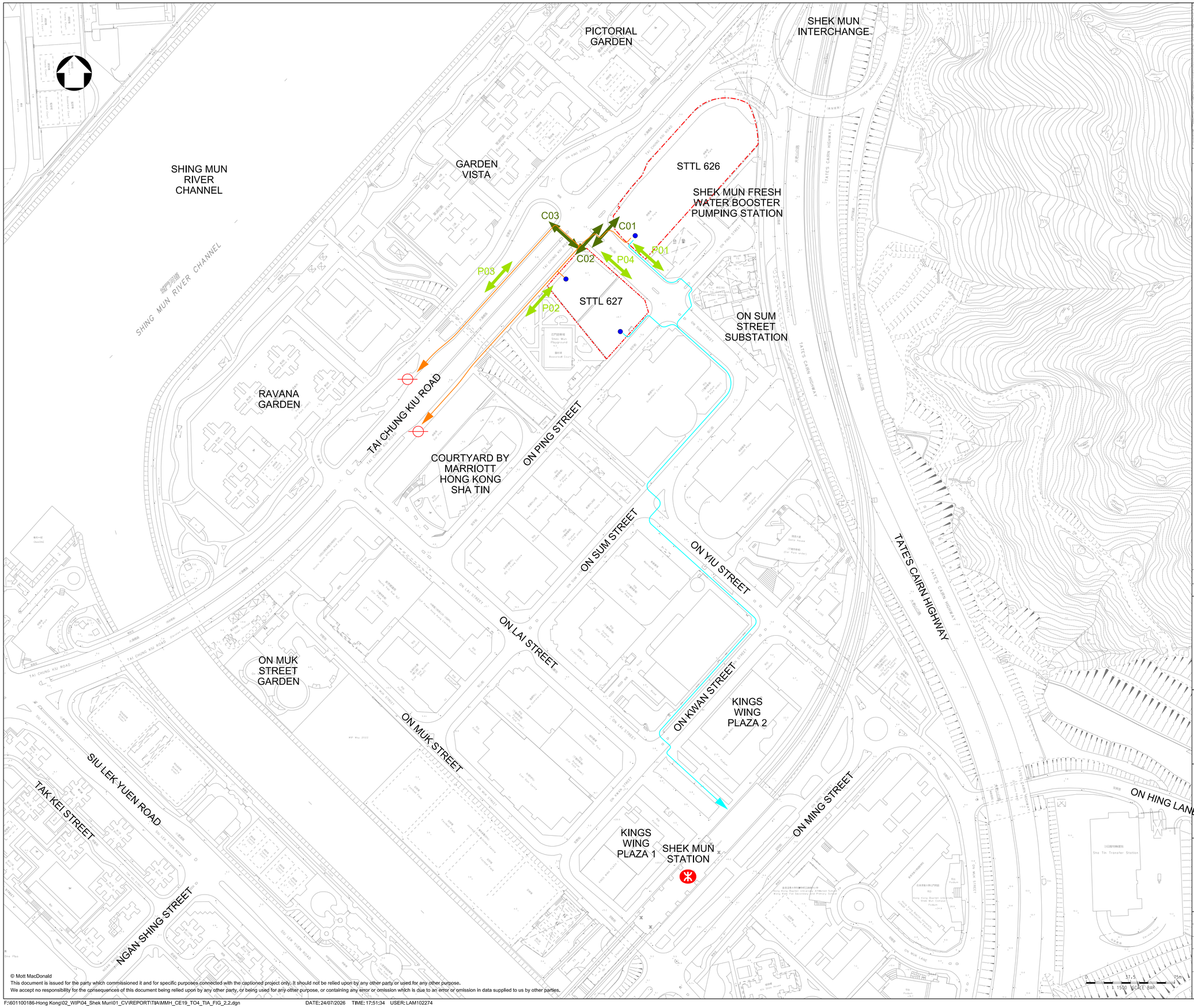

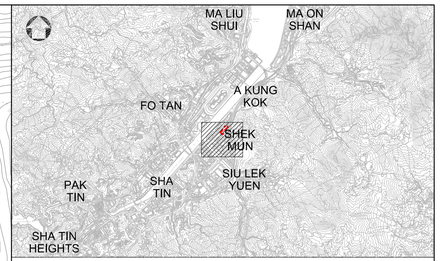

KEY PLAN

LEGEND:

- APPLICATION SITE BOUNDARY
- P01 ASSESSED WALKWAY
- C01 ASSESSED CROSSING
- PEDESTRIAN ROUTE TO BUS STOP
- PEDESTRIAN ROUTE TO MTR STATION
- PEDESTRIAN ACCESS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

ASSESSED WALKWAY / CROSSING AND MAJOR PEDESTRIAN ROUTINGS

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
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SHING MUN RIVER CHANNEL

PICTORIAL GARDEN

TATE'S CAIRN HIGHWAY

SHEK MUN INTERCHANGE

GARDEN VISTA

811A

82X, 284

ON KING STREET

SHEK MUN FRESH WATER BOOSTER PUMPING STATION

TAI CHUNG KIU ROAD

82X

284

263A, 286C, 287D, 289R, 299X, 38B, 40X, 43S, 43X, 81C, 82C, 84M, 85K, 85X, 86C, 86K, 86S, 87D, 89C, N281, N287, 680, N680 682, B8, A41P, N42, NA40

67K, 803, 806A, 806B, 806X, 810, 810A, 811B, 811S

ON SUM STREET SUBSTATION

ON PING STREET

67K, 810, 810A, 811B, 811S

803, 806A, 806B, 806X

RAVANA GARDEN

263A, 281B, 284, 286C, 289R, 299X, 38B, 40X, 43S, 43X, 49X, 81C, 82C, 82X, 84M, 85K, 86C, 86K, 86S, 87D, 89C, N281 , 680, 980A, N680, 682, 982C, B8, A41P, N42, NA40

COURTYARD BY MARRIOTT HONG KONG SHA TIN

ON SUM STREET

ON YIU STREET

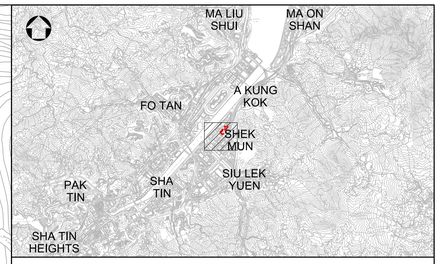
ON LAI STREET

ON MUK STREET GARDEN

ON KWAN STREET

KINGS WING PLAZA 2

ON MUK STREET



KEY PLAN

LEGEND:

- APPLICATION SITE BOUNDARY
- 300m CATCHMENT
- BUS STOP
- GMB STOP

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JAN 2026	TL	FIRST ISSUE	IC	DN

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Client

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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

AGREEMENT NO. CE 19/2023 (CE) - TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING AND OTHER DEVELOPMENTS IN ZONE 1 (2023-2027) TASK ORDER NO.4

Title

EXISTING PUBLIC TRANSPORT IN THE VICINITY

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	

Scale at A1	Status	Rev
1:1500	PRE	P1

Drawing Number

MMH/CE19/TO4/TIA/FIG/2.3

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HONG KONG JOCKEY CLUB SHA TIN RACECOURSE

SHING MUN RIVER CHANNEL

PICTORIAL GARDEN

SHEK MUN INTERCHANGE

TATE'S CAIRN HIGHWAY

A KUNG KOK STREET

A KUNG KOK SHAN STREET

GARDEN VISTA

ON SUM STREET SUBSTATION

RAVANA GARDEN

TAI CHUNG KIU ROAD

ON PING STREET

COURTYARD BY MARRIOTT HONG KONG SHA TIN

ON SUM STREET

ON YIU STREET

ON LAI STREET

SHING MUN RIVER PROMENADE GARDEN NO.2

ON MUK STREET GARDEN

ON MUK STREET

ON KWAN STREET

KINGS WING PLAZA 2

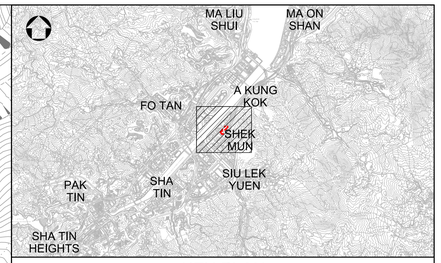
SIU LEK YUEN ROAD

TAK KEI STREET

KINGS WING PLAZA 1

ON MING STREET

ON HING LANE



KEY PLAN

LEGEND:

- APPLICATION SITE BOUNDARY
- MAJOR INGRESS ROUTE
- MINOR INGRESS ROUTE
- MAJOR EGRESS ROUTE
- MINOR EGRESS ROUTE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JAN 2026	TL	FIRST ISSUE	IC	DN

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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

AGREEMENT NO. CE 19/2023 (CE) - TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING AND OTHER DEVELOPMENTS IN ZONE 1 (2023-2027) TASK ORDER NO.4

Title

MAJOR VEHICULAR ROUTING

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
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1:2000	PRE	P1

Drawing Number

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HONG KONG JOCKEY CLUB SHA TIN RACECOURSE

SHING MUN RIVER CHANNEL

PICTORIAL GARDEN

SHEK MUN INTERCHANGE

TATE'S CAIRN HIGHWAY

A KUNG KOK STREET

A KUNG KOK SHAN STREET

GARDEN VISTA

ON SUM STREET SUBSTATION

RAVANA GARDEN

TAI CHUNG KIU ROAD

ON PING STREET

COURTYARD BY MARRIOTT HONG KONG SHA TIN

ON SUM STREET

ON YIU STREET

ON LAI STREET

ON KWAN STREET

KINGS WING PLAZA 2

SHING MUN RIVER PROMENADE GARDEN NO.2

ON MUK STREET GARDEN

ON MUK STREET

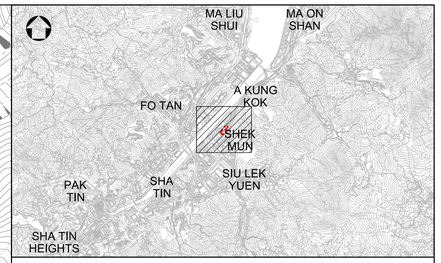
SIU LEK YUEN ROAD

TAK KEI STREET

KINGS WING PLAZA 1

ON MING STREET

ON HING LANE



KEY PLAN

LEGEND:

- APPLICATION SITE BOUNDARY
- MAJOR INGRESS ROUTE
- MAJOR EGRESS ROUTE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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AGREEMENT NO. CE 19/2023 (CE) - TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING AND OTHER DEVELOPMENTS IN ZONE 1 (2023-2027) TASK ORDER NO.4

Title

MAJOR VEHICULAR ROUTING OF CONSTRUCTION VEHICLES

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
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Scale at A1	Status	Rev
1:2000	PRE	P1

Drawing Number

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HONG KONG JOCKEY CLUB SHA TIN RACECOURSE

SHING MUN RIVER CHANNEL

PICTORIAL GARDEN

SHING MUN RIVER CHANNEL

SHEK MUN INTERCHANGE

TATE'S CAIRN HIGHWAY

A KUNG KOK STREET

A KUNG KOK SHAN STREET

ON PING STREET STT CAR PARK (STTL626)

GARDEN VISTA

STTL 626

SHEK MUN FRESH WATER BOOSTER PUMPING STATION

R 300m

STTL 627

ON SUM STREET SUBSTATION

ON SUM STREET ON-STREET MOTORCYCLE PARKING SPACE

NIGHTTIME ON STREET CAR SPACES

RAVANA GARDEN

TAI CHUNG KIU ROAD

ON PING STREET

COURTYARD BY MARRIOTT HONG KONG SHA TIN

ON PING STREET STT CAR PARK

ON SUM STREET

ON YIU STREET

TATE'S CAIRN HIGHWAY

NIGHTTIME ON STREET CAR SPACES

SHING MUN RIVER PROMENADE GARDEN NO.2

ON MUK STREET GARDEN

ON LAI STREET

ON MUK STREET

ON KWAN STREET

KINGS WING PLAZA 2

SIU LEK YUEN ROAD

TAK KEI STREET

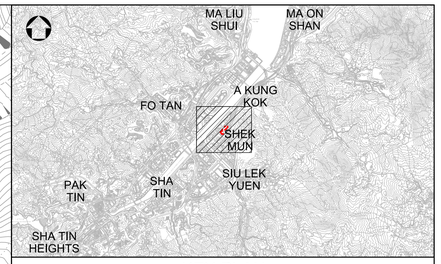
KINGS WING PLAZA 1

ON MING STREET

ON HING LANE

0 50 100m

± 2 CM SCALE BAR



KEY PLAN

LEGEND:

APPLICATION SITE BOUNDARY

300m CATCHMENT

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JAN 2026	TL	FIRST ISSUE	IC	DN

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Project

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Title

PARKING FACILITIES IN THE VICINITY OF THE SITE

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	

Scale at A1	Status	Rev
1:2000	PRE	P1

Drawing Number

MMH/CE19/TO4/TIA/FIG/3.3

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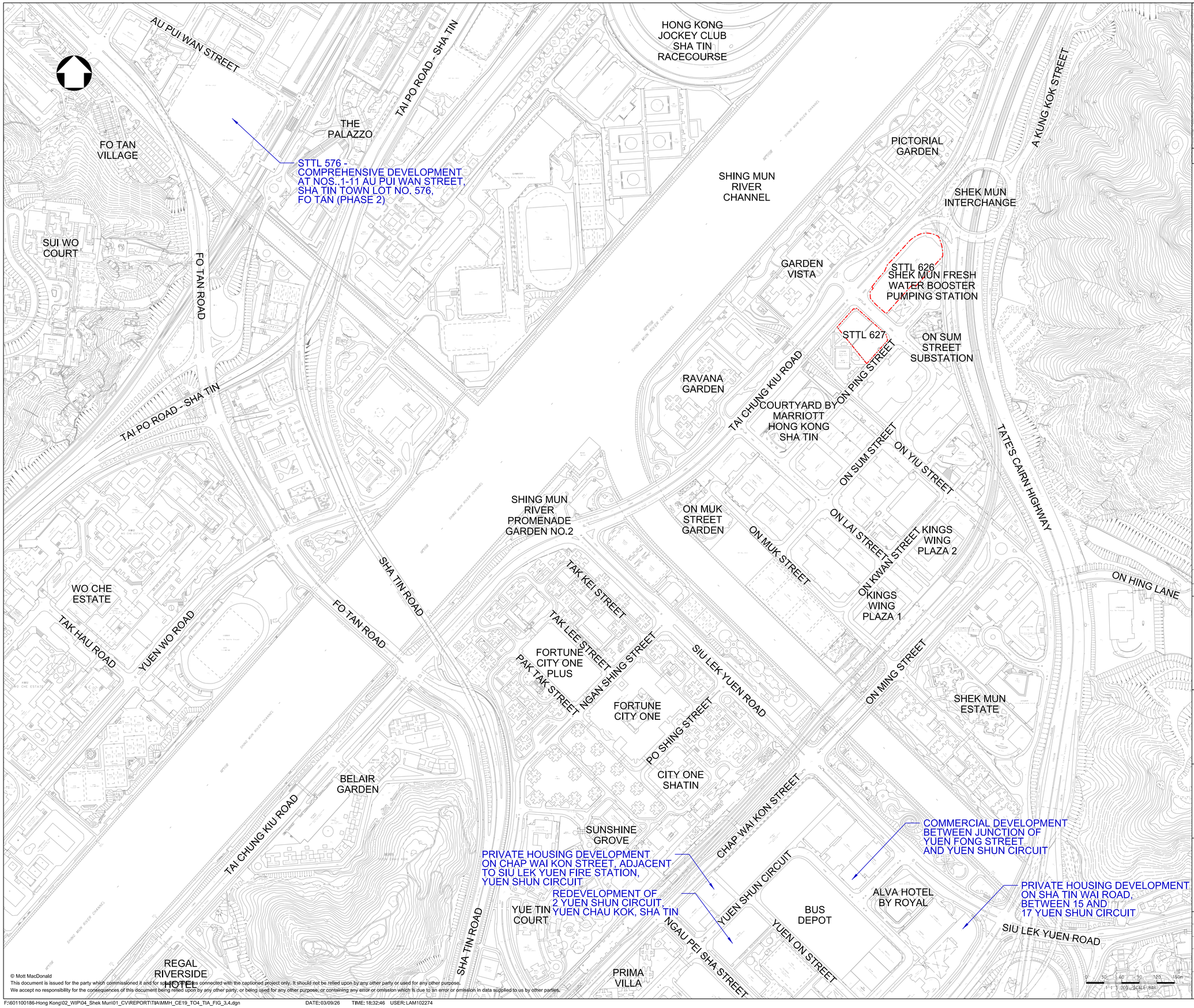

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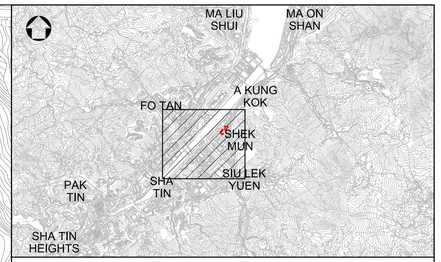
F:\601100186-Hong Kong\02_WIP\04_Shek Mun\01_CV\REPORT\TIA\MMH_CE19_TO4_TIA_FIG_3.4.dgn DATE: 03/09/26 TIME: 18:32:46 USER: LAM102274



KEY PLAN

LEGEND:

APPLICATION SITE BOUNDARY

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JAN 2026	TL	FIRST ISSUE	IC	DN

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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

AGREEMENT NO. CE 19/2023 (CE) - TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING AND OTHER DEVELOPMENTS IN ZONE 1 (2023-2027) TASK ORDER NO.4

Title

LOCATION OF NEARBY PROPOSED DEVELOPMENTS

Designed	TC		Eng check	IC	
Drawn	TL		Coordination	IC	
Dwg check	AT		Approved	DN	

Scale at A1	Status	Rev
1:3000	PRE	P1

Drawing Number

MMH/CE19/TO4/TIA/FIG/3.4

APPENDIX

Appendix A	Traffic Flow Diagram
Appendix B	Planned Improvement Works
Appendix C	Development Parameter on Study Brief
Appendix D	Junction Calculation Sheet
Appendix E	Pedestrian Crossing Calculation Sheet

APPENDIX A – Traffic Flow Diagram

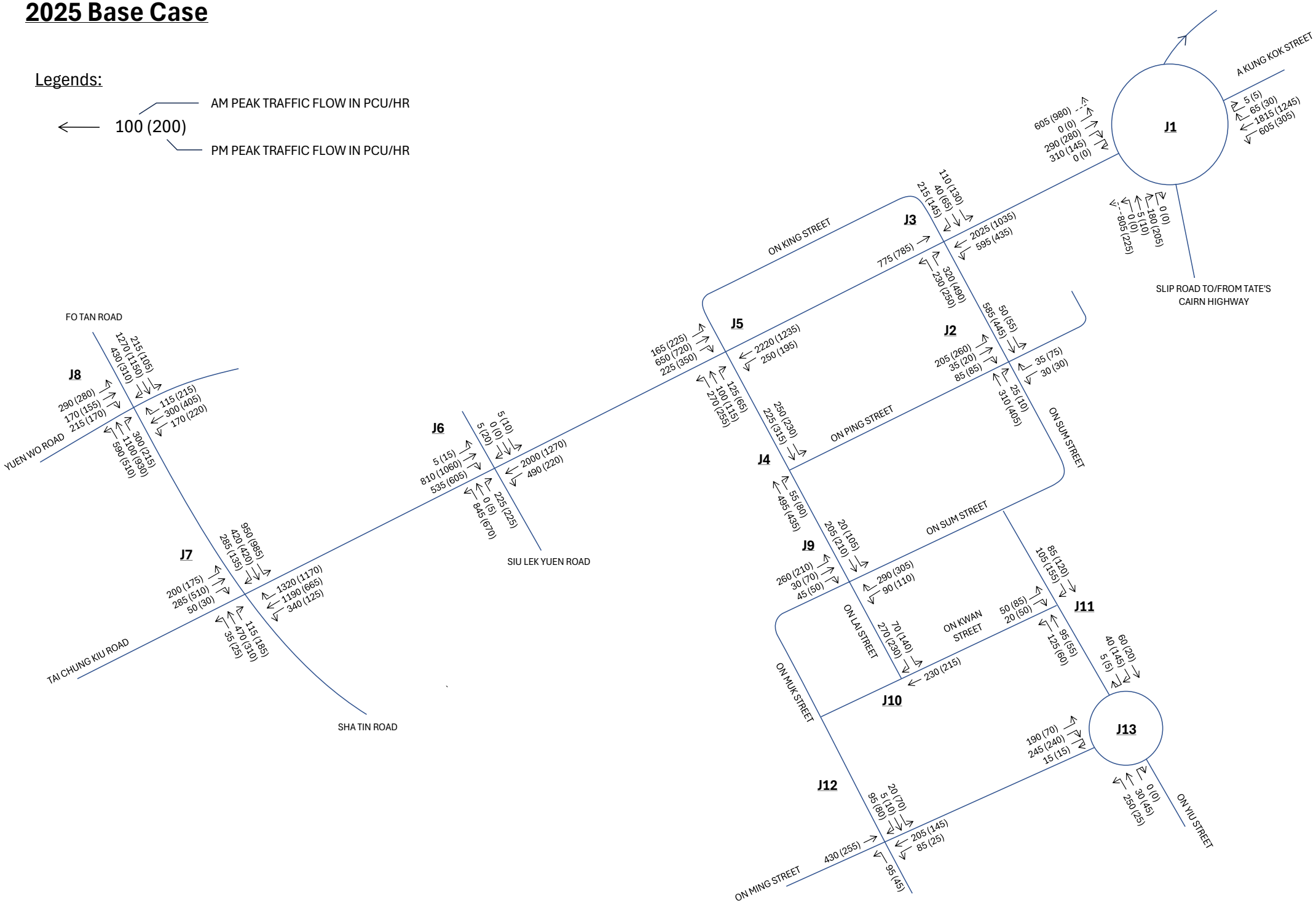
2025 Base Case

Legends:

AM PEAK TRAFFIC FLOW IN PCU/HR

← 100 (200)

PM PEAK TRAFFIC FLOW IN PCU/HR



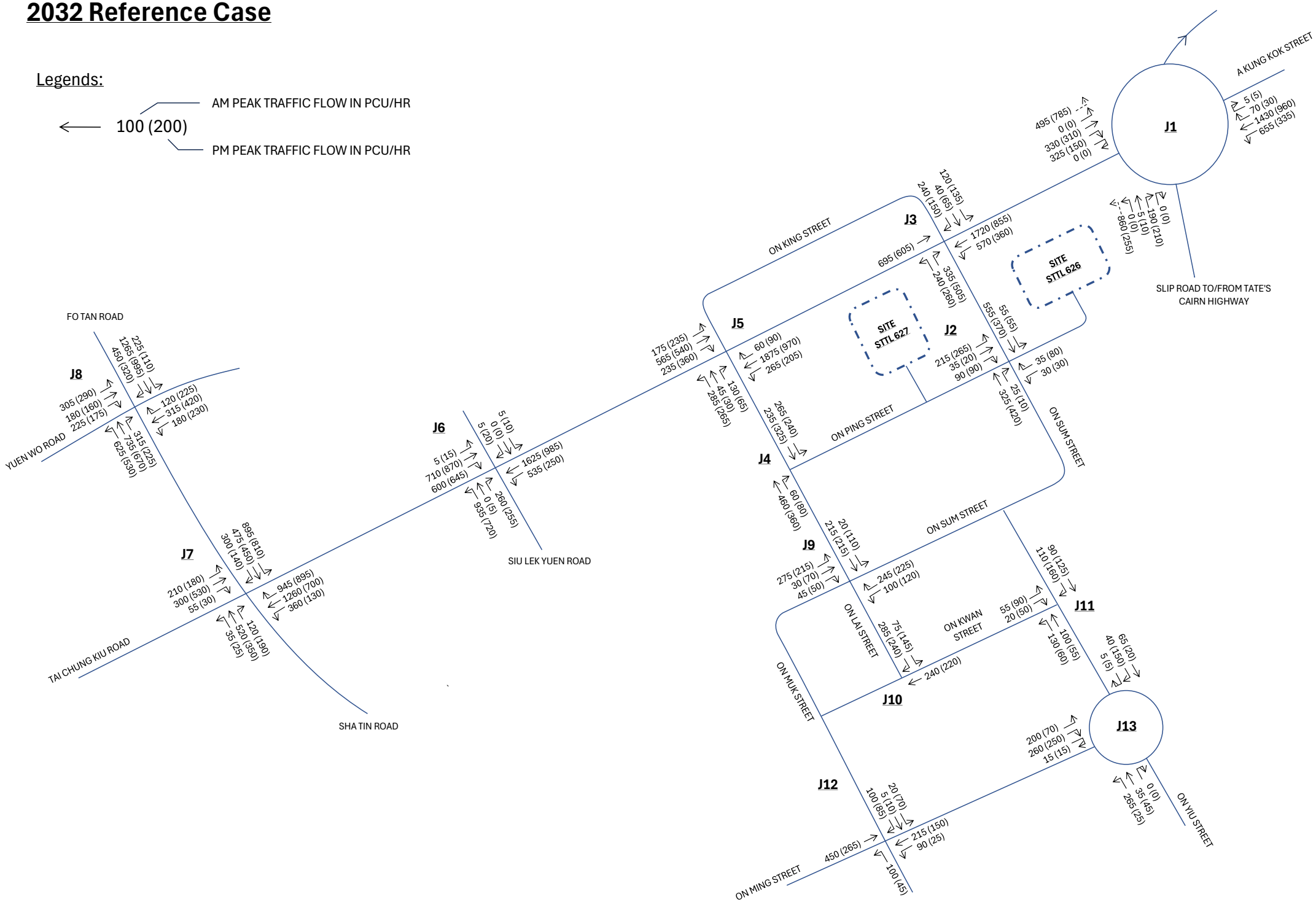
2032 Reference Case

Legends:

100 (200)

AM PEAK TRAFFIC FLOW IN PCU/HR

PM PEAK TRAFFIC FLOW IN PCU/HR



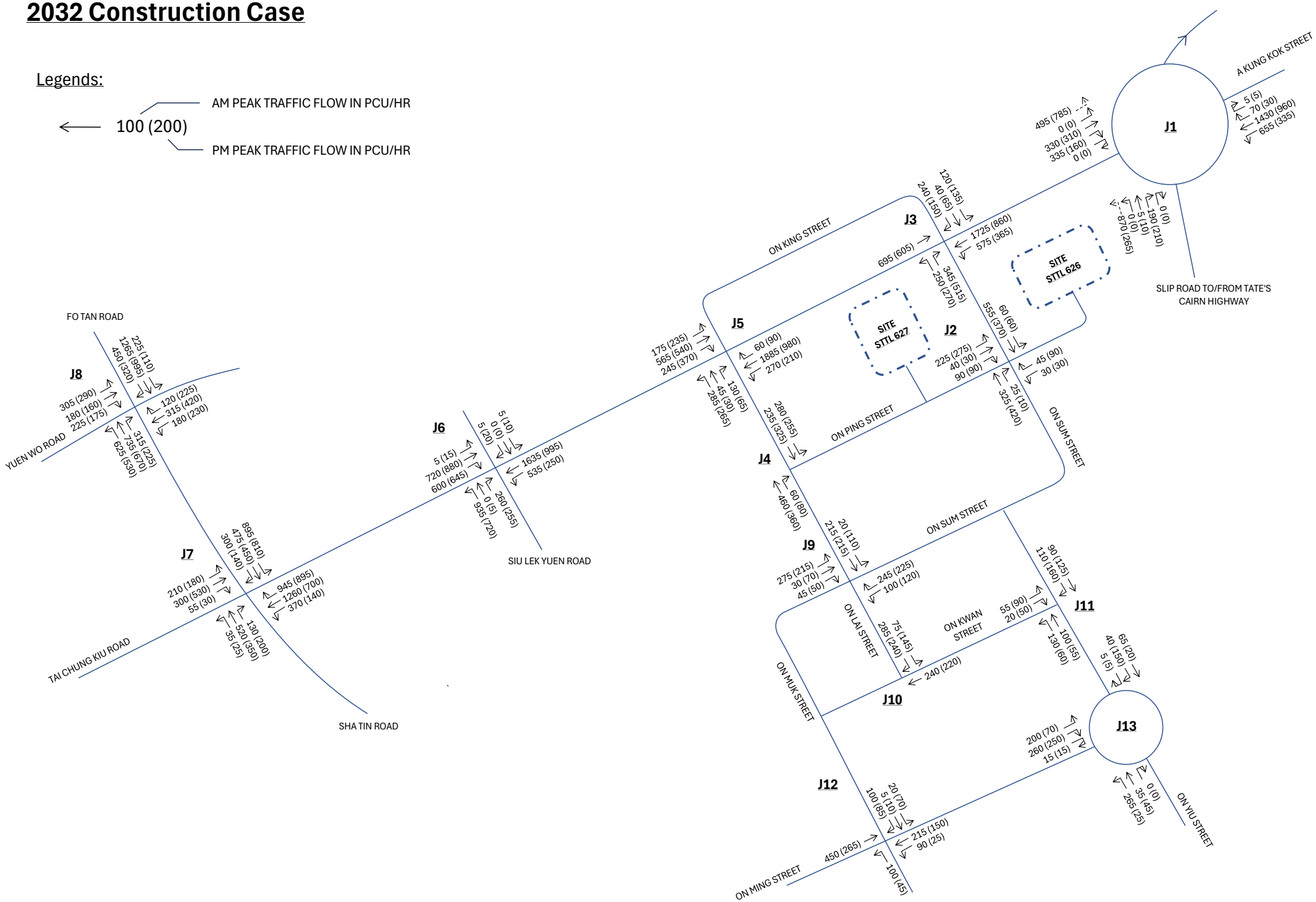
2032 Construction Case

Legends:

100 (200)

AM PEAK TRAFFIC FLOW IN PCU/HR

PM PEAK TRAFFIC FLOW IN PCU/HR



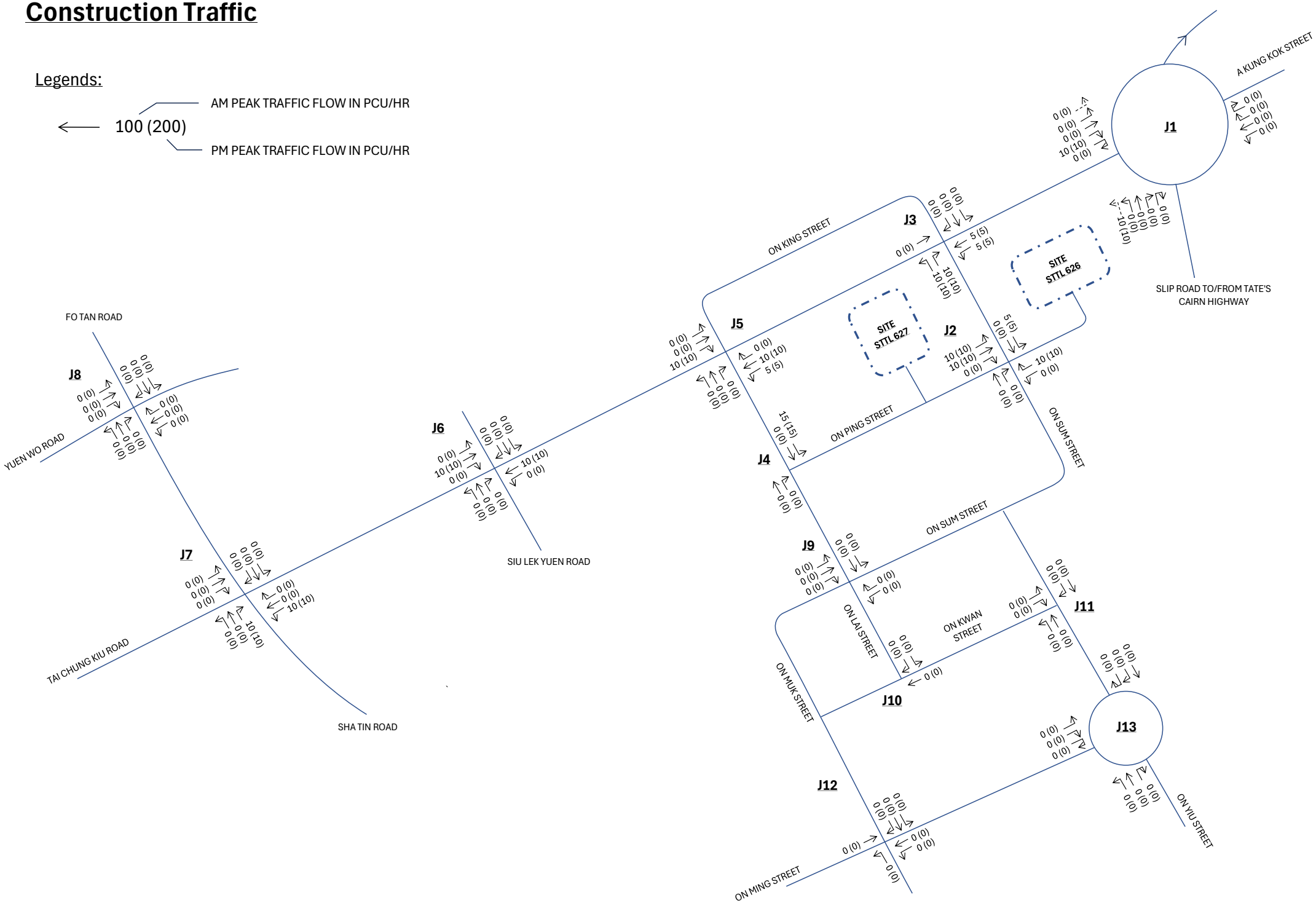
Construction Traffic

Legends:

AM PEAK TRAFFIC FLOW IN PCU/HR

← 100 (200)

PM PEAK TRAFFIC FLOW IN PCU/HR



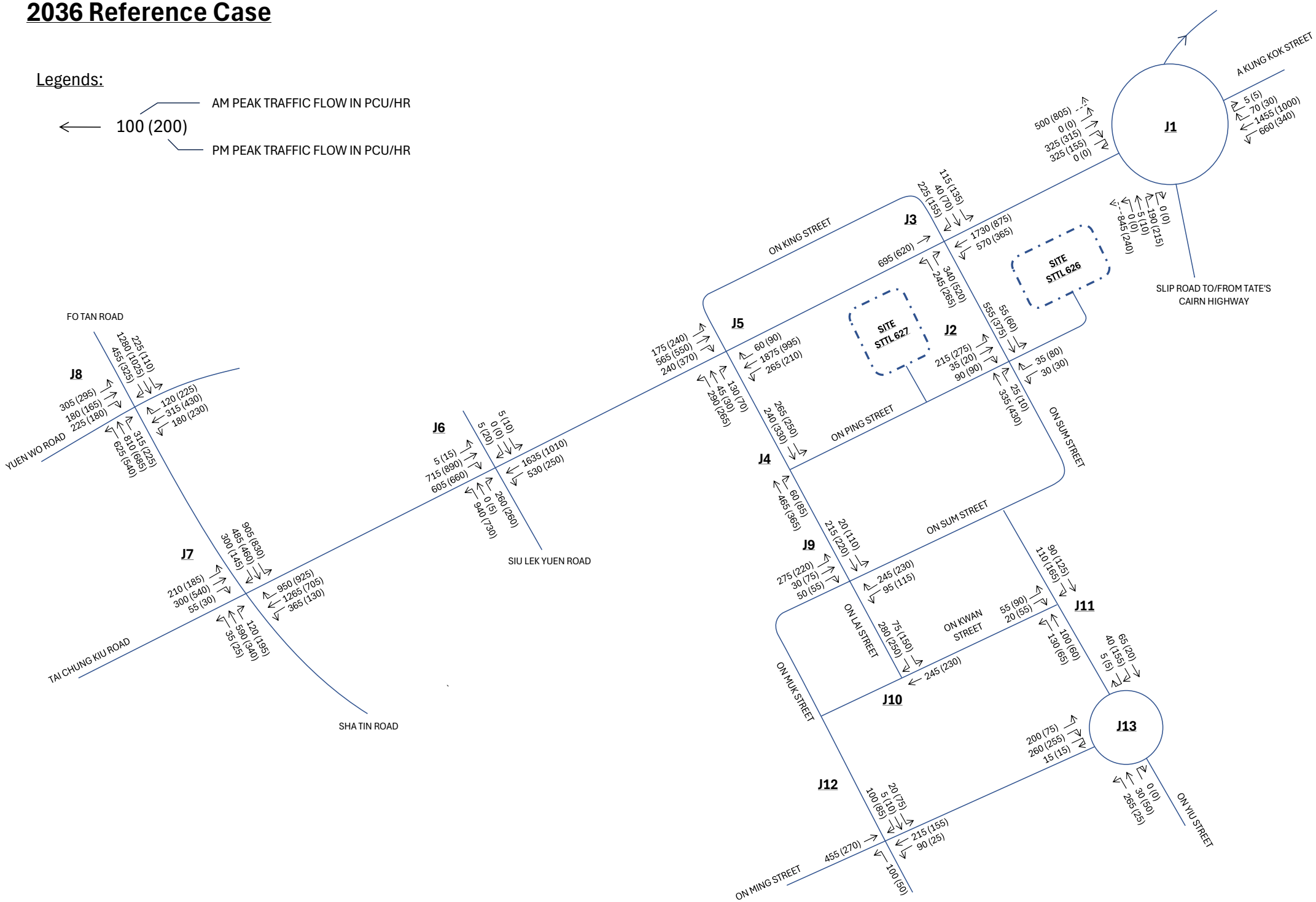
2036 Reference Case

Legends:

100 (200)

AM PEAK TRAFFIC FLOW IN PCU/HR

PM PEAK TRAFFIC FLOW IN PCU/HR



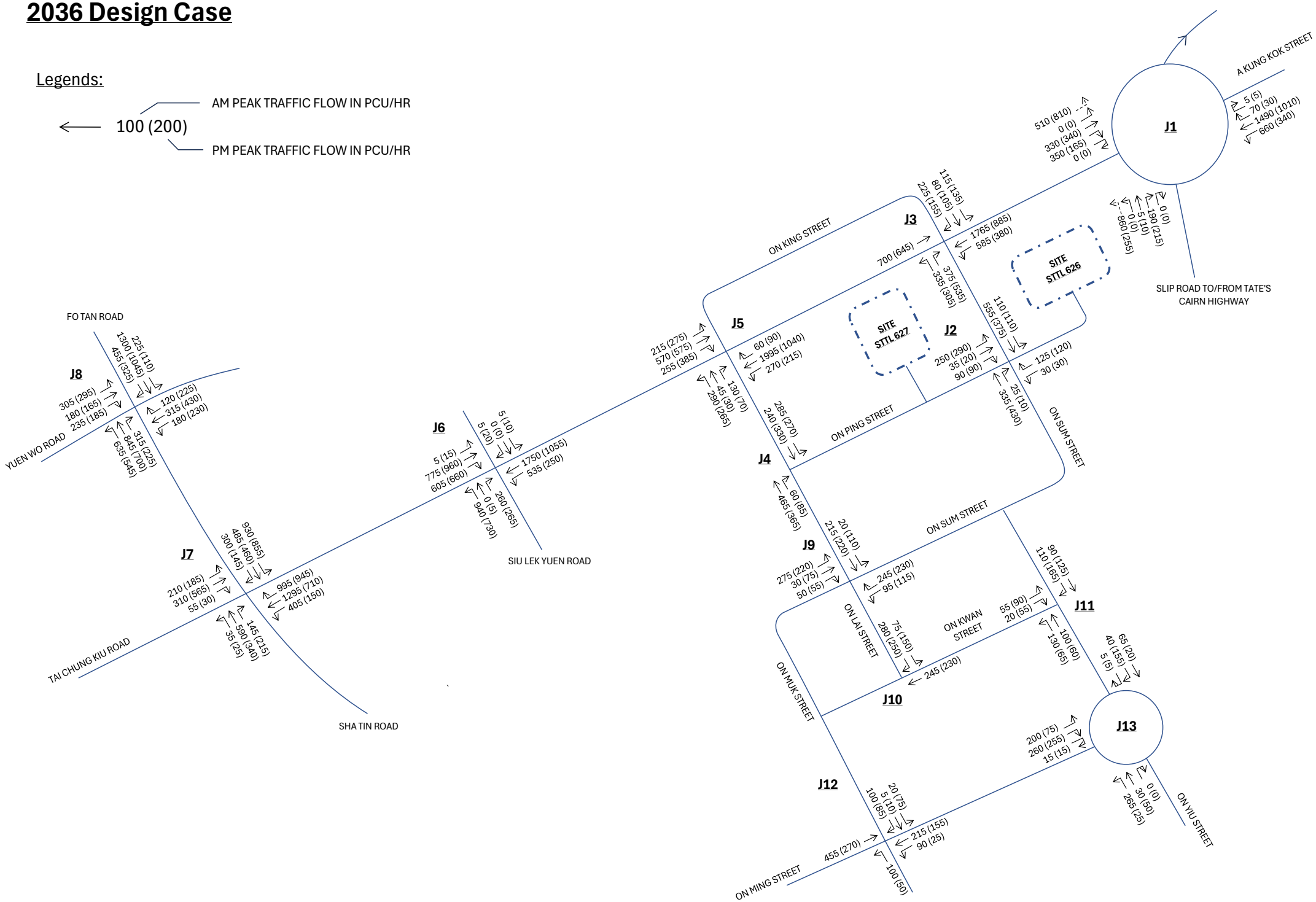
2036 Design Case

Legends:

100 (200)

AM PEAK TRAFFIC FLOW IN PCU/HR

PM PEAK TRAFFIC FLOW IN PCU/HR



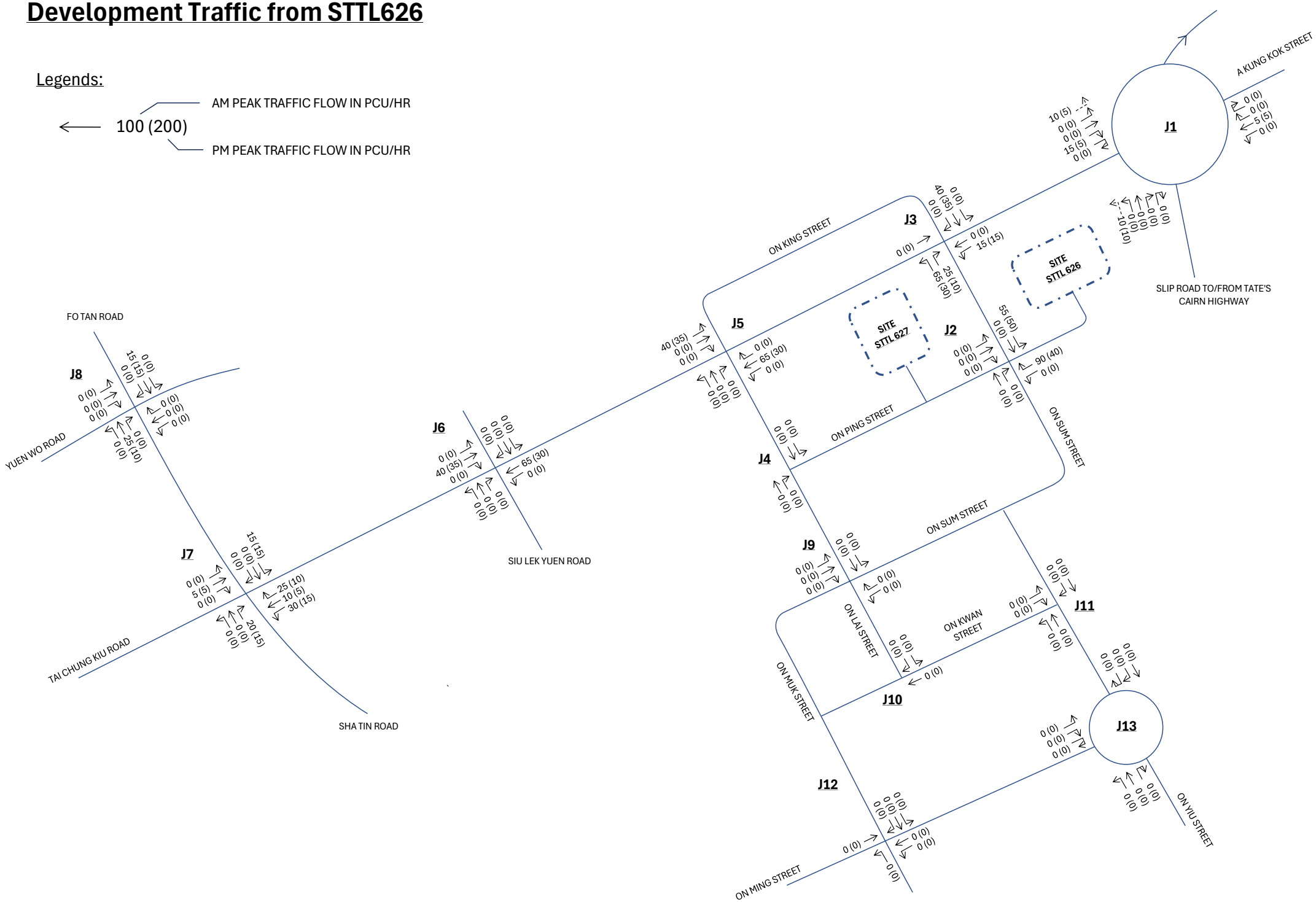
Development Traffic from STTL626

Legends:

100 (200)

AM PEAK TRAFFIC FLOW IN PCU/HR

PM PEAK TRAFFIC FLOW IN PCU/HR



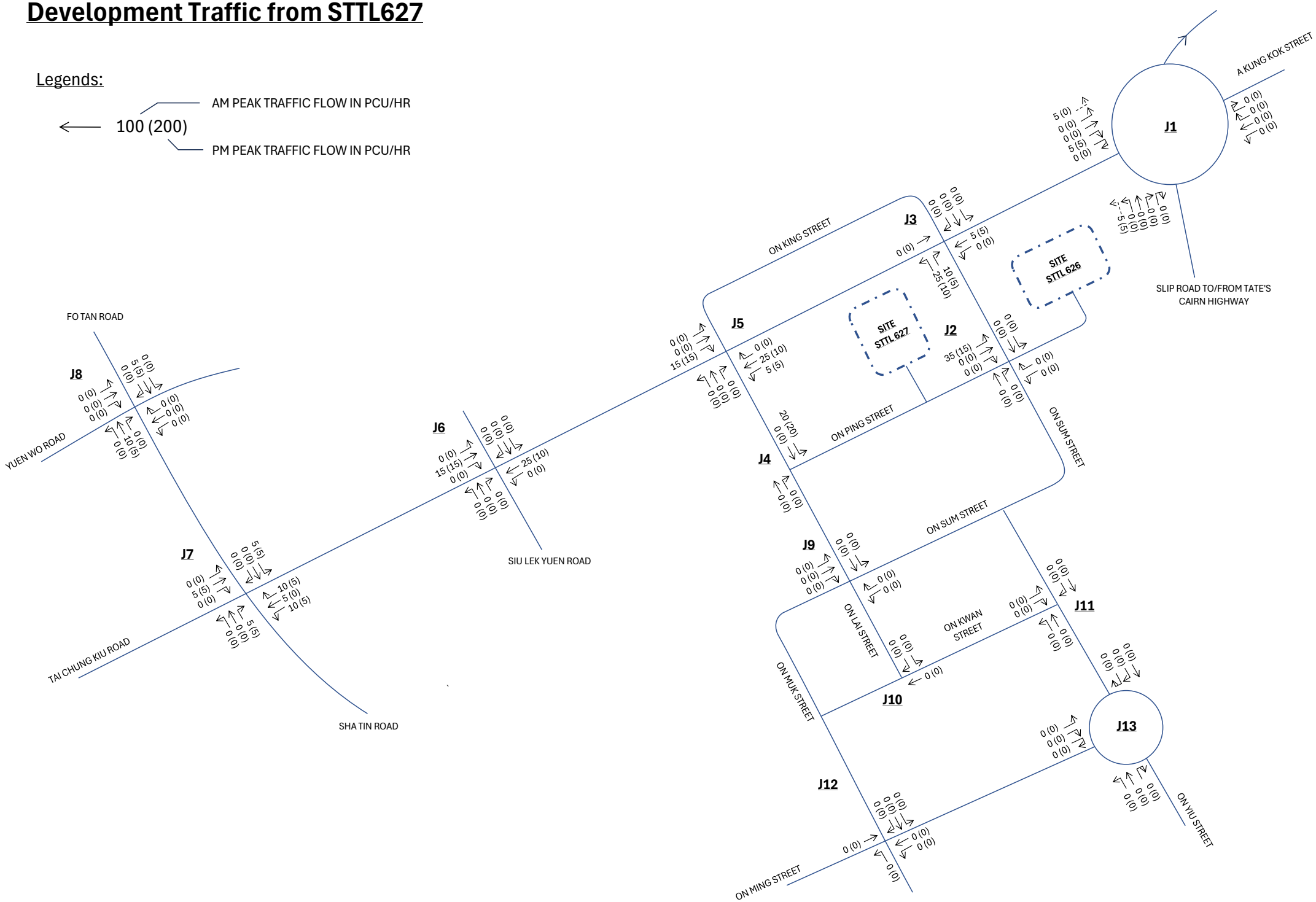
Development Traffic from STTL627

Legends:

AM PEAK TRAFFIC FLOW IN PCU/HR

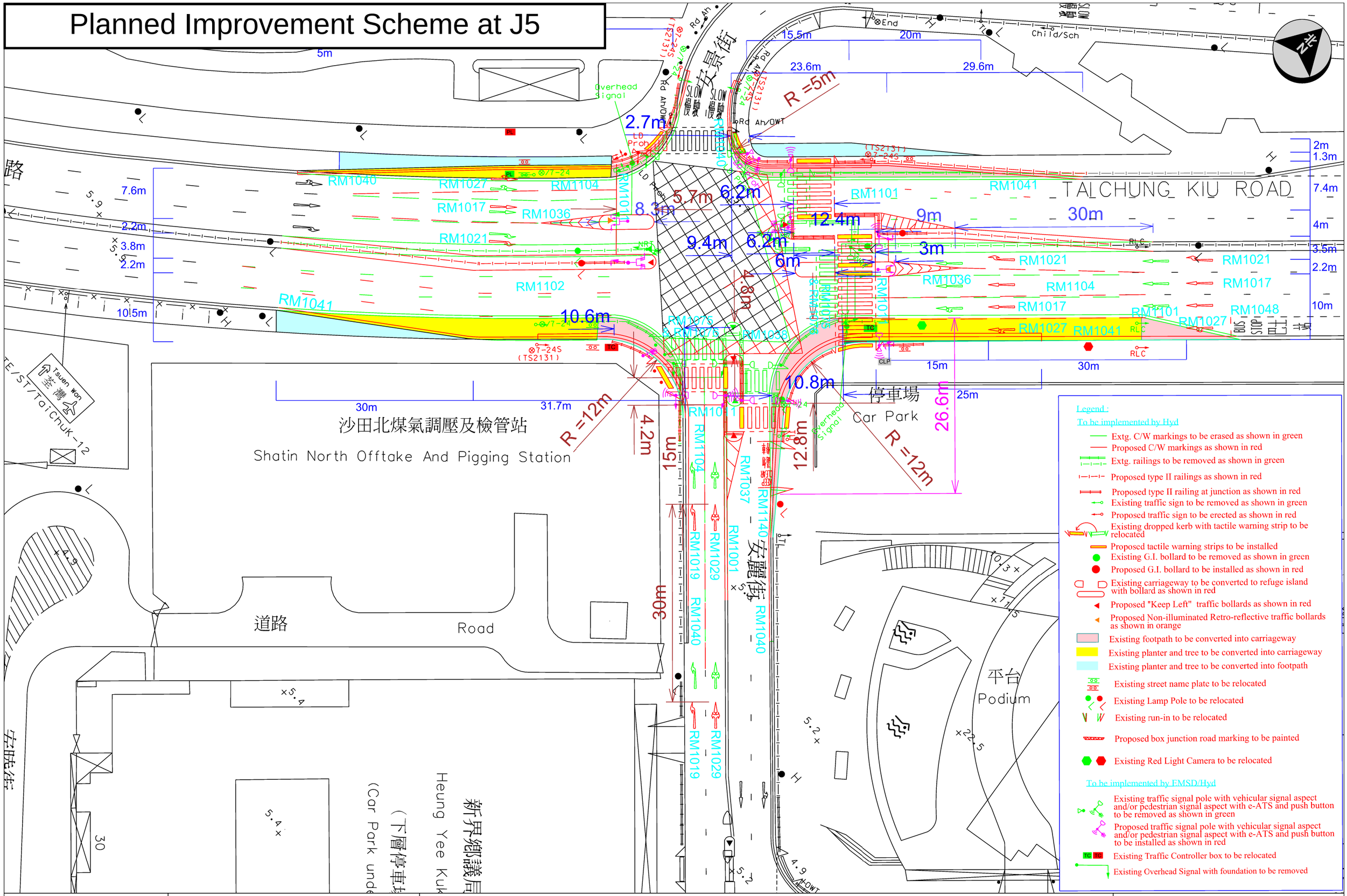
← 100 (200)

PM PEAK TRAFFIC FLOW IN PCU/HR



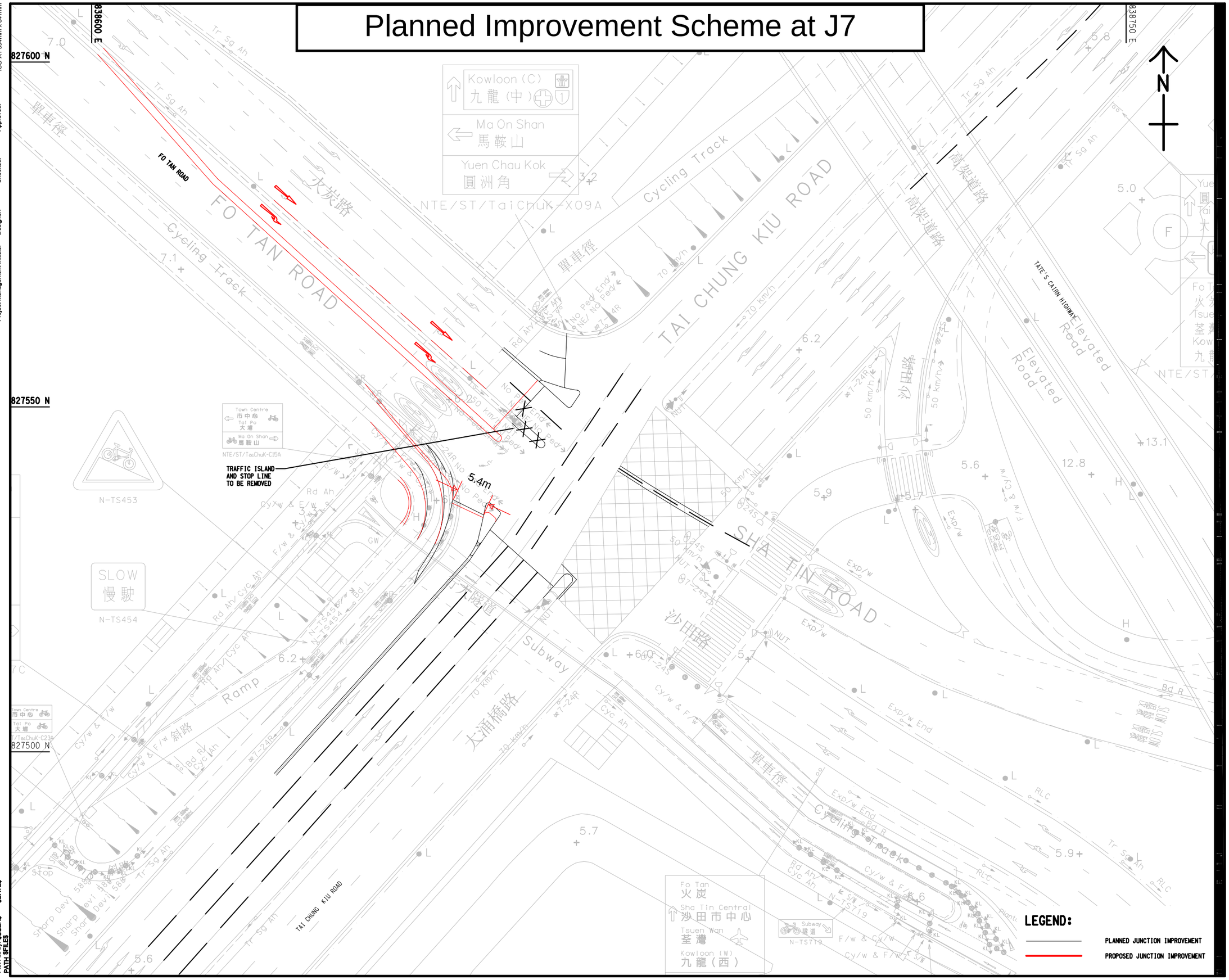
APPENDIX B – Planned Improvement Works

Planned Improvement Scheme at J5



運輸署 Transport Department	TRAFFIC ENGINEERING (NTE) DIV.	Location: J/O Tai Chung Kiu Road/ On Lai Street/ On King Street, Sha Tin	WRF NO. TE/NE/18/02456
		Survey Sheet No. E07S07C; Scale 1: 500(A3); Date: 17/11/2025	Drawing No. E181137.00M

Planned Improvement Scheme at J7



AECOM

PROJECT

TRAFFIC IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENTS IN SIU LEK YUEN AND SHEK MUN, SHATIN

CLIENT

TRANSPORT DEPARTMENT

AGREEMENT NO.

TD 73/2017

SCALE DIMENSION UNIT

A3 1 : 500

DRAWING TITLE

PROPOSED IMPROVEMENT AT FO TAN ROAD / TAI CHUNG KIU ROAD (SLY-J2) (OPTION 2)

DRAWING NO.

60563890/TIAAS/FIGURE 5.22

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Plot File by: $USER$ $DATE$

PATH: $FILE$

APPENDIX C – Development Parameter on Study Brief

Attachment 2

Review on Conversion of 2 Commercial Sites to Residential Sites for Private Housing Development in Shek Mun (STTL 626 and 627) – Engineering Feasibility Study

Scopes and Requirements for the EFS

Main Objective	Conduct the technical assessments required to support the town planning application for the proposed private residential developments for two sites in Shek Mun, namely STTL626 and STTL627
Site Area	• STTL626 – Approximately 0.85 Ha • STTL627 – Approximately 0.41 Ha (Approximately 1.26 Ha in total)
Maximum Plot Ratio	For both sites STTL626 and STTL627 – 6 [1]
Building Height Restriction	For both sites STTL626 and STTL627 – 120mPD [1]
No. of Flats	• STTL626 – Approximately 850 to 1,000 flats (tentative) • STTL627 – Approximately 410 flats (tentative)
Scope	(a) To conduct technical assessments related to traffic and transport, drainage, sewerage, water supply and utilities; (b) To assess environmental impacts and conduct risk assessments arising from the adjacent Petrol Filling Station and Liquefied Petroleum Gas Filling Station (which may be converted to a Quick Charging Station by 2029/2030 according to the EEB), as well as from the high pressure towngas transmission pipeline running along Tai Chung Kiu Road in the vicinity of the sites; and (c) To prepare a Planning Report and to provide all necessary inputs to support and complete the planning application procedure.

[1] These parameters are PlanD's initial recommendations. However, the Consultants may propose alternative plot ratios and building height restrictions for the two sites, subject to PlanD's agreement and supported by appropriate justifications

APPENDIX D – Junction Calculation Sheets

2025 Base Case

ROUNDABOUT CALCULATION

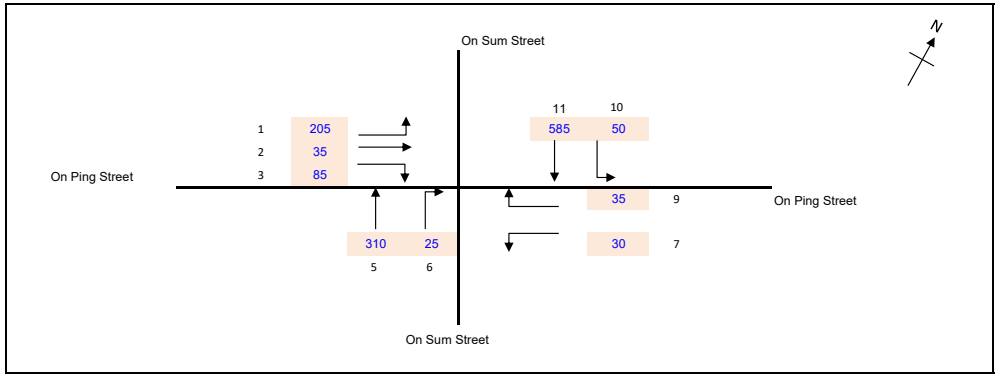
	Project No. -	
J1 - Shek Mun Interchange	2025 Base Case	J1_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	600	2490	185
Qc	=	Circulating flow across entry (pcu/h)	255	310	1885
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2655	2669	1489
DFC	=	Design flow/Capacity = Q/Qe	0.23	0.93	0.12

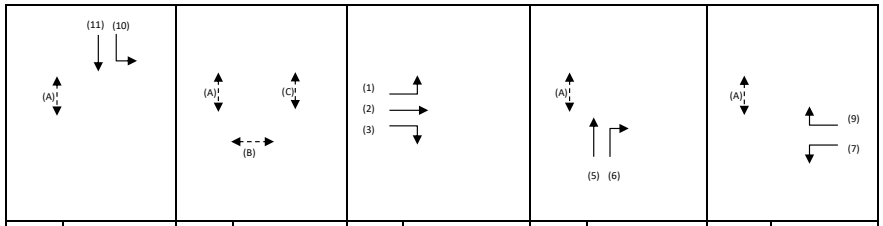
Total In Sum = 3275 PCU

DFC of Critical Approach = 0.93

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2025 Base Case	J2_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	130 sec
Sum(y)		Y =	0.318
Loss time		L =	45 sec
Total Flow		=	1360 pcu
Co	= (1.5*L+5)/(1-Y)	=	106.4 sec
Cm	= L/(1-Y)	=	66.0 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	76.6 %
Cp	= 0.9*L/(0.9-Y)	=	69.6 sec
Ymax	= 1-L/C	=	0.654
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	84.8 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

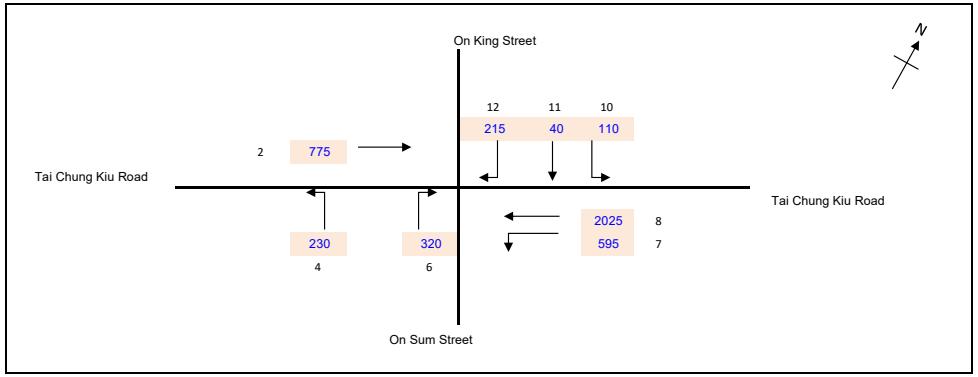
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	108	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	50			50	1.00	1809			1809	0.028			7	37	0.096	8
11	1	3.30	I	2				4170		585		585	0.00	4170			4170	0.140	0.140		37	37	0.487	45
1	3	4.00	II	1	15		N	2015	113			113	1.00	1832			1832	0.062	0.062		16	17	0.484	21
1,2	3	4.00	II	1	20			2155	92	35		127	0.72	2044			2044	0.062			17	17	0.487	24
3	3	4.00	II	1	15			2155			85	85	1.00	1959			1959	0.043			12	17	0.340	16
5	4	3.50	IV	1			N	1965		163		163	0.00	1965			1965	0.083	0.083		22	22	0.487	29
5,6	4	3.50	IV	1	25			2105		148	25	173	0.14	2087			2087	0.083			22	22	0.487	31
7,9	5	4.50	V	1	25		N	2065	30		35	65	1.00	1948			1948	0.033	0.033		9	9	0.487	13
																		Stage 2 Pedestrian		22				

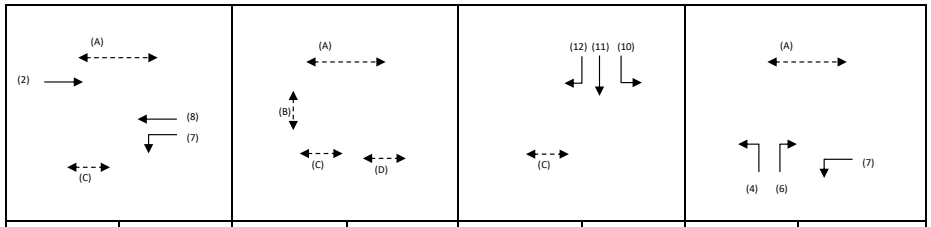
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2025 Base Case	J3_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	120	sec
Sum(y)	Y =	0.479	
Loss time	L =	41	sec
Total Flow	=	4310	pcu
Co = (1.5*L+5)/(1-Y)	=	127.6	sec
Cm = L/(1-Y)	=	78.7	sec
Yult	=	0.593	
R.C.ult = (Yult-Y)/Y*100%	=	23.7	%
Cp = 0.9*L/(0.9-Y)	=	87.6	sec
Ymax = 1-L/C	=	0.658	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	23.7	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

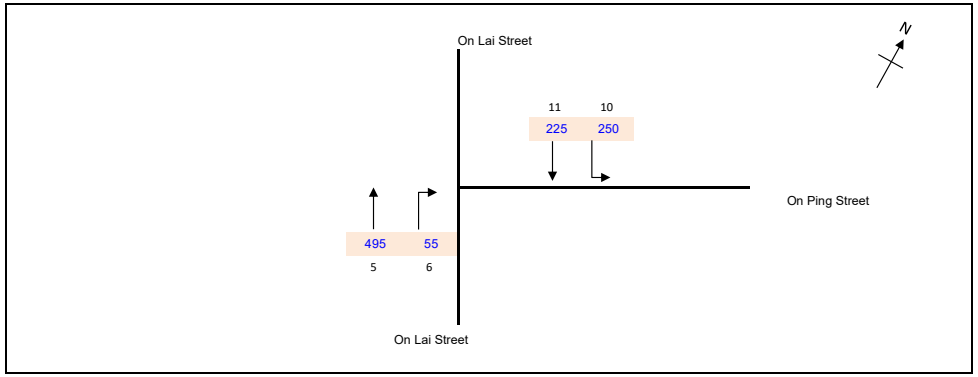
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	58	4	20	OK
B	15	7		13	7	3	13	OK
C	9	5		8	83	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		247		247	0.00	1965			1965	0.126			21	53	0.282	27
2	1	3.50	I	2				4210		528		528	0.00	4210			4210	0.126			21	53	0.282	29
8	1	3.30	II	3				6255		2025		2025	0.00	6255			6255	0.324	0.324		53	53	0.727	75
7	1,4	5.00	III	1	20		N	2115	595			595	1.00	1967			1967	0.302			50	50	0.727	70
10	3	3.50	IV	1	15		N	1965	71			71	1.00	1786			1786	0.040			7	9	0.526	13
10,11	3	3.30	IV	1	20			2085	39	40		79	0.50	2010			2010	0.040			7	9	0.526	15
12	3	3.30	IV	2	25			4170			215	215	1.00	3934			3934	0.055	0.055		9	9	0.727	20
4	4	3.00	V	1	12.5		N	1915	172			172	1.00	1710			1710	0.100	0.100		17	17	0.727	30
4,6	4	3.00	V	1	20			2055	58		134	192	1.00	1912			1912	0.100			17	17	0.726	33
6	4	3.00	V	1	15			2055			187	187	1.00	1868			1868	0.100			16	17	0.723	32
																		Stage 2 Pedestrian		23				

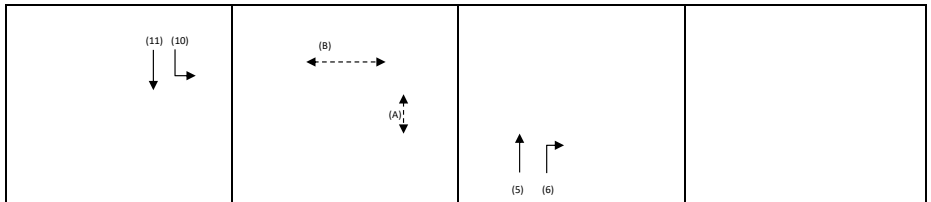
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2025 Base Case	J4_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.286
Loss time		L =	26 sec
Total Flow		=	1025 pcu
Co	= (1.5*L+5)/(1-Y)	=	61.6 sec
Cm	= L/(1-Y)	=	36.4 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	146.3 %
Cp	= 0.9*L/(0.9-Y)	=	38.1 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	151.5 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

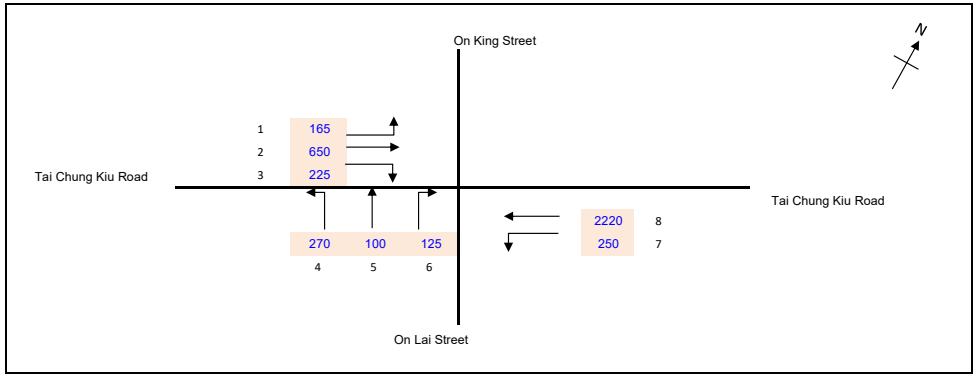
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	250	0		250	1.00	1726			1726	0.145	0.145		53	53	0.358	32
11	1	3.10	I	1				2065		225		225	0.00	2065			2065	0.109			40	53	0.269	29
5	3	2.80	II	1			N	1895		268		268	0.00	1895			1895	0.141	0.141		51	51	0.358	35
5,6	3	2.80	II	1	18			2035		227	55	282	0.20	2002			2002	0.141			51	51	0.358	37
																		Stage 2 Pedestrian		18				

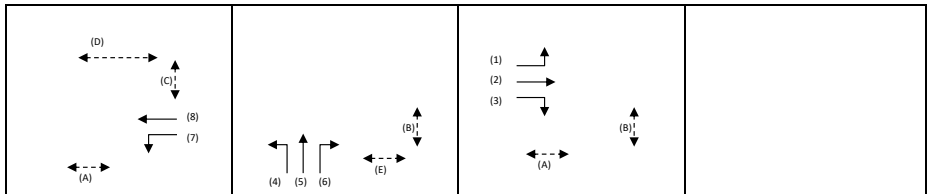
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2025 Base Case	J5_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.754
Loss time		L =	20 sec
Total Flow		=	4005 pcu
Co	= (1.5*L+5)/(1-Y)	=	142.5 sec
Cm	= L/(1-Y)	=	81.4 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	-0.6 %
Cp	= 0.9*L/(0.9-Y)	=	123.6 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	1.0 %



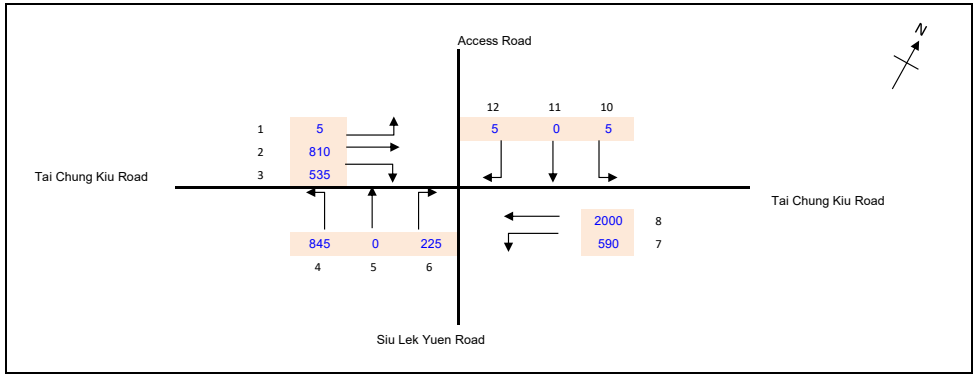
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	96	2	7	OK
B	7	5		6	53	3	10	OK
C	10	5		8	55	6	6	OK
D	6	5		5	51	6	10	OK
E	9	5		8	14	6	8	OK

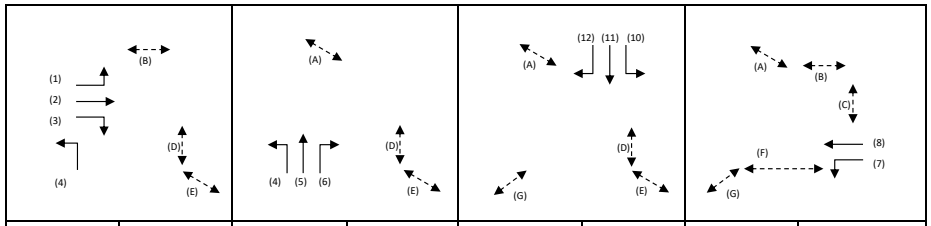
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	250	510		760	0.33	1873			1873	0.406	0.406		59	59	0.891	90
8	1	3.50	I	2				4210		1710		1710	0.00	4210			4210	0.406			59	59	0.891	101
4	2	3.40	II	1	10		N	1746	215			215	1.00	1518			1518	0.142	0.142		21	21	0.891	44
4,5,6	2	3.50	II	1	15			2105	55	100	125	280	0.64	1978			1978	0.142			21	21	0.891	51
1,2	3	3.50	III	1	10		N	1965	165	216		381	0.43	1845			1845	0.206	0.206		30	30	0.891	63
2	3	3.50	III	1				2105		434		434	0.00	2105			2105	0.206			30	30	0.890	72
3	3	3.50	III	1	15			2105			225	225	1.00	1914			1914	0.118			17	30	0.508	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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2025 Base Case	J6_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.579
Loss time		L =	25 sec
Total Flow		=	5020 pcu
Co	= (1.5*L+5)/(1-Y)	=	100.9 sec
Cm	= L/(1-Y)	=	59.4 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	23.1 %
Cp	= 0.9*L/(0.9-Y)	=	70.1 sec
Ymax	= 1-L/C	=	0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	25.6 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

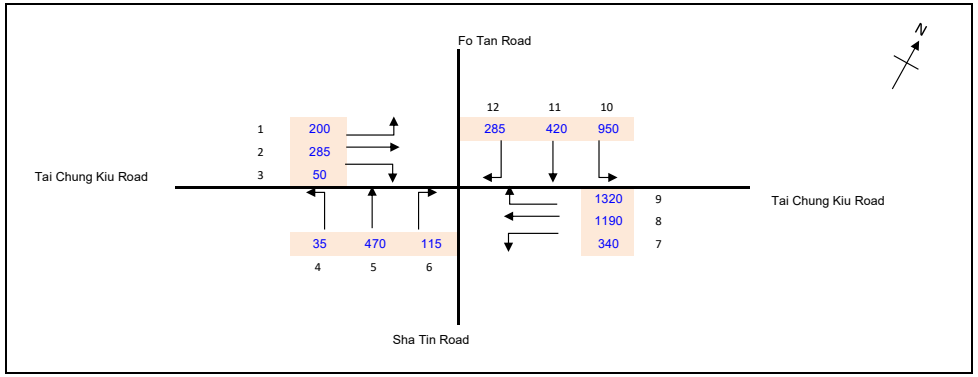
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	84	1	7	OK
B	5	5		5	90	2	13	OK
C	8	5		7	45	6	13	OK
D	9	5		8	56	2	12	OK
E	9	5		8	58	2	10	OK
F	9	5		8	47	6	11	OK
G	9	5		8	63	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	5			5	1.00	1754			1754	0.003			1	36	0.010	1
2	1	3.00	I	2				4110		810		810	0.00	4110			4110	0.197	0.197		36	36	0.717	64
3	1	3.00	I	2	22.5			4110			535	535	1.00	3853			3853	0.139			25	36	0.505	42
4	1,2	3.00	II	1	30		N	1915	406			406	1.00	1824			1824	0.223			40	53	0.546	52
4	1,2	3.00	II	1	35			2055	439			439	1.00	1971			1971	0.223			40	53	0.546	56
5,6	2	3.00	II	1	12.5			2055		0	114	114	1.00	1835			1835	0.062	0.062		11	11	0.717	23
6	2	3.00	II	1	10			2055			111	111	1.00	1787			1787	0.062			11	11	0.717	22
10,11,12	3	4.00	III	1	25		N	2015	5	0	0	5	1.00	1901			1901	0.003			0	5	0.068	1
12	3	4.00	III	1	15			2155			5	5	1.00	1959			1959	0.003			0	5	0.066	1
7	4	4.00	IV	1	20		N	2015	590			590	1.00	1874			1874	0.315			57	58	0.706	71
8	4	3.30	IV	3				6255		2000		2000	0.00	6255			6255	0.320	0.320		58	58	0.717	80
																	Stage 3 Provision of Min. g			5				

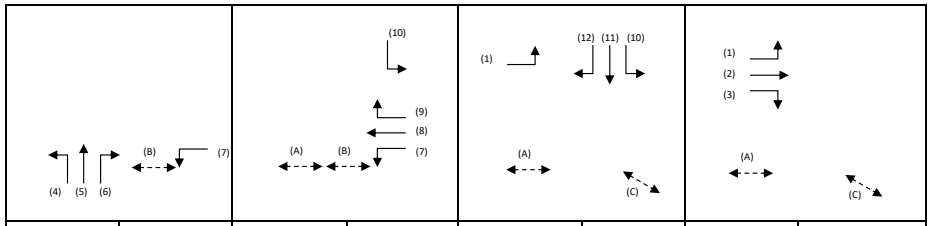
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2025 Base Case	J7_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.698
Loss time		L =	21 sec
Total Flow		=	5660 pcu
Co	= (1.5*L+5)/(1-Y)	=	120.8 sec
Cm	= L/(1-Y)	=	69.5 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	6.4 %
Cp	= 0.9*L/(0.9-Y)	=	93.5 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	8.1 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

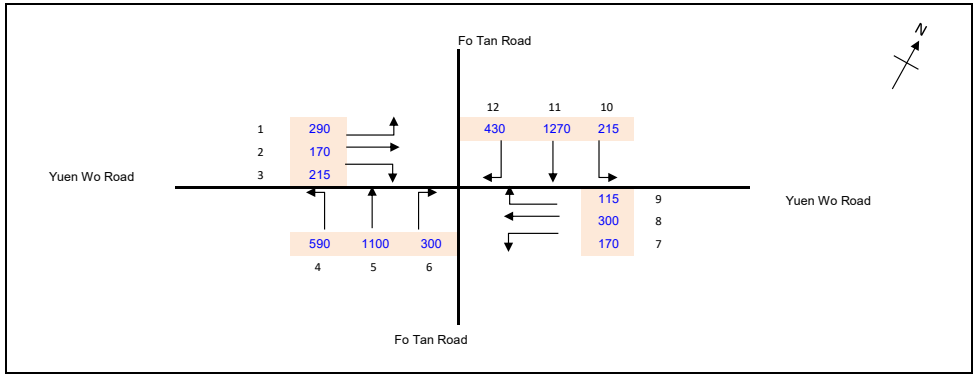
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	97	1	9	OK
B	5	5		5	71	8	8	OK
C	8	5		7	40	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	207		242	0.14	1912			1912	0.126	0.126		20	20	0.832	44
5,6	1	3.30	I	1	30			2085		264	0	264	0.00	2085			2085	0.126			20	20	0.832	48
6	1	3.30	I	1	25			2085			115	115	1.00	1967			1967	0.058			9	20	0.385	21
7	1,2	5.00	II	1	35		N	2115	340			340	1.00	2028		-900	1128	0.301			47	87	0.449	24
8	2	3.00	III	3				6165		1190		1190	0.00	6165			6165	0.193			30	54	0.461	50
9	2	3.00	III	2	17.5			4110			1320	1320	1.00	3786			3786	0.349	0.349		54	54	0.832	83
10	2,3	3.00	IV	1	12.5		N	1915	454			454	1.00	1710			1710	0.266			41	95	0.363	26
10	2,3	3.00	IV	1	15			2055	496			496	1.00	1868			1868	0.266			41	95	0.363	29
11	3	3.00	V	1				2055		363		363	0.00	2055			2055	0.177	0.177		28	28	0.832	62
11,12	3	3.00	V	1	20			2055		57	285	342	0.83	1934			1934	0.177			28	28	0.832	58
1	3,4	3.00	VI	1	12.5		N	1915	200			200	1.00	1710			1710	0.117			18	47	0.325	28
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		7	7	0.832	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			7	7	0.832	19
3	4	3.00	VII	1	25			2055			50	50	1.00	1939			1939	0.026			4	7	0.464	10

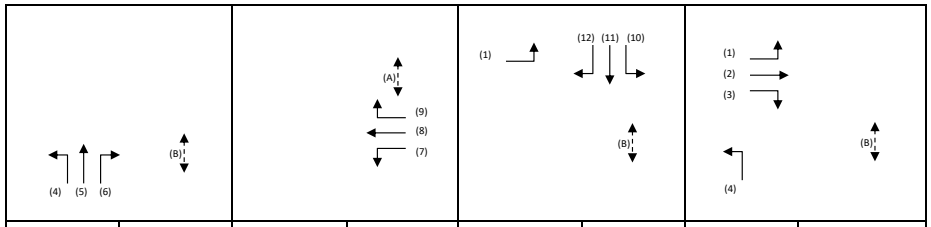
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2025 Base Case	J8_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.548
Loss time		L =	23 sec
Total Flow		=	5165 pcu
Co	= (1.5*L+5)/(1-Y)	=	87.3 sec
Cm	= L/(1-Y)	=	50.9 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	32.8 %
Cp	= 0.9*L/(0.9-Y)	=	58.8 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	35.2 %



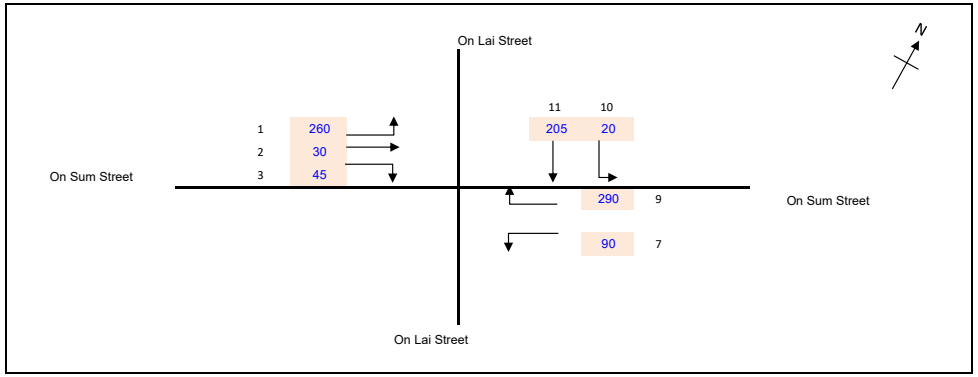
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	12	8	7	OK
B	9	5		8	94	2	11	OK

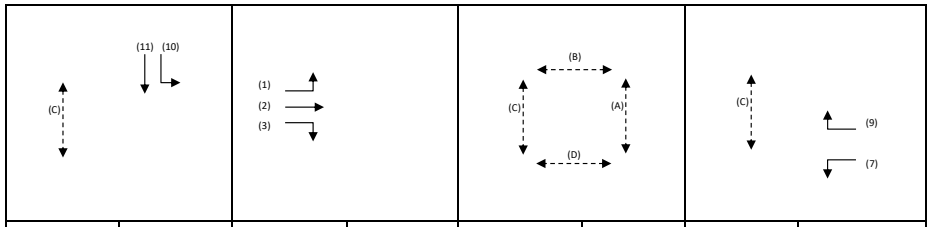
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	590			590	1.00	1741			1741	0.339			66	60	0.729	68
5	1	3.00	I	3				6165		1100		1100	0.00	6165			6165	0.178	0.178		35	35	0.666	58
6	1	3.00	I	1	22.5			2055			300	300	1.00	1927			1927	0.156			30	35	0.581	48
7	2	3.00	II	1	15		N	1915	170			170	1.00	1741			1741	0.098	0.098		19	19	0.666	31
8	2	3.00	II	1				2055		150		150	0.00	2055			2055	0.073			14	19	0.497	28
8,9	2	3.00	II	1	27.5			2055		150	0	150	0.00	2055			2055	0.073			14	19	0.497	28
9	2	3.00	II	1	22.5			2055			115	115	1.00	1927			1927	0.060			12	19	0.407	21
10	3	3.30	III	1	15		N	1945	215			215	1.00	1768			1768	0.122			24	40	0.390	32
10,11	3	3.30	III	1	20			2085	0	432		432	0.00	2085			2085	0.207	0.207		40	40	0.666	64
11	3	3.30	III	1				2085		432		432	0.00	2085			2085	0.207			40	40	0.666	64
11,12	3	3.30	III	1	27.5			2085		406	25	431	0.06	2078			2078	0.207			40	40	0.666	64
12	3	3.30	III	1	22.5			2085			405	405	1.00	1955			1955	0.207			40	40	0.666	60
1	3,4	3.30	IV	1	15		N	1945	290			290	1.00	1768			1768	0.164			32	65	0.328	31
2	4	3.30	IV	1				2085		133		133	0.00	2085			2085	0.064	0.064		12	13	0.659	26
2,3	4	3.30	IV	1	25			2085		37	90	127	0.71	2000			2000	0.064			12	13	0.656	25
3	4	3.30	IV	1	20			2085			125	125	1.00	1940			1940	0.064			13	13	0.666	24

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION		
		PROJECT NO:	-
J9 - On Lai Street / On Sum Street	2025 Base Case	J9_AM	



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.365
Loss time		L =	34 sec
Total Flow		=	940 pcu
Co	= (1.5*L+5)/(1-Y)	=	88.2 sec
Cm	= L/(1-Y)	=	53.6 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	76.6 %
Cp	= 0.9*L/(0.9-Y)	=	57.2 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	53.3 %



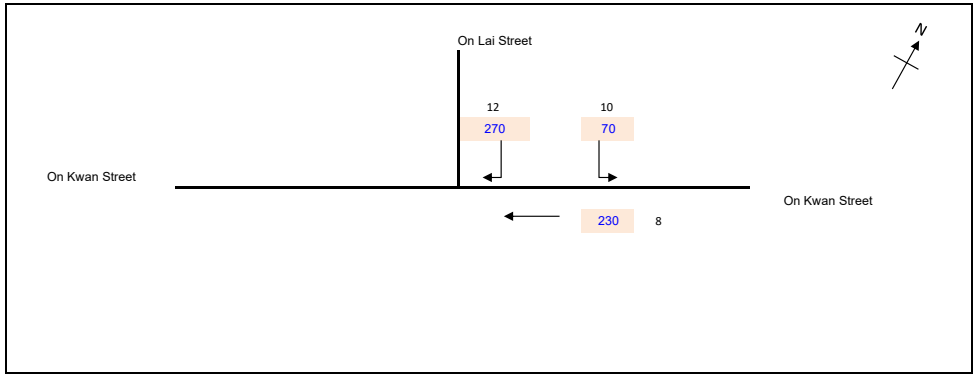
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	55	2	11	OK
D	8	5		7	6	6	11	OK

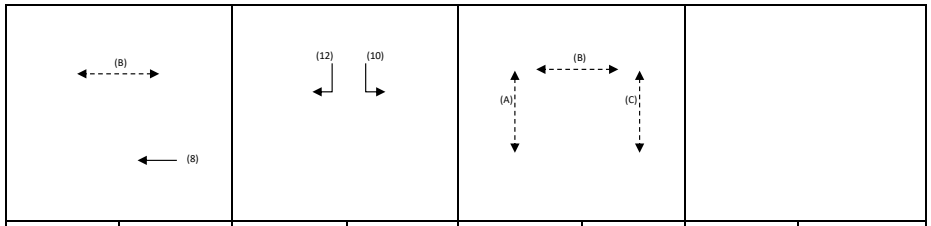
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				11				
10,11	1	3.50	I	1	15		N	1965	20	50		70	0.29	1910			1910	0.037	0.037		6	6	0.584	10
11	1	3.50	I	2				4210		155		155	0.00	4210			4210	0.037			6	6	0.587	11
1,2	2	5.00	II	1	15		N	2115	260	0		260	1.00	1923			1923	0.135	0.135		21	21	0.587	30
2,3	2	5.00	II	1	20			2255		30	45	75	0.60	2158			2158	0.035			5	21	0.151	9
7,9	4	5.00	III	1	20		N	2115	90		290	380	1.00	1967			1967	0.193	0.193		30	30	0.587	38
																		Stage 3 Pedestrian		23				

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2025 Base Case	J10_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	85 sec
Sum(y)		Y =	0.249
Loss time		L =	34 sec
Total Flow		=	570 pcu
Co	= (1.5*L+5)/(1-Y)	=	74.6 sec
Cm	= L/(1-Y)	=	45.3 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	158.8 %
Cp	= 0.9*L/(0.9-Y)	=	47.0 sec
Ymax	= 1-L/C	=	0.600
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	116.6 %



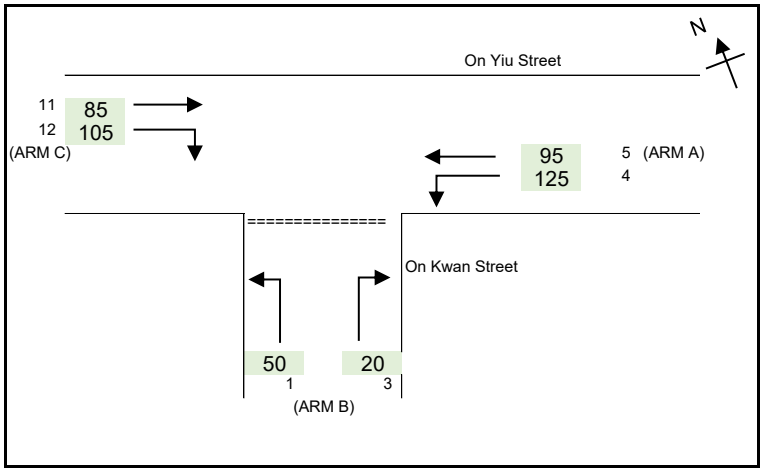
STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	39	3	12	OK
C	8	5		7	6	6	7	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.
																				10				
8	1	4.50	I	1			N	2065		230		230	0.00	2065			2065	0.111	0.111		23	23	0.415	24
10	2	3.50	II	1	15		N	1965	70			70	1.00	1786			1786	0.039			8	28	0.118	7
12	2	3.50	II	1	20			2105			270	270	1.00	1958			1958	0.138	0.138		28	28	0.415	26
																		Stage 3 Pedestrian		24				

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2025 Base Case	J11_AM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	125	(pcu/hr)
q a-c	=	95	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	85	(pcu/hr)
q c-b	=	105	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	20	(pcu/hr)
q b-c	=	50	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	442
Q b-c	=	629
Q c-b	=	751
Q b-ac	=	561.2

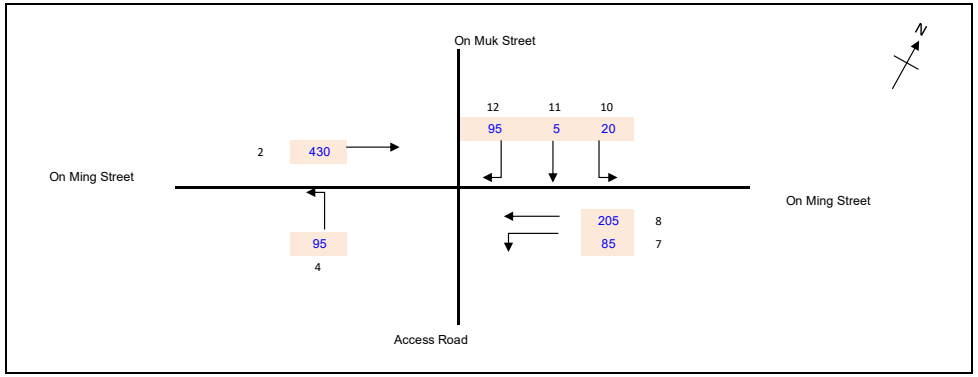
TOTAL FLOW = 480 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

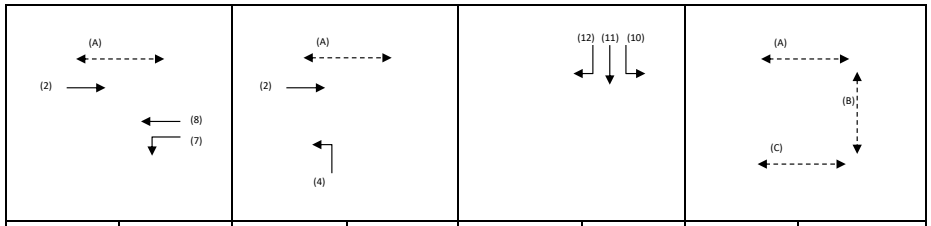
DFC b-a	=	0.0452
DFC b-c	=	0.0795
DFC c-b	=	0.1398
DFC b-ac	=	0.1247

CRITICAL DFC = 0.14

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2025 Base Case	J12_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.154
Loss time		L =	40 sec
Total Flow		=	935 pcu
Co	= (1.5*L+5)/(1-Y)	=	76.8 sec
Cm	= L/(1-Y)	=	47.3 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	289.3 %
Cp	= 0.9*L/(0.9-Y)	=	48.3 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	271.6 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	82	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		208		208	0.00	2015			2015	0.103			47	47	0.242	22
2	1,2	4.00	I	1				2155		222		222	0.00	2155			2155	0.103			47	47	0.242	23
7,8	1	3.50	II	1	20		N	1965	85	52		137	0.62	1878			1878	0.073	0.073		33	33	0.242	18
8	1	3.50	II	1				2105		153		153	0.00	2105			2105	0.073			33	33	0.241	20
4	2	3.50	III	1	20		N	1965	95			95	1.00	1828			1828	0.052	0.052		24	24	0.242	14
10,11,12	3	5.00	IV	1	30		N	2115	20	5	34	59	0.92	2022			2022	0.029			13	13	0.242	10
12	3	5.00	IV	1	25			2255			61	61	1.00	2127			2127	0.029	0.029		13	13	0.238	10
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2025 Base Case	J13_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	105	450	280
Qc	=	Circulating flow across entry (pcu/h)	485	340	365
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2298	1994	2327
DFC	=	Design flow/Capacity = Q/Qe	0.05	0.23	0.12

Total In Sum = **835** **PCU**

DFC of Critical Approach = **0.23**

ROUNDABOUT CALCULATION

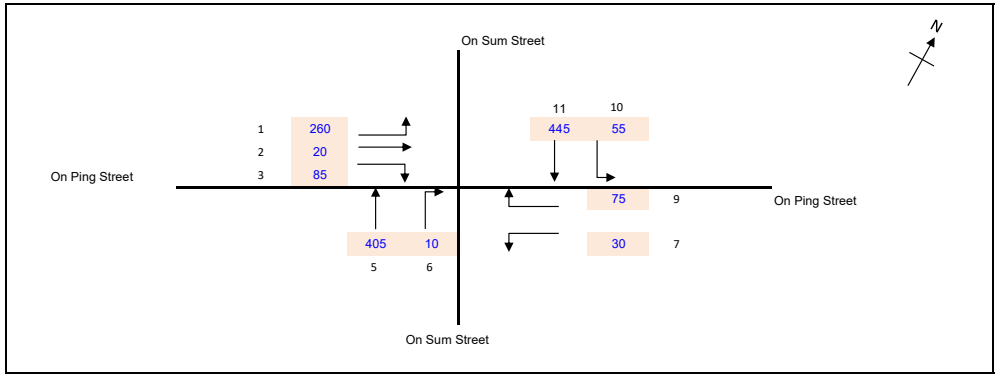
	Project No. -	
J1 - Shek Mun Interchange	2025 Base Case	J1_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	425	1585	215
Qc	=	Circulating flow across entry (pcu/h)	250	630	1280
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2658	2467	1849
DFC	=	Design flow/Capacity = Q/Qe	0.16	0.64	0.12

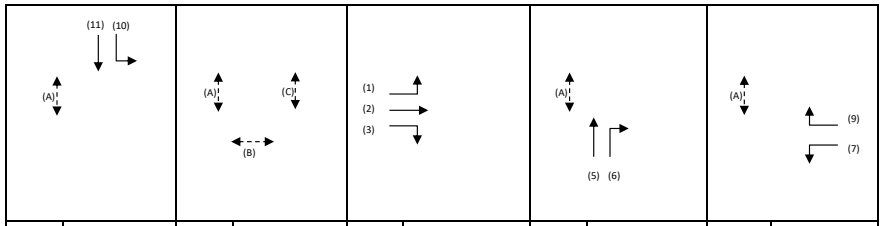
Total In Sum = 2225 PCU

DFC of Critical Approach = 0.64

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2025 Base Case	J2_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	125 sec
Sum(y)		Y =	0.336
Loss time		L =	45 sec
Total Flow		=	1385 pcu
Co	= (1.5*L+5)/(1-Y)	=	109.1 sec
Cm	= L/(1-Y)	=	67.7 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	67.6 %
Cp	= 0.9*L/(0.9-Y)	=	71.8 sec
Ymax	= 1-L/C	=	0.640
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	71.6 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

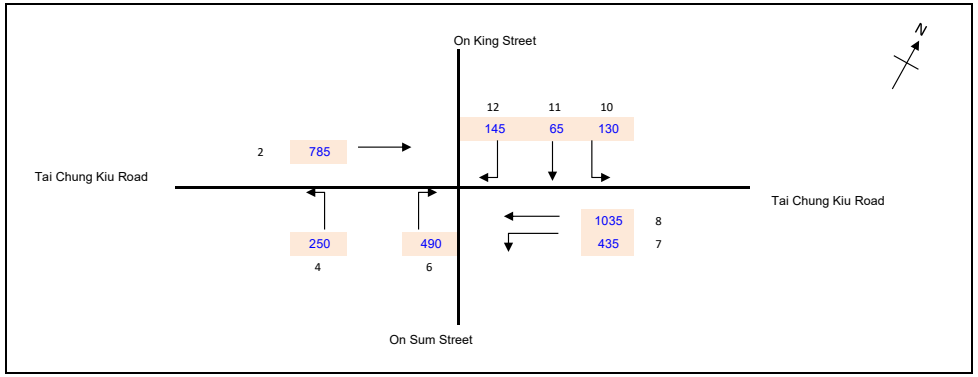
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	103	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	55			55	1.00	1809			1809	0.030			7	25	0.149	9
11	1	3.30	I	2				4170		445		445	0.00	4170			4170	0.107	0.107		25	25	0.524	37
1	3	4.00	II	1	15		N	2015	133			133	1.00	1832			1832	0.073	0.073		17	17	0.524	24
1,2	3	4.00	II	1	20			2155	127	20		147	0.86	2024			2024	0.073			17	17	0.524	26
3	3	4.00	II	1	15			2155			85	85	1.00	1959			1959	0.043			10	17	0.313	15
5	4	3.50	IV	1			N	1965		200		200	0.00	1965			1965	0.102	0.102		24	24	0.521	34
5,6	4	3.50	IV	1	25			2105		205	10	215	0.05	2099			2099	0.102			24	24	0.524	36
7,9	5	4.50	V	1	25		N	2065	30		75	105	1.00	1948			1948	0.054	0.054		13	13	0.524	20
																		Stage 2 Pedestrian		22				

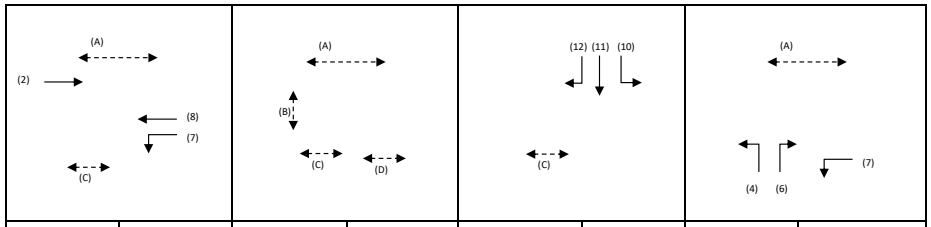
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2025 Base Case	J3_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.352	
Loss time	L =	42	sec
Total Flow	=	3335	pcu
Co = (1.5*L+5)/(1-Y)	=	104.9	sec
Cm = L/(1-Y)	=	64.8	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	66.3	%
Cp = 0.9*L/(0.9-Y)	=	68.9	sec
Ymax = 1-L/C	=	0.664	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	69.9	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

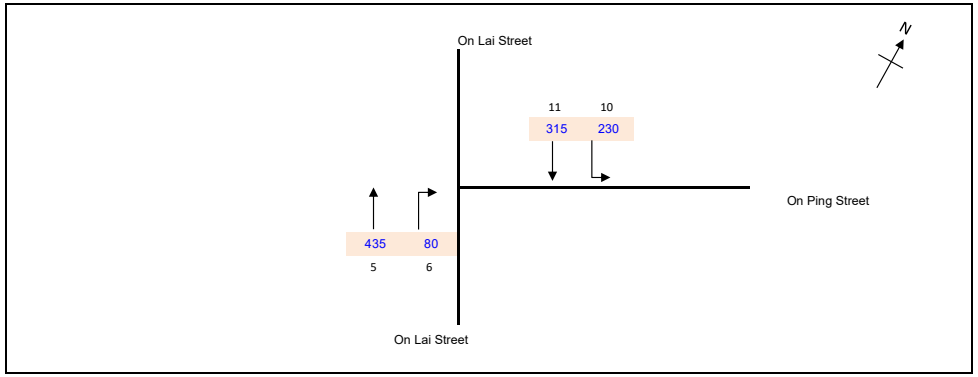
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	61	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	73	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		250		250	0.00	1965			1965	0.127			30	39	0.407	36
2	1	3.50	I	2				4210		535		535	0.00	4210			4210	0.127			30	39	0.407	38
8	1	3.30	II	3				6255		1035		1035	0.00	6255			6255	0.165	0.165		39	39	0.530	49
7	1,4	5.00	III	1	20		N	2115	435			435	1.00	1967			1967	0.221			52	52	0.530	53
10	3	3.50	IV	1	15		N	1965	91			91	1.00	1786			1786	0.051	0.051		12	12	0.526	17
10,11	3	3.30	IV	1	20			2085	39	65		104	0.38	2028			2028	0.051			12	12	0.530	20
12	3	3.30	IV	2	25			4170			145	145	1.00	3934			3934	0.037			9	12	0.381	14
4	4	3.00	V	1	12.5		N	1915	230			230	1.00	1710			1710	0.135	0.135		32	32	0.528	36
4,6	4	3.00	V	1	20			2055	20		238	258	1.00	1912			1912	0.135			32	32	0.530	40
6	4	3.00	V	1	15			2055			252	252	1.00	1868			1868	0.135			32	32	0.529	39
																		Stage 2 Pedestrian		24				

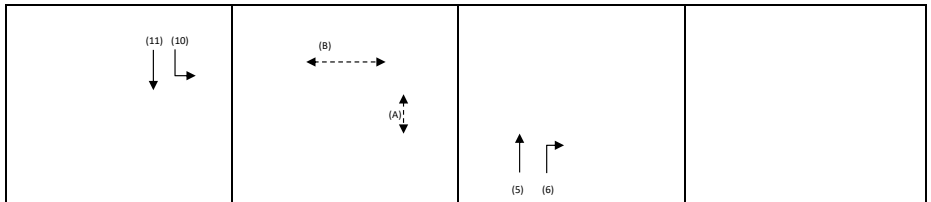
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2025 Base Case	J4_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	125 sec
Sum(y)		Y =	0.276
Loss time		L =	26 sec
Total Flow		=	1060 pcu
Co	= (1.5*L+5)/(1-Y)	=	60.8 sec
Cm	= L/(1-Y)	=	35.9 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	155.1 %
Cp	= 0.9*L/(0.9-Y)	=	37.5 sec
Ymax	= 1-L/C	=	0.792
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	158.0 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

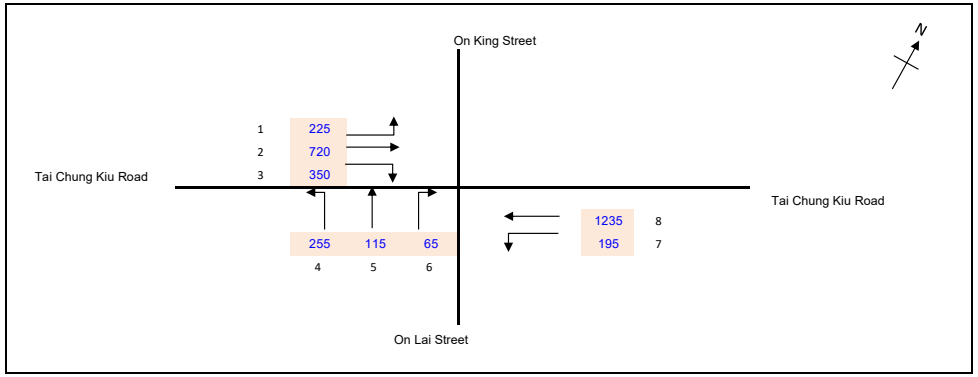
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	230	19		249	0.92	1740			1740	0.143	0.143		51	51	0.348	31
11	1	3.10	I	1				2065		296		296	0.00	2065			2065	0.143			51	51	0.349	36
5	3	2.80	II	1			N	1895		252		252	0.00	1895			1895	0.133	0.133		48	48	0.349	32
5,6	3	2.80	II	1	18			2035		183	80	263	0.30	1985			1985	0.133			47	47	0.349	34
																		Stage 2 Pedestrian		18				

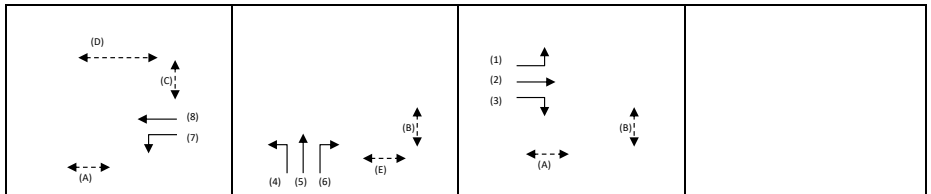
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2025 Base Case	J5_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	3	
Cycle time	C =	130	sec
Sum(y)	Y =	0.601	
Loss time	L =	20	sec
Total Flow	=	3160	pcu
Co = (1.5*L+5)/(1-Y)	=	87.7	sec
Cm = L/(1-Y)	=	50.1	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	24.9	%
Cp = 0.9*L/(0.9-Y)	=	60.1	sec
Ymax = 1-L/C	=	0.846	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	26.8	%



STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

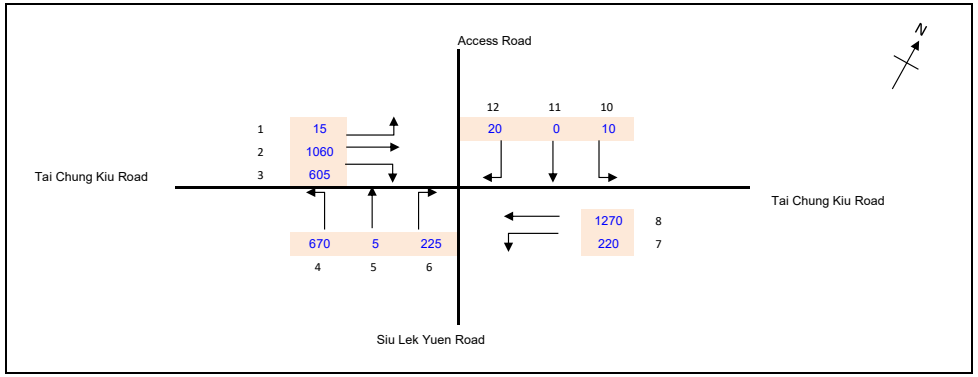
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	94	2	7	OK
B	7	5		6	69	3	10	OK
C	10	5		8	39	6	6	OK
D	6	5		5	35	6	10	OK
E	9	5		8	16	6	8	OK

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.
																				20				
7,8	1	3.50	I	1	10		N	1965	195	240		435	0.45	1841			1841	0.236	0.236		43	43	0.710	63
8	1	3.50	I	2				4210		995		995	0.00	4210			4210	0.236			43	43	0.710	72
4	2	3.40	II	1	10		N	1746	188			188	1.00	1518			1518	0.124	0.124		23	23	0.710	37
4,5,6	2	3.50	II	1	15			2105	67	115	65	247	0.53	1998			1998	0.124			23	23	0.708	44
1,2	3	3.50	III	1	10		N	1965	225	214		439	0.51	1825			1825	0.240	0.240		44	44	0.710	63
2	3	3.50	III	1				2105		506		506	0.00	2105			2105	0.240			44	44	0.710	73
3	3	3.50	III	1	15			2105			350	350	1.00	1914			1914	0.183			33	44	0.540	50

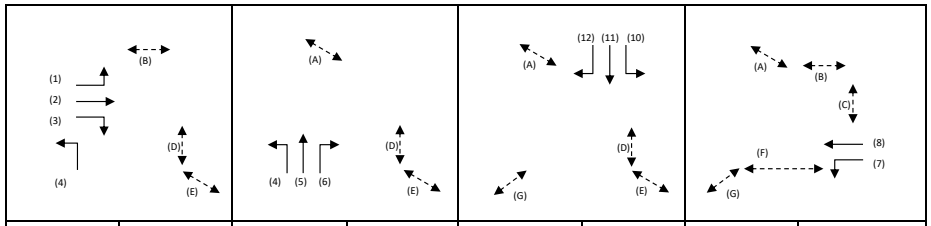
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2025 Base Case	J6_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	125 sec
Sum(y)		Y =	0.524
Loss time		L =	25 sec
Total Flow		=	4100 pcu
Co	= (1.5*L+5)/(1-Y)	=	89.4 sec
Cm	= L/(1-Y)	=	52.6 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	35.9 %
Cp	= 0.9*L/(0.9-Y)	=	59.9 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	37.3 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

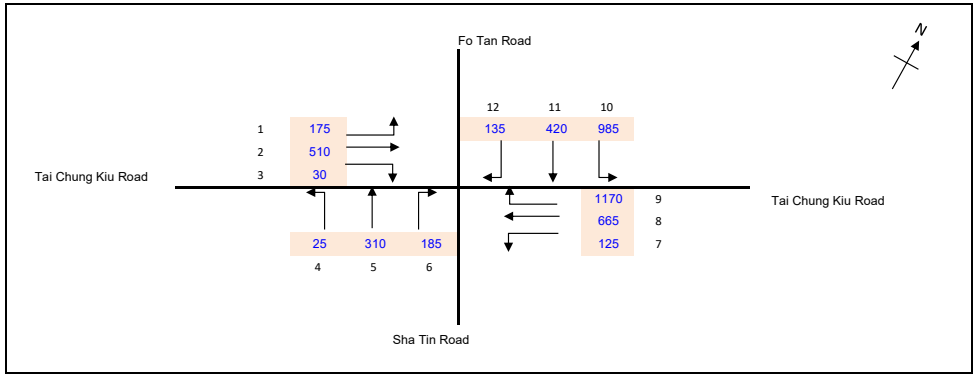
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	66	1	7	OK
B	5	5		5	84	2	13	OK
C	8	5		7	26	6	13	OK
D	9	5		8	70	2	12	OK
E	9	5		8	72	2	10	OK
F	9	5		8	28	6	11	OK
G	9	5		8	44	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	15			15	1.00	1754			1754	0.009			2	49	0.022	2
2	1	3.00	I	2				4110		1060		1060	0.00	4110			4110	0.258	0.258		49	49	0.656	67
3	1	3.00	I	2	22.5			4110			605	605	1.00	3853			3853	0.157			30	49	0.399	38
4	1,2	3.00	II	1	30		N	1915	322			322	1.00	1824			1824	0.177			34	67	0.328	31
4	1,2	3.00	II	1	35			2055	348			348	1.00	1971			1971	0.177			34	67	0.328	33
5,6	2	3.00	II	1	12.5			2055		5	112	117	0.96	1843			1843	0.063	0.063		12	12	0.656	22
6	2	3.00	II	1	10			2055			113	113	1.00	1787			1787	0.063			12	12	0.653	21
10,11,12	3	4.00	III	1	25		N	2015	10	0	5	15	1.00	1901			1901	0.008			2	5	0.197	3
12	3	4.00	III	1	15			2155			15	15	1.00	1959			1959	0.008			1	5	0.191	3
7	4	4.00	IV	1	20		N	2015	220			220	1.00	1874			1874	0.117			22	39	0.379	32
8	4	3.30	IV	3				6255		1270		1270	0.00	6255			6255	0.203	0.203		39	39	0.656	61
																	Stage 3 Provision of Min. g			5				

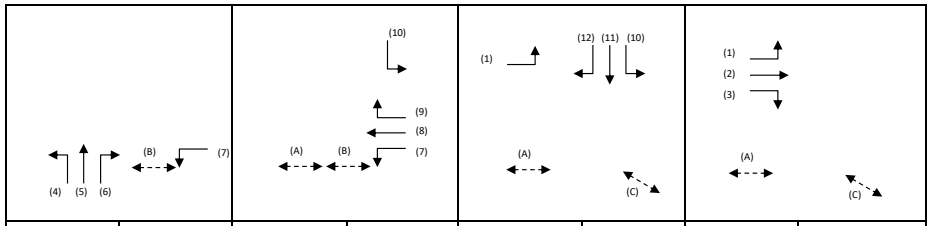
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2025 Base Case	J7_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.617	
Loss time	L =	21	sec
Total Flow	=	4735	pcu
Co = (1.5*L+5)/(1-Y)	=	95.2	sec
Cm = L/(1-Y)	=	54.8	sec
Yult	=	0.743	
R.C.ult = (Yult-Y)/Y*100%	=	20.4	%
Cp = 0.9*L/(0.9-Y)	=	66.7	sec
Ymax = 1-L/C	=	0.838	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	22.4	%



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

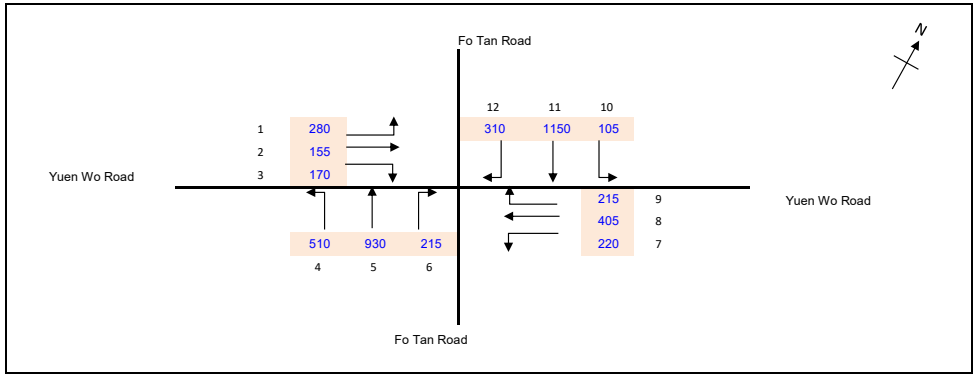
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	102	1	9	OK
B	5	5		5	67	8	8	OK
C	8	5		7	44	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	142		167	0.15	1911			1911	0.087	0.087		15	15	0.735	32
5,6	1	3.30	I	1	30			2085		168	13	181	0.07	2078			2078	0.087			15	15	0.733	35
6	1	3.30	I	1	25			2085			172	172	1.00	1967			1967	0.087			15	15	0.736	33
7	1,2	5.00	II	1	35		N	2115	125			125	1.00	2028		-900	1128	0.111			20	83	0.173	10
8	2	3.00	III	3				6165		665		665	0.00	6165			6165	0.108			19	55	0.257	28
9	2	3.00	III	2	17.5			4110			1170	1170	1.00	3786			3786	0.309	0.309		55	55	0.736	73
10	2,3	3.00	IV	1	12.5		N	1915	471			471	1.00	1710			1710	0.275			49	92	0.390	30
10	2,3	3.00	IV	1	15			2055	514			514	1.00	1868			1868	0.275			49	92	0.389	33
11	3	3.00	V	1				2055		283		283	0.00	2055			2055	0.138	0.138		24	24	0.736	50
11,12	3	3.00	V	1	20			2055		137	135	272	0.50	1981			1981	0.138			24	24	0.736	48
1	3,4	3.00	VI	1	12.5		N	1915	175			175	1.00	1710			1710	0.102			18	51	0.261	23
2	4	3.00	VII	2				4110		340		340	0.00	4110			4110	0.083	0.083		15	15	0.736	33
2,3	4	3.00	VII	1	30			2055		170	0	170	0.00	2055			2055	0.083			15	15	0.736	33
3	4	3.00	VII	1	25			2055			30	30	1.00	1939			1939	0.015			3	15	0.138	6

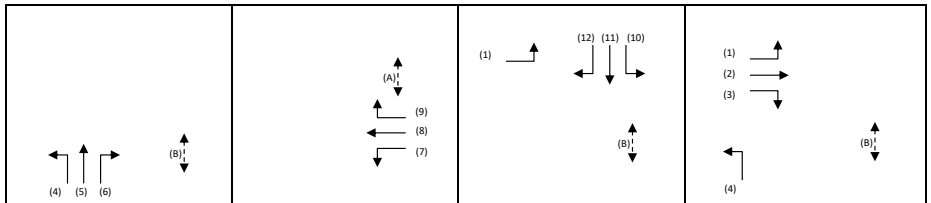
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2025 Base Case	J8_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.515	
Loss time	L =	23	sec
Total Flow	=	4665	pcu
Co = (1.5*L+5)/(1-Y)	=	81.5	sec
Cm = L/(1-Y)	=	47.4	sec
Yult	=	0.728	
R.C.ult = (Yult-Y)/Y*100%	=	41.2	%
Cp = 0.9*L/(0.9-Y)	=	53.8	sec
Ymax = 1-L/C	=	0.823	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	43.8	%



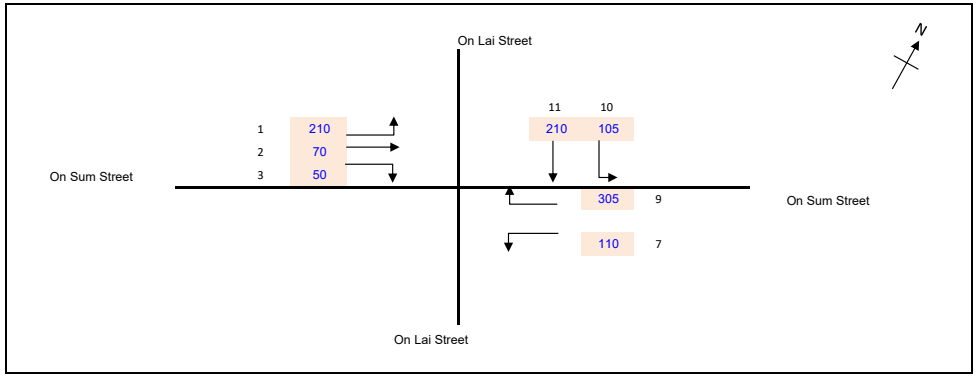
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	19	8	7	OK
B	9	5		8	87	2	11	OK

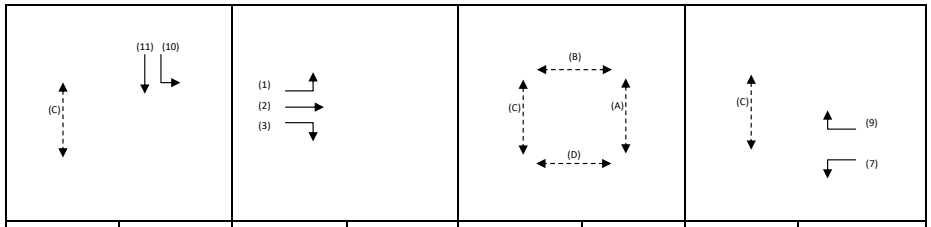
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	510			510	1.00	1741			1741	0.293			61	56	0.685	63
5	1	3.00	I	3				6165		930		930	0.00	6165			6165	0.151	0.151		31	31	0.626	51
6	1	3.00	I	1	22.5			2055			215	215	1.00	1927			1927	0.112			23	31	0.463	35
7	2	3.00	II	1	15		N	1915	220			220	1.00	1741			1741	0.126	0.126		26	26	0.626	38
8	2	3.00	II	1				2055		211		211	0.00	2055			2055	0.103			21	26	0.509	36
8,9	2	3.00	II	1	27.5			2055		194	17	211	0.08	2046			2046	0.103			21	26	0.511	36
9	2	3.00	II	1	22.5			2055			198	198	1.00	1927			1927	0.103			21	26	0.509	34
10	3	3.30	III	1	15		N	1945	105			105	1.00	1768			1768	0.059			12	38	0.202	16
10,11	3	3.30	III	1	20			2085	0	383		383	0.00	2085			2085	0.184	0.184		38	38	0.626	59
11	3	3.30	III	1				2085		383		383	0.00	2085			2085	0.184			38	38	0.626	59
11,12	3	3.30	III	1	27.5			2085		383	0	383	0.00	2085			2085	0.184			38	38	0.626	59
12	3	3.30	III	1	22.5			2085			310	310	1.00	1955			1955	0.159			33	38	0.540	47
1	3,4	3.30	IV	1	15		N	1945	280			280	1.00	1768			1768	0.158			33	61	0.335	32
2	4	3.30	IV	1				2085		113		113	0.00	2085			2085	0.054	0.054		11	11	0.626	22
2,3	4	3.30	IV	1	25			2085		42	66	108	0.61	2011			2011	0.054			11	11	0.620	21
3	4	3.30	IV	1	20			2085			104	104	1.00	1940			1940	0.054			11	11	0.619	21

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION		
		PROJECT NO:	-
J9 - On Lai Street / On Sum Street	2025 Base Case	J9_PM	



No. of stages per cycle		N =		
No. of stage using for calculation		N =	4	
Cycle time		C =	90	sec
Sum(y)		Y =	0.379	
Loss time		L =	34	sec
Total Flow		=	1060	pcu
Co	= (1.5*L+5)/(1-Y)	=	90.2	sec
Cm	= L/(1-Y)	=	54.7	sec
Yult		=	0.645	
R.C.ult	= (Yult-Y)/Y*100%	=	70.2	%
Cp	= 0.9*L/(0.9-Y)	=	58.7	sec
Ymax	= 1-L/C	=	0.622	
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	47.8	%



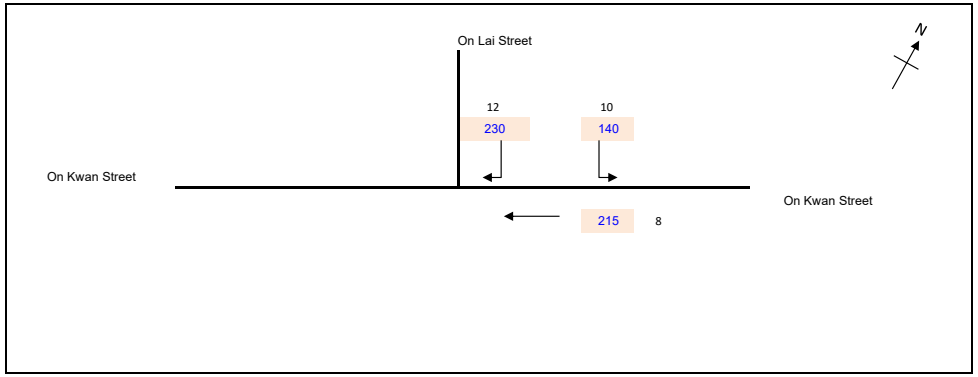
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	60	2	11	OK
D	8	5		7	6	6	11	OK

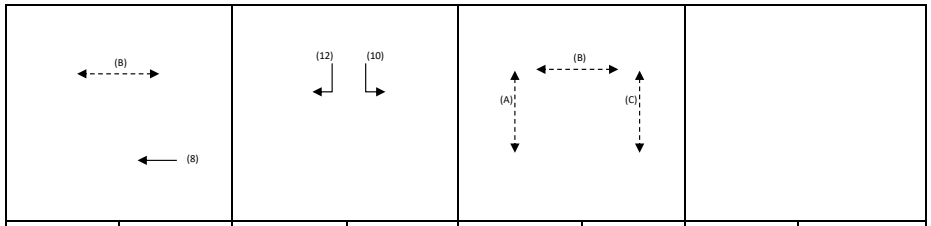
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				11				
10,11	1	3.50	I	1	15		N	1965	105	0		105	1.00	1786			1786	0.059	0.059		9	9	0.609	14
11	1	3.50	I	2				4210		210		210	0.00	4210			4210	0.050			7	9	0.517	14
1,2	2	5.00	II	1	15		N	2115	210	0		210	1.00	1923			1923	0.109	0.109		16	16	0.609	26
2,3	2	5.00	II	1	20			2255		70	50	120	0.42	2187			2187	0.055			8	16	0.306	15
7,9	4	5.00	III	1	20		N	2115	110		305	415	1.00	1967			1967	0.211	0.211		31	31	0.609	41
																		Stage 3 Pedestrian		23				

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2025 Base Case	J10_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.222
Loss time		L =	34 sec
Total Flow		=	585 pcu
Co	= (1.5*L+5)/(1-Y)	=	71.9 sec
Cm	= L/(1-Y)	=	43.7 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	191.1 %
Cp	= 0.9*L/(0.9-Y)	=	45.1 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	152.7 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

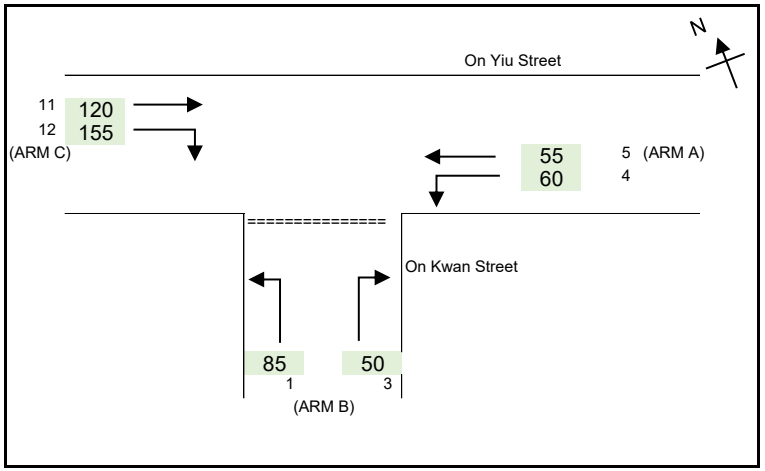
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	42	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		215		215	0.00	2065			2065	0.104	0.104		26	26	0.356	23
10	2	3.50	II	1	15		N	1965	140			140	1.00	1786			1786	0.078			20	30	0.238	14
12	2	3.50	II	1	20			2105			230	230	1.00	1958			1958	0.117	0.117		30	30	0.356	23
																		Stage 3 Pedestrian		24				

Mott MacDonald Restricted

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2025 Base Case	J11_PM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	60	(pcu/hr)
q a-c	=	55	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	120	(pcu/hr)
q c-b	=	155	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	50	(pcu/hr)
q b-c	=	85	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	434
Q b-c	=	647
Q c-b	=	786
Q b-ac	=	547.5

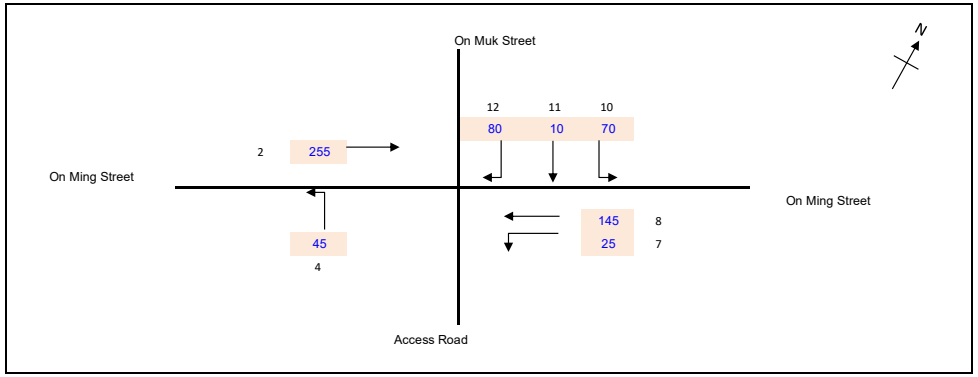
TOTAL FLOW = 525 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

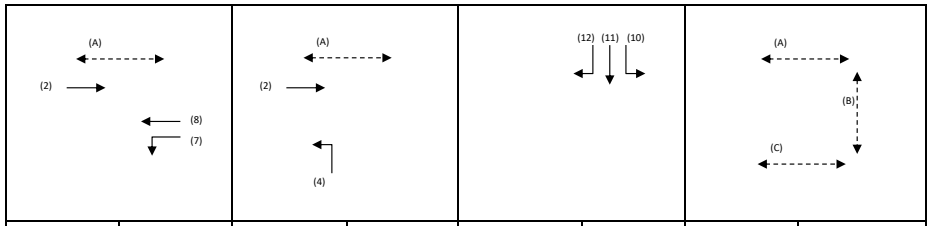
DFC b-a	=	0.1152
DFC b-c	=	0.1314
DFC c-b	=	0.1972
DFC b-ac	=	0.2466

CRITICAL DFC = 0.25

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2025 Base Case	J12_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.106
Loss time		L =	40 sec
Total Flow		=	630 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.7 sec
Cm	= L/(1-Y)	=	44.8 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	464.0 %
Cp	= 0.9*L/(0.9-Y)	=	45.4 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	438.4 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	69	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		123		123	0.00	2015			2015	0.061			40	40	0.167	14
2	1,2	4.00	I	1				2155		132		132	0.00	2155			2155	0.061			40	40	0.167	15
7,8	1	3.50	II	1	20		N	1965	25	56		81	0.31	1921			1921	0.042	0.042		28	28	0.167	11
8	1	3.50	II	1				2105		89		89	0.00	2105			2105	0.042			28	28	0.167	12
4	2	3.50	III	1	20		N	1965	45			45	1.00	1828			1828	0.025	0.025		16	16	0.167	7
10,11,12	3	5.00	IV	1	30		N	2115	70	10	0	80	0.88	2026			2026	0.039	0.039		26	26	0.167	11
12	3	5.00	IV	1	25			2255			80	80	1.00	2127			2127	0.038			25	26	0.159	11
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2025 Base Case	J13_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	170	325	70
Qc	=	Circulating flow across entry (pcu/h)	375	235	425
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2391	2073	2277
DFC	=	Design flow/Capacity = Q/Qe	0.07	0.16	0.03

Total In Sum = 565 PCU

DFC of Critical Approach = 0.16

2032 Reference Case

ROUNDABOUT CALCULATION

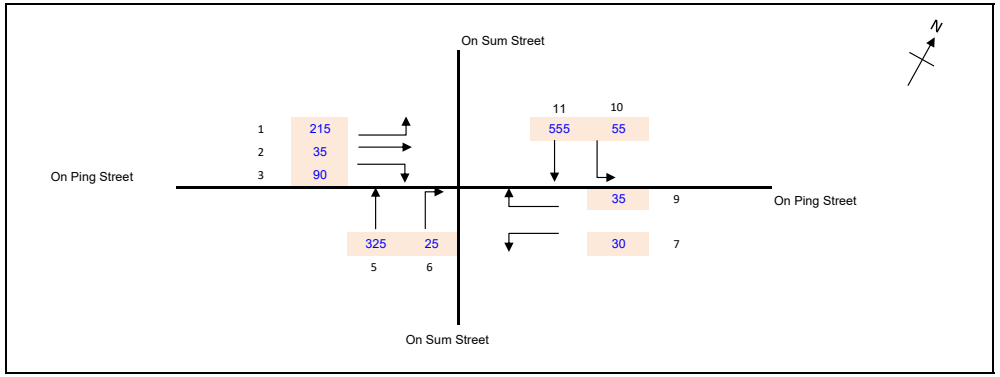
	Project No. -	
J1 - Shek Mun Interchange	2032 Reference Case	J1_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	655	2160	195
Qc	=	Circulating flow across entry (pcu/h)	270	325	1505
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2646	2659	1715
DFC	=	Design flow/Capacity = Q/Qe	0.25	0.81	0.11

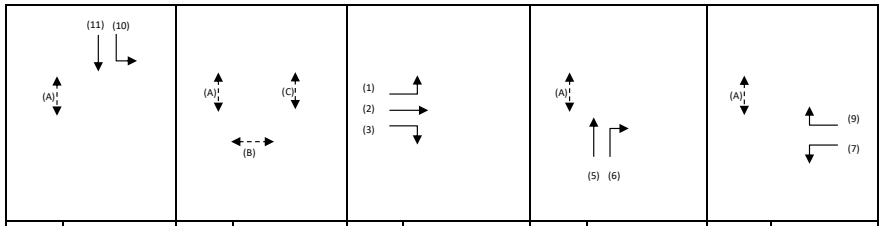
Total In Sum = 3010 PCU

DFC of Critical Approach = 0.81

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2032 Reference Case	J2_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	130 sec
Sum(y)		Y =	0.317
Loss time		L =	45 sec
Total Flow		=	1365 pcu
Co	= (1.5*L+5)/(1-Y)	=	106.2 sec
Cm	= L/(1-Y)	=	65.9 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	77.2 %
Cp	= 0.9*L/(0.9-Y)	=	69.5 sec
Ymax	= 1-L/C	=	0.654
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	85.4 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

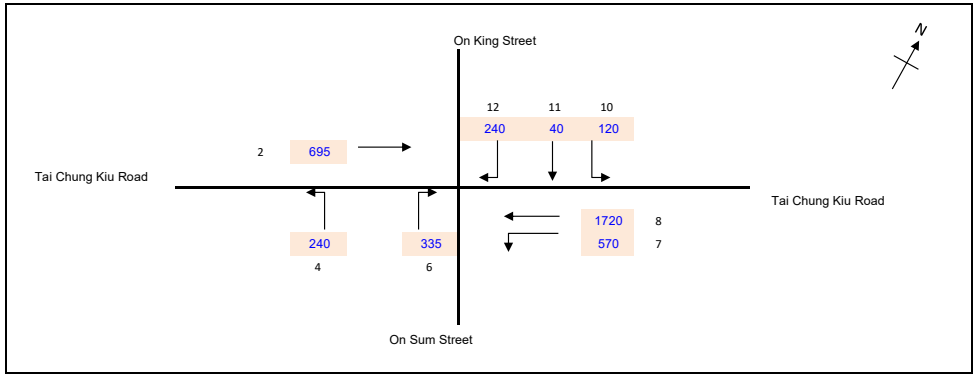
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	113	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	55			55	1.00	1809			1809	0.030			8	36	0.111	9
11	1	3.30	I	2				4170		555		555	0.00	4170			4170	0.133	0.133		36	36	0.486	44
1	3	4.00	II	1	15		N	2015	118			118	1.00	1832			1832	0.065	0.065		17	17	0.485	22
1,2	3	4.00	II	1	20			2155	97	35		132	0.73	2042			2042	0.065			17	17	0.486	25
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			12	17	0.346	17
5	4	3.50	IV	1			N	1965		170		170	0.00	1965			1965	0.086	0.086		23	23	0.484	30
5,6	4	3.50	IV	1	25			2105		156	25	181	0.14	2088			2088	0.086			23	23	0.486	32
7,9	5	4.50	V	1	25		N	2065	30		35	65	1.00	1948			1948	0.033	0.033		9	9	0.486	13
																		Stage 2 Pedestrian		22				

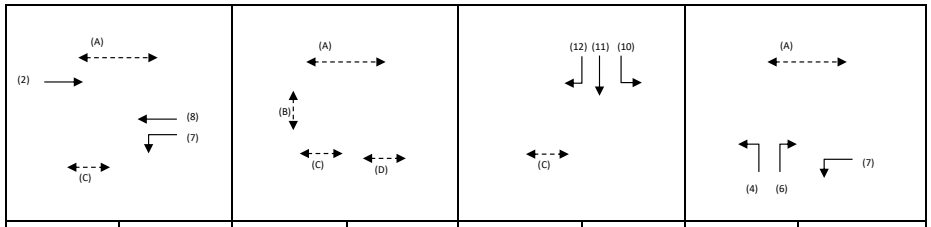
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2032 Reference Case	J3_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.441	
Loss time	L =	42	sec
Total Flow	=	3960	pcu
Co = (1.5*L+5)/(1-Y)	=	121.6	sec
Cm = L/(1-Y)	=	75.1	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	32.7	%
Cp = 0.9*L/(0.9-Y)	=	82.3	sec
Ymax = 1-L/C	=	0.677	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	38.2	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

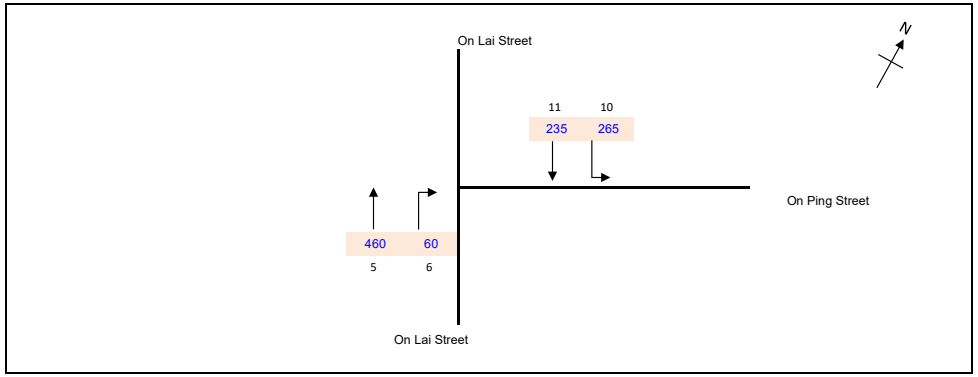
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	67	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	89	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		221		221	0.00	1965			1965	0.113			22	55	0.267	28
2	1	3.50	I	2				4210		474		474	0.00	4210			4210	0.113			22	55	0.266	30
8	1	3.30	II	3				6255		1720		1720	0.00	6255			6255	0.275	0.275		55	55	0.651	72
7	1,4	5.00	III	1	20		N	2115	570			570	1.00	1967			1967	0.290			58	58	0.651	69
10	3	3.50	IV	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	12	0.448	15
10,11	3	3.30	IV	1	20			2085	45	40		85	0.53	2005			2005	0.042			8	12	0.452	17
12	3	3.30	IV	2	25			4170			240	240	1.00	3934			3934	0.061	0.061		12	12	0.651	24
4	4	3.00	V	1	12.5		N	1915	179			179	1.00	1710			1710	0.105	0.105		21	21	0.651	33
4,6	4	3.00	V	1	20			2055	61		139	200	1.00	1912			1912	0.105			21	21	0.651	36
6	4	3.00	V	1	15			2055			196	196	1.00	1868			1868	0.105			21	21	0.651	36
																		Stage 2 Pedestrian		24				

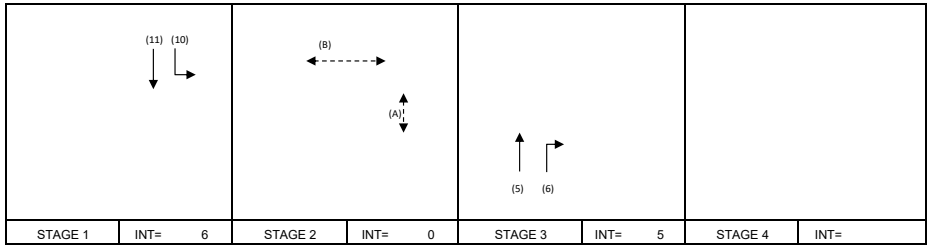
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2032 Reference Case	J4_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.287
Loss time		L =	26 sec
Total Flow		=	1020 pcu
Co	= (1.5*L+5)/(1-Y)	=	61.7 sec
Cm	= L/(1-Y)	=	36.5 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	145.5 %
Cp	= 0.9*L/(0.9-Y)	=	38.2 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	150.7 %



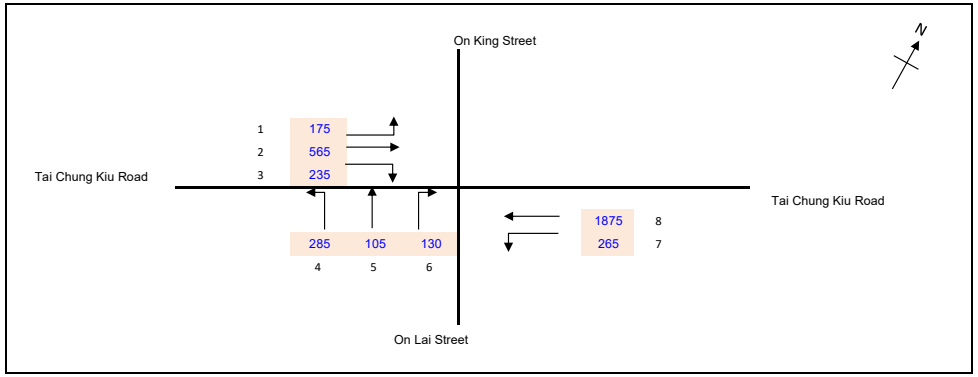
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	265	0		265	1.00	1726			1726	0.154	0.154		56	56	0.359	33
11	1	3.10	I	1				2065		235		235	0.00	2065			2065	0.114			41	56	0.266	29
5	3	2.80	II	1			N	1895		253		253	0.00	1895			1895	0.134	0.134		48	48	0.359	34
5,6	3	2.80	II	1	18			2035		207	60	267	0.22	1998			1998	0.134			48	48	0.359	36
																		Stage 2 Pedestrian		18				

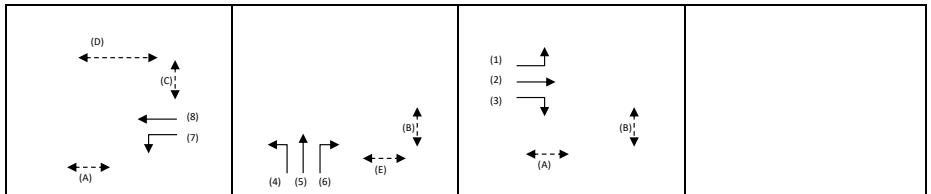
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Reference Case	J5_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.690
Loss time		L =	20 sec
Total Flow		=	3635 pcu
Co	= (1.5*L+5)/(1-Y)	=	112.9 sec
Cm	= L/(1-Y)	=	64.5 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	8.7 %
Cp	= 0.9*L/(0.9-Y)	=	85.7 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	10.4 %



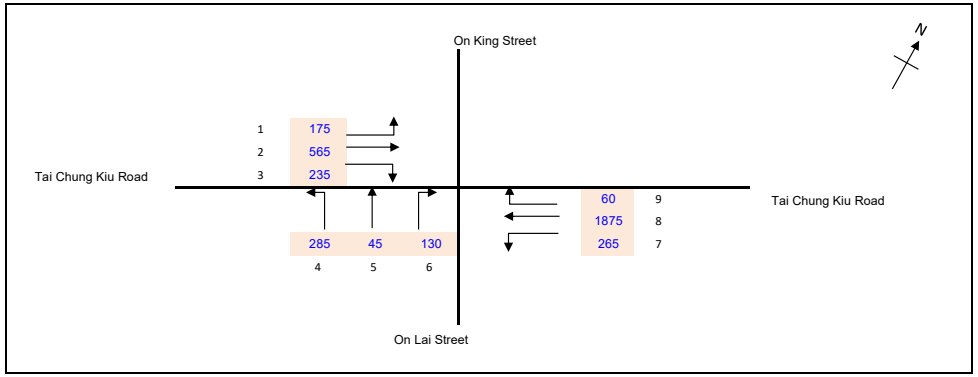
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	93	2	7	OK
B	7	5		6	56	3	10	OK
C	10	5		8	52	6	6	OK
D	6	5		5	48	6	10	OK
E	9	5		8	17	6	8	OK

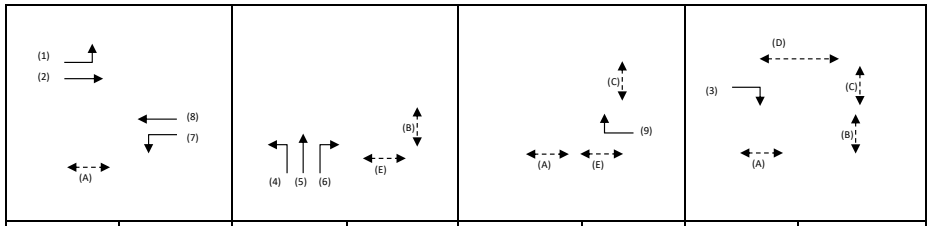
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	265	389		654	0.41	1852			1852	0.353	0.353		56	56	0.815	80
8	1	3.50	I	2				4210		1486		1486	0.00	4210			4210	0.353			56	56	0.815	91
4	2	3.50	II	1	10		N	1755	227			227	1.00	1526			1526	0.148	0.148		24	24	0.815	45
4,5,6	2	3.50	II	1	15			2105	59	105	130	294	0.64	1978			1978	0.148			24	24	0.815	52
1,2	3	3.50	III	1	10		N	1965	175	169		344	0.51	1826			1826	0.188	0.188		30	30	0.815	57
2	3	3.50	III	1				2105		396		396	0.00	2105			2105	0.188			30	30	0.814	66
3	3	3.50	III	1	15			2105			235	235	1.00	1914			1914	0.123			20	30	0.531	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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Reference Case (With Planned Improvement)	J5_AM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.628
Loss time		L =	20 sec
Total Flow		=	3635 pcu
Co	= (1.5*L+5)/(1-Y)	=	94.2 sec
Cm	= L/(1-Y)	=	53.8 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	19.4 %
Cp	= 0.9*L/(0.9-Y)	=	66.3 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	21.2 %



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

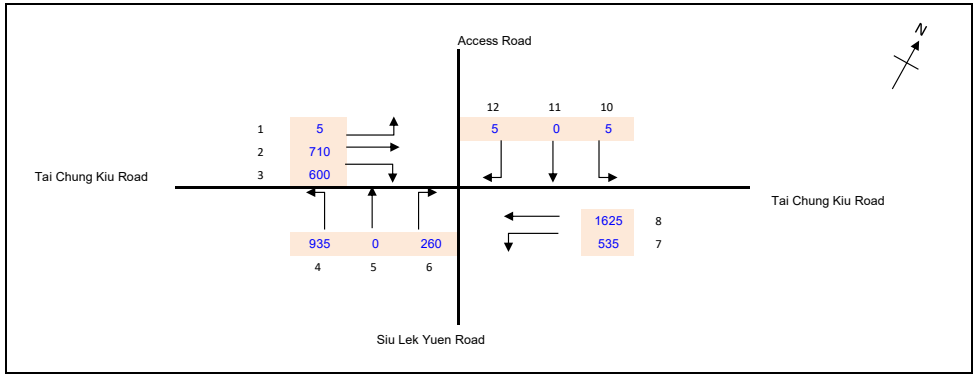
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	104	2	7	OK
B	7	5		6	34	3	10	OK
C	10	5		8	32	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	23	6	8	OK

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.
																				20				
1,2	1	3.50	I	1	15		N	1965	175	175		350	0.50	1871			1871	0.187			33	62	0.393	40
2	1	3.30	I	1				2085		390		390	0.00	2085			2085	0.187			33	62	0.393	44
3	4	3.50	V	1	20			2105			235	235	1.00	1958			1958	0.120	0.120		26	26	0.589	41
7,8	1	3.40	II	1	15		N	1955	265	400		665	0.40	1880			1880	0.354	0.354		62	62	0.743	75
8	1	3.30	II	2				4170		1475		1475	0.00	4170			4170	0.354			62	62	0.743	84
9	3	3.50	IV	1	15			2105			60	60	1.00	1914			1914	0.031	0.031		5	5	0.743	12
4	2	3.40	III	1	15		N	1955	219			219	1.00	1777			1777	0.123	0.123		22	22	0.743	40
4,5,6	2	3.20	III	1	20			2075	66	45	130	241	0.81	1956			1956	0.123			22	22	0.743	44

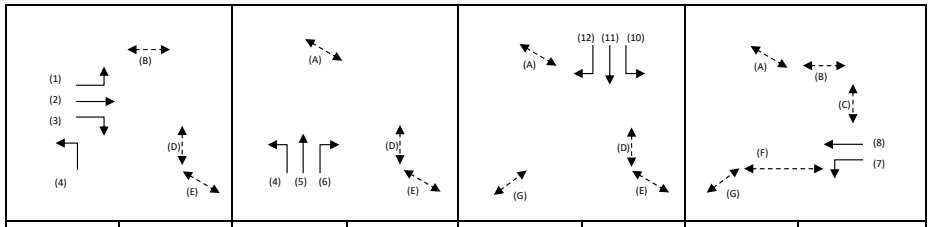
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2032 Reference Case	J6_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.529	
Loss time	L =	25	sec
Total Flow	=	4680	pcu
Co = (1.5*L+5)/(1-Y)	=	90.2	sec
Cm = L/(1-Y)	=	53.0	sec
Yult	=	0.713	
R.C.ult = (Yult-Y)/Y*100%	=	34.8	%
Cp = 0.9*L/(0.9-Y)	=	60.6	sec
Ymax = 1-L/C	=	0.808	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	37.5	%



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

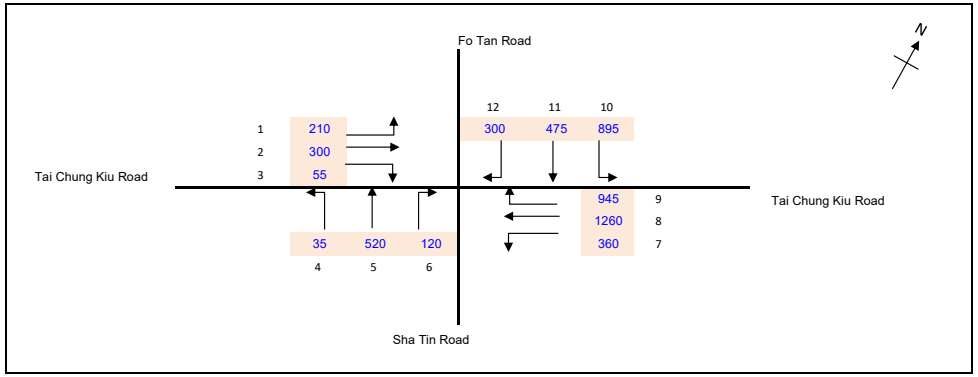
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	86	1	7	OK
B	5	5		5	87	2	13	OK
C	8	5		7	44	6	13	OK
D	9	5		8	58	2	12	OK
E	9	5		8	60	2	10	OK
F	9	5		8	46	6	11	OK
G	9	5		8	62	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	5			5	1.00	1754			1754	0.003			1	34	0.011	1
2	1	3.00	I	2				4110		710		710	0.00	4110			4110	0.173	0.173		34	34	0.654	57
3	1	3.00	I	2	22.5			4110			600	600	1.00	3853			3853	0.156			31	34	0.590	48
4	1,2	3.00	II	1	30		N	1915	450			450	1.00	1824			1824	0.246			49	55	0.584	56
4	1,2	3.00	II	1	35			2055	486			486	1.00	1971			1971	0.246			49	55	0.584	61
5,6	2	3.00	II	1	12.5			2055		0	129	129	1.00	1835			1835	0.070	0.070		14	15	0.630	25
6	2	3.00	II	1	10			2055			131	131	1.00	1787			1787	0.073			15	15	0.654	25
10,11,12	3	4.00	III	1	25		N	2015	5	0	0	5	1.00	1901			1901	0.003			1	5	0.068	1
12	3	4.00	III	1	15			2155			5	5	1.00	1959			1959	0.003			1	5	0.066	1
7	4	4.00	IV	1	20		N	2015	535			535	1.00	1874			1874	0.285	0.285		57	57	0.654	65
8	4	3.30	IV	3				6255		1625		1625	0.00	6255			6255	0.260			52	57	0.596	66
																	Stage 3 Provision of Min. g			5				

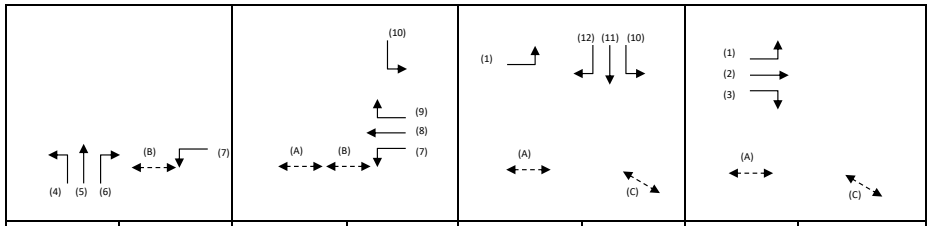
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Reference Case	J7_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.631	
Loss time	L =	21	sec
Total Flow	=	5475	pcu
Co = (1.5*L+5)/(1-Y)	=	98.9	sec
Cm = L/(1-Y)	=	56.9	sec
Yult	=	0.743	
R.C.ult = (Yult-Y)/Y*100%	=	17.7	%
Cp = 0.9*L/(0.9-Y)	=	70.2	sec
Ymax = 1-L/C	=	0.838	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	19.6	%



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

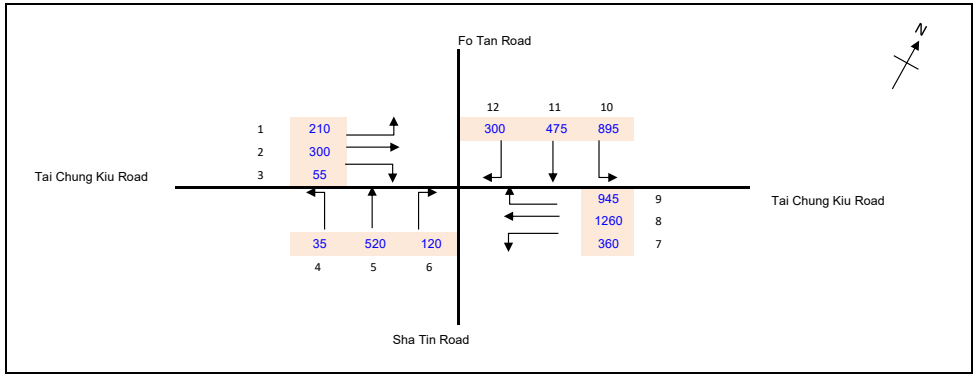
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	93	1	9	OK
B	5	5		5	64	8	8	OK
C	8	5		7	47	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	231		266	0.13	1915			1915	0.139	0.139		24	24	0.752	47
5,6	1	3.30	I	1	30			2085		289	0	289	0.00	2085			2085	0.139			24	24	0.751	51
6	1	3.30	I	1	25			2085			120	120	1.00	1967			1967	0.061			11	24	0.330	21
7	1,2	5.00	II	1	35		N	2115	360			360	1.00	2028		-900	1128	0.319			55	80	0.518	30
8	2	3.00	III	3				6165		1260		1260	0.00	6165			6165	0.204			35	43	0.616	61
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		43	43	0.752	68
10	2,3	3.00	IV	1	12.5		N	1915	428			428	1.00	1710			1710	0.250			43	90	0.363	29
10	2,3	3.00	IV	1	15			2055	467			467	1.00	1868			1868	0.250			43	90	0.362	31
11	3	3.00	V	1				2055		398		398	0.00	2055			2055	0.194	0.194		33	34	0.750	64
11,12	3	3.00	V	1	20			2055		77	300	377	0.80	1939			1939	0.194			34	34	0.752	61
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			21	54	0.296	27
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		8	8	0.752	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			8	8	0.752	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	8	0.439	11

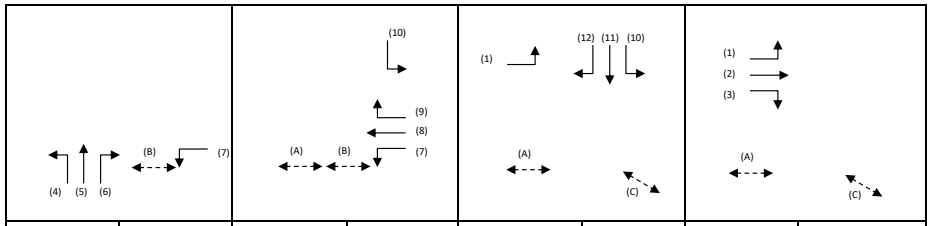
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Reference Case (With Planned Improvement)	J7_AM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.594
Loss time		L =	21 sec
Total Flow		=	5475 pcu
Co	= (1.5*L+5)/(1-Y)	=	89.9 sec
Cm	= L/(1-Y)	=	51.7 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	25.0 %
Cp	= 0.9*L/(0.9-Y)	=	61.8 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	27.0 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

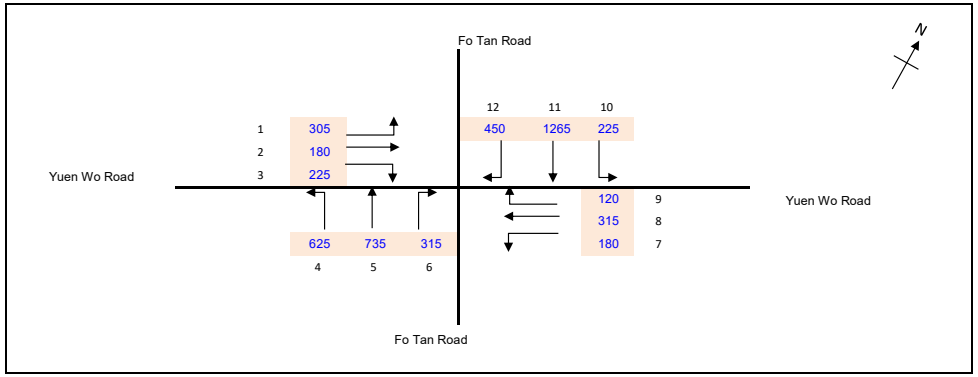
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	92	1	9	OK
B	5	5		5	68	8	8	OK
C	8	5		7	43	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	231		266	0.13	1915			1915	0.139	0.139		25	25	0.709	46
5,6	1	3.30	I	1	30			2085		289	0	289	0.00	2085			2085	0.139			25	25	0.707	50
6	1	3.30	I	1	25			2085			120	120	1.00	1967			1967	0.061			11	25	0.311	21
7	1,2	5.00	II	1	35		N	2115	360			360	1.00	2028		-900	1128	0.319			59	84	0.492	27
8	2	3.00	III	3				6165		1260		1260	0.00	6165			6165	0.204			37	46	0.580	59
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		46	46	0.709	66
10	2,3	3.00	IV	1	12.5		N	1915	428			428	1.00	1710			1710	0.250			46	88	0.372	30
10	2,3	3.00	IV	1	15			2055	467			467	1.00	1868			1868	0.250			46	88	0.371	33
11	3	3.00	V	2				4110		475		475	0.00	4110			4110	0.116			21	29	0.522	40
12	3	3.00	V	1	20			2055			300	300	1.00	1912			1912	0.157	0.157		29	29	0.709	51
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			23	50	0.321	28
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		9	9	0.709	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			9	9	0.709	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	9	0.413	11

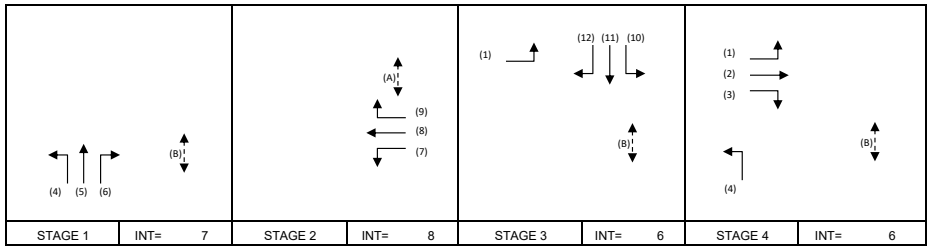
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2032 Reference Case	J8_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.544
Loss time		L =	23 sec
Total Flow		=	4940 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.5 sec
Cm	= L/(1-Y)	=	50.4 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	33.8 %
Cp	= 0.9*L/(0.9-Y)	=	58.1 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	36.3 %



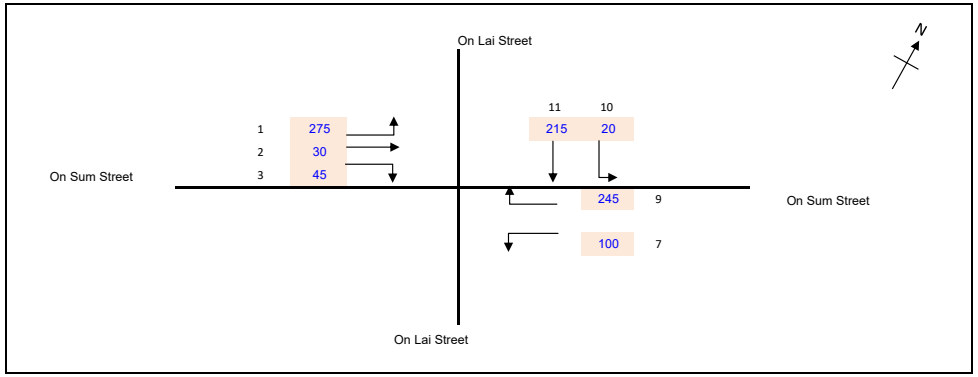
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	13	8	7	OK
B	9	5		8	93	2	11	OK

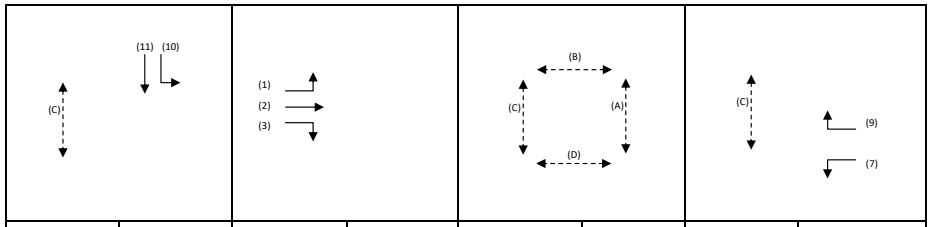
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	625			625	1.00	1741			1741	0.359			71	58	0.798	75
5	1	3.00	I	3				6165		735		735	0.00	6165			6165	0.119	0.164		23	32	0.482	40
6	1	3.00	I	1	22.5			2055			315	315	1.00	1927			1927	0.164			32	32	0.660	51
7	2	3.00	II	1	15		N	1915	180			180	1.00	1741			1741	0.103	0.103		20	20	0.660	33
8	2	3.00	II	1				2055		158		158	0.00	2055			2055	0.077			15	20	0.490	29
8,9	2	3.00	II	1	27.5			2055		158	0	158	0.00	2055			2055	0.077			15	20	0.490	29
9	2	3.00	II	1	22.5			2055			120	120	1.00	1927			1927	0.062			12	20	0.398	22
10	3	3.30	III	1	15		N	1945	225			225	1.00	1768			1768	0.127			25	41	0.402	33
10,11	3	3.30	III	1	20			2085	0	436		436	0.00	2085			2085	0.209	0.209		41	41	0.660	65
11	3	3.30	III	1				2085		436		436	0.00	2085			2085	0.209			41	41	0.660	65
11,12	3	3.30	III	1	27.5			2085		393	41	434	0.09	2074			2074	0.209			41	41	0.660	64
12	3	3.30	III	1	22.5			2085			409	409	1.00	1955			1955	0.209			41	41	0.660	61
1	3,4	3.30	IV	1	15		N	1945	305			305	1.00	1768			1768	0.172			34	66	0.337	32
2	4	3.30	IV	1				2085		140		140	0.00	2085			2085	0.067	0.067		13	13	0.657	27
2,3	4	3.30	IV	1	25			2085		40	95	135	0.70	2001			2001	0.067			13	13	0.660	26
3	4	3.30	IV	1	20			2085			130	130	1.00	1940			1940	0.067			13	13	0.656	25

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2032 Reference Case	J9_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.357
Loss time		L =	34 sec
Total Flow		=	930 pcu
Co	= (1.5*L+5)/(1-Y)	=	87.1 sec
Cm	= L/(1-Y)	=	52.9 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	80.8 %
Cp	= 0.9*L/(0.9-Y)	=	56.3 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	56.9 %

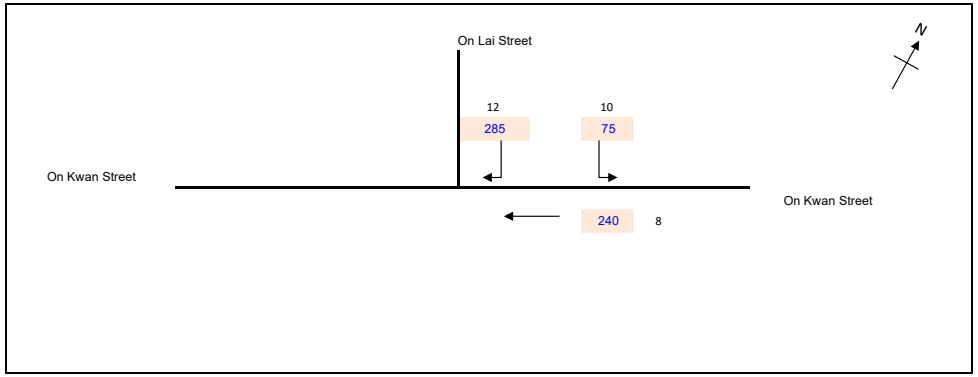


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

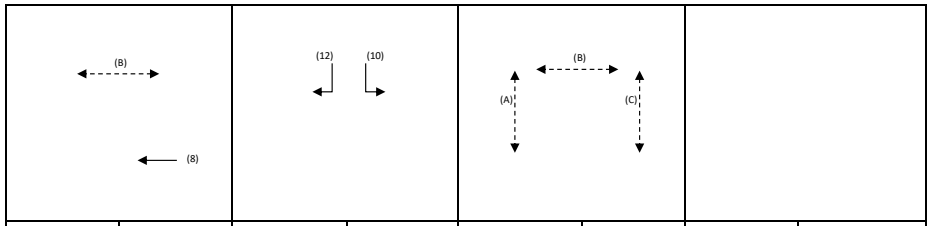
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	54	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	20	54		74	0.27	1913			1913	0.038	0.038		6	6	0.573	10
11	1	3.50	I	2				4210		162		162	0.00	4210			4210	0.038			6	6	0.573	11
1,2	2	5.00	II	1	15		N	2115	275	0		275	1.00	1923			1923	0.143	0.143		22	22	0.573	31
2,3	2	5.00	II	1	20			2255		30	45	75	0.60	2158			2158	0.035			5	22	0.139	8
7,9	4	5.00	III	1	20		N	2115	100		245	345	1.00	1967			1967	0.175	0.175		28	28	0.573	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2032 Reference Case	J10_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	85 sec
Sum(y)		Y =	0.262
Loss time		L =	34 sec
Total Flow		=	600 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.9 sec
Cm	= L/(1-Y)	=	46.1 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	146.4 %
Cp	= 0.9*L/(0.9-Y)	=	47.9 sec
Ymax	= 1-L/C	=	0.600
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	106.3 %



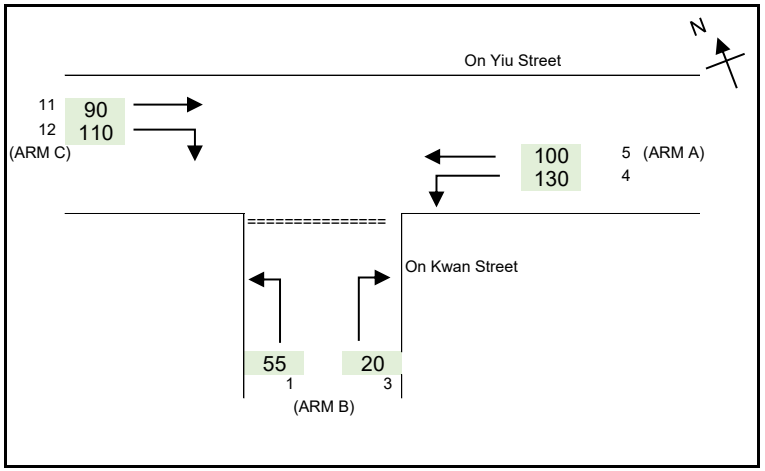
STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	39	3	12	OK
C	8	5		7	6	6	7	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.
																				10				
8	1	4.50	I	1			N	2065		240		240	0.00	2065			2065	0.116	0.116		23	23	0.436	25
10	2	3.50	II	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	28	0.126	7
12	2	3.50	II	1	20			2105			285	285	1.00	1958			1958	0.146	0.146		28	28	0.436	27
																		Stage 3 Pedestrian		24				

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2032 Reference Case	J11_AM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	130	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	90	(pcu/hr)
q c-b	=	110	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	20	(pcu/hr)
q b-c	=	55	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	437
Q b-c	=	627
Q c-b	=	748
Q b-ac	=	561.9

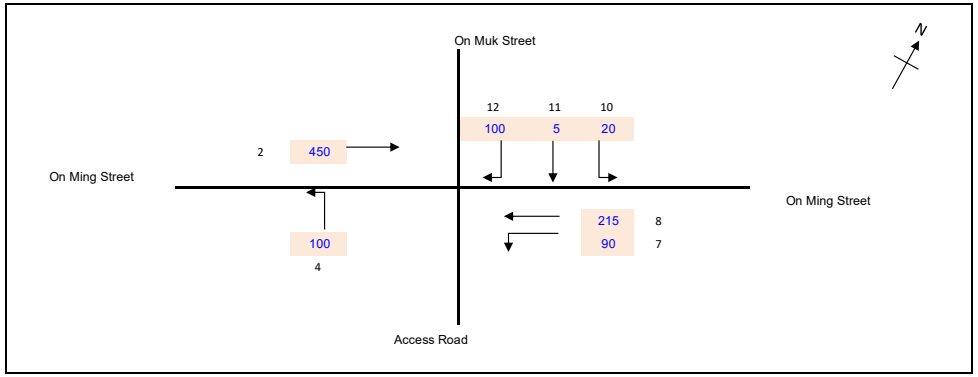
TOTAL FLOW = 505 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

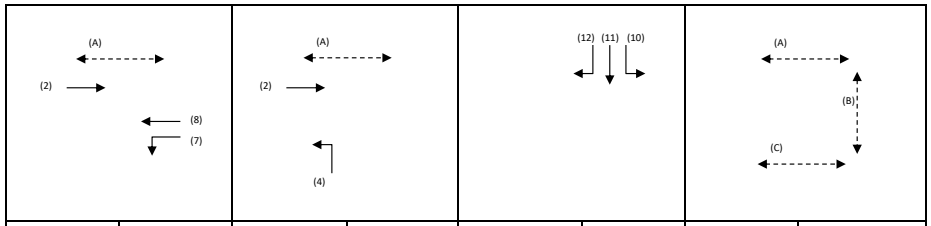
DFC b-a	=	0.0458
DFC b-c	=	0.0877
DFC c-b	=	0.1471
DFC b-ac	=	0.1335

CRITICAL DFC = 0.15

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2032 Reference Case	J12_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.162
Loss time		L =	40 sec
Total Flow		=	980 pcu
Co	= (1.5*L+5)/(1-Y)	=	77.5 sec
Cm	= L/(1-Y)	=	47.7 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	271.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	254.5 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	82	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	6	OK

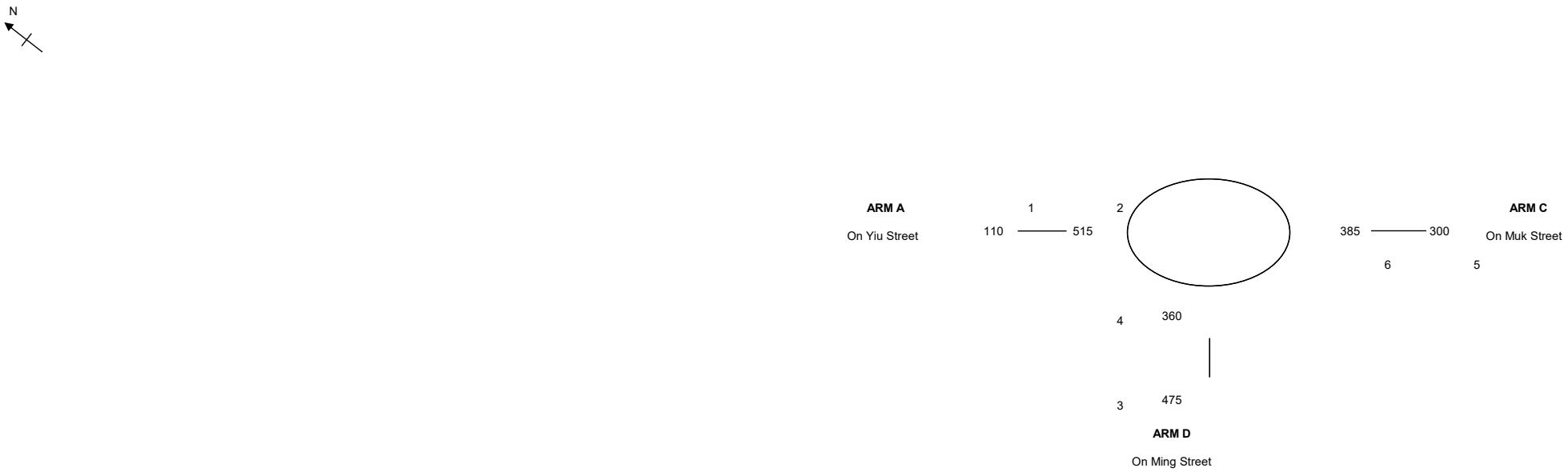
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
2	1,2	4.00	I	1			N	2015		218		218	0.00	2015			2015	0.108			47	47	0.254	23
2	1,2	4.00	I	1				2155		232		232	0.00	2155			2155	0.108			47	47	0.253	24
7,8	1	3.50	II	1	20		N	1965	90	54		144	0.63	1877			1877	0.077	0.077		33	33	0.253	18
8	1	3.50	II	1				2105		161		161	0.00	2105			2105	0.077			33	33	0.254	21
4	2	3.50	III	1	20		N	1965	100			100	1.00	1828			1828	0.055	0.055		24	24	0.254	14
10,11,12	3	5.00	IV	1	30		N	2115	20	5	36	61	0.92	2022			2022	0.030			13	13	0.254	10
12	3	5.00	IV	1	25			2255			64	64	1.00	2127			2127	0.030	0.030		13	13	0.253	10
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2032 Reference Case	J13_AM



ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	110	475	300
Qc	=	Circulating flow across entry (pcu/h)	515	360	385
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2273	1979	2310
DFC	=	Design flow/Capacity = Q/Qe	0.05	0.24	0.13

Total In Sum = 885 PCU

DFC of Critical Approach = 0.24

ROUNDABOUT CALCULATION

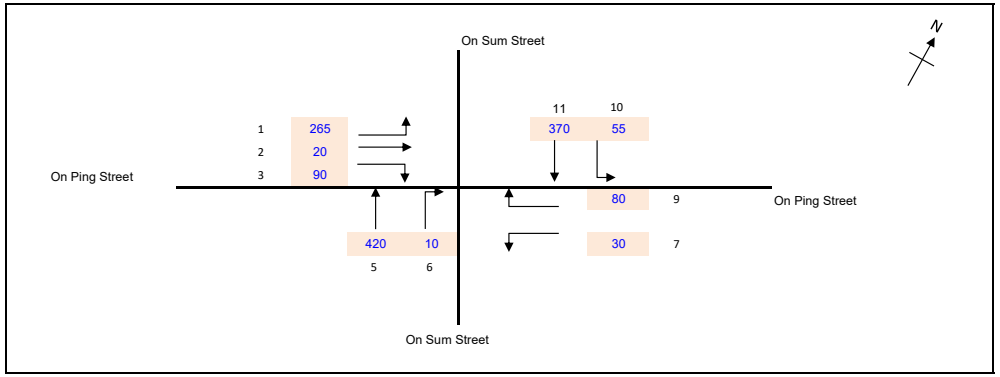
	Project No. -	
J1 - Shek Mun Interchange	2032 Reference Case	J1_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	460	1330	220
Qc	=	Circulating flow across entry (pcu/h)	255	670	995
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2655	2442	2018
DFC	=	Design flow/Capacity = Q/Qe	0.17	0.54	0.11

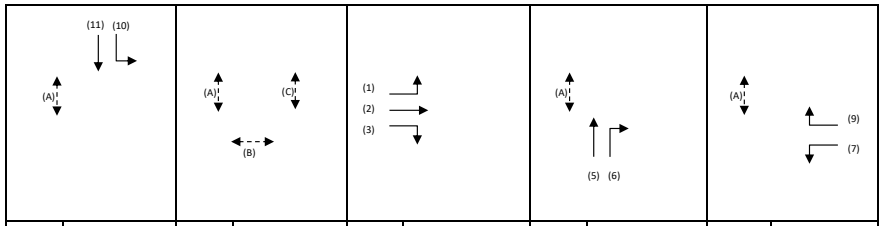
Total In Sum = 2010 PCU

DFC of Critical Approach = 0.54

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2032 Reference Case	J2_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	125 sec
Sum(y)		Y =	0.325
Loss time		L =	45 sec
Total Flow		=	1340 pcu
Co	= (1.5*L+5)/(1-Y)	=	107.4 sec
Cm	= L/(1-Y)	=	66.7 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	73.0 %
Cp	= 0.9*L/(0.9-Y)	=	70.5 sec
Ymax	= 1-L/C	=	0.640
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	77.1 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

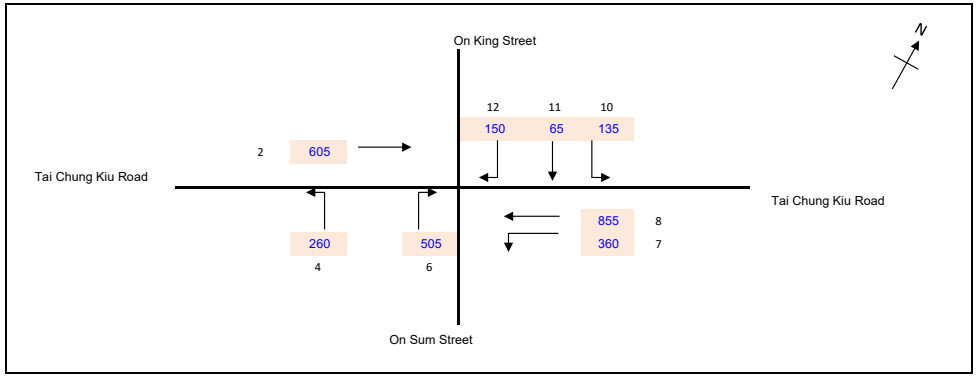
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	102	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	55			55	1.00	1809			1809	0.030			7	22	0.174	9
11	1	3.30	I	2				4170		370		370	0.00	4170			4170	0.089	0.089		22	22	0.508	32
1	3	4.00	II	1	15		N	2015	135			135	1.00	1832			1832	0.074	0.074		18	18	0.505	24
1,2	3	4.00	II	1	20			2155	130	20		150	0.87	2023			2023	0.074			18	18	0.508	27
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			11	18	0.315	16
5	4	3.50	IV	1			N	1965		208		208	0.00	1965			1965	0.106	0.106		26	26	0.508	34
5,6	4	3.50	IV	1	25			2105		212	10	222	0.05	2099			2099	0.106			26	26	0.508	37
7,9	5	4.50	V	1	25		N	2065	30		80	110	1.00	1948			1948	0.056	0.056		14	14	0.508	20
																		Stage 2 Pedestrian		22				

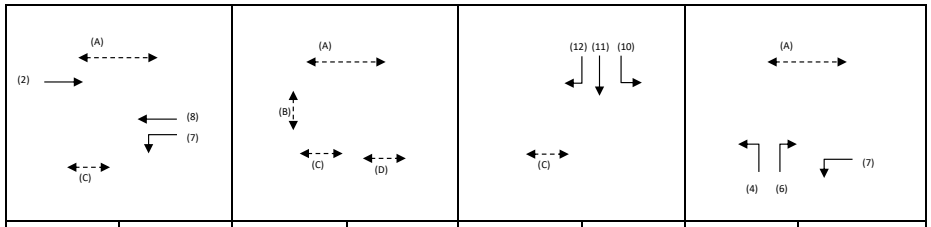
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2032 Reference Case	J3_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.329	
Loss time	L =	42	sec
Total Flow	=	2935	pcu
Co = (1.5*L+5)/(1-Y)	=	101.3	sec
Cm = L/(1-Y)	=	62.5	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	78.1	%
Cp = 0.9*L/(0.9-Y)	=	66.1	sec
Ymax = 1-L/C	=	0.664	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	81.9	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

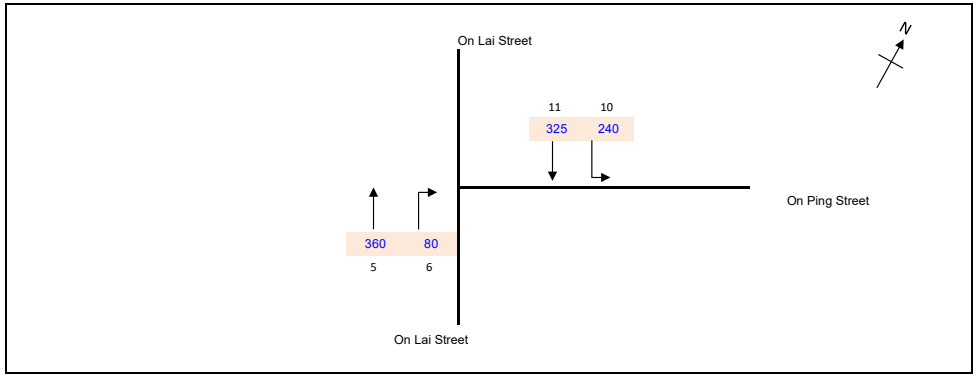
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	55	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	70	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		192		192	0.00	1965			1965	0.098			25	35	0.354	29
2	1	3.50	I	2				4210		413		413	0.00	4210			4210	0.098			25	35	0.355	31
8	1	3.30	II	3				6255		855		855	0.00	6255			6255	0.137	0.137		35	35	0.495	43
7	1,4	5.00	III	1	20		N	2115	360			360	1.00	1967			1967	0.183			46	46	0.495	47
10	3	3.50	IV	1	15		N	1965	94			94	1.00	1786			1786	0.052	0.052		13	13	0.495	17
10,11	3	3.30	IV	1	20			2085	41	65		106	0.39	2026			2026	0.052			13	13	0.495	20
12	3	3.30	IV	2	25			4170			150	150	1.00	3934			3934	0.038			10	13	0.360	14
4	4	3.00	V	1	12.5		N	1915	238			238	1.00	1710			1710	0.139	0.139		35	35	0.495	36
4,6	4	3.00	V	1	20			2055	22		245	266	1.00	1912			1912	0.139			35	35	0.495	40
6	4	3.00	V	1	15			2055			260	260	1.00	1868			1868	0.139			35	35	0.495	39
																		Stage 2 Pedestrian		24				

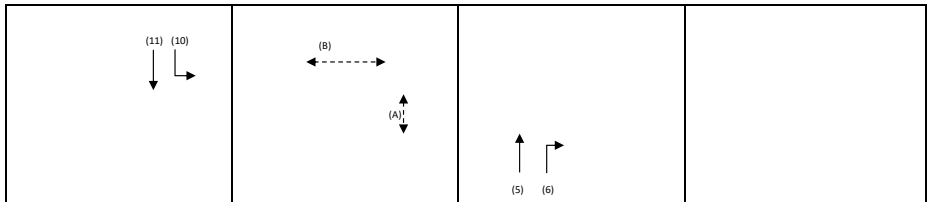
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2032 Reference Case	J4_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	125 sec
Sum(y)		Y =	0.271
Loss time		L =	26 sec
Total Flow		=	1005 pcu
Co	= (1.5*L+5)/(1-Y)	=	60.4 sec
Cm	= L/(1-Y)	=	35.7 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	160.0 %
Cp	= 0.9*L/(0.9-Y)	=	37.2 sec
Ymax	= 1-L/C	=	0.792
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	162.9 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

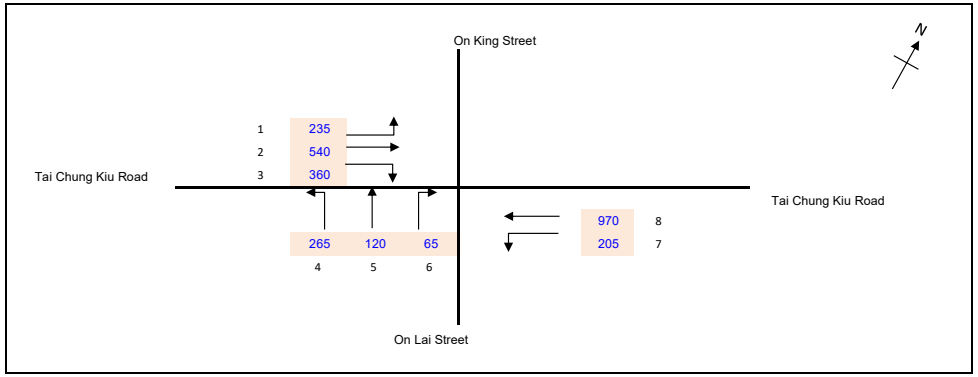
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	240	0		240	1.00	1726			1726	0.139	0.157		51	57	0.302	27
11	1	3.10	I	1				2065		325		325	0.00	2065			2065	0.157			57	57	0.342	37
5	3	2.80	II	1			N	1895		216		216	0.00	1895			1895	0.114	0.114		42	42	0.342	30
5,6	3	2.80	II	1	18			2035		145	80	225	0.36	1976			1976	0.114			41	41	0.342	31
																		Stage 2 Pedestrian		18				

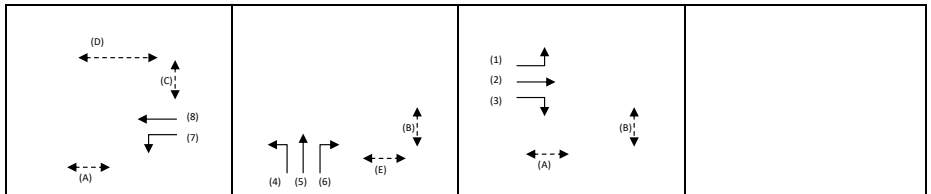
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Reference Case	J5_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.522
Loss time		L =	20 sec
Total Flow		=	2760 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.3 sec
Cm	= L/(1-Y)	=	41.9 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	43.6 %
Cp	= 0.9*L/(0.9-Y)	=	47.7 sec
Ymax	= 1-L/C	=	0.831
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	43.1 %



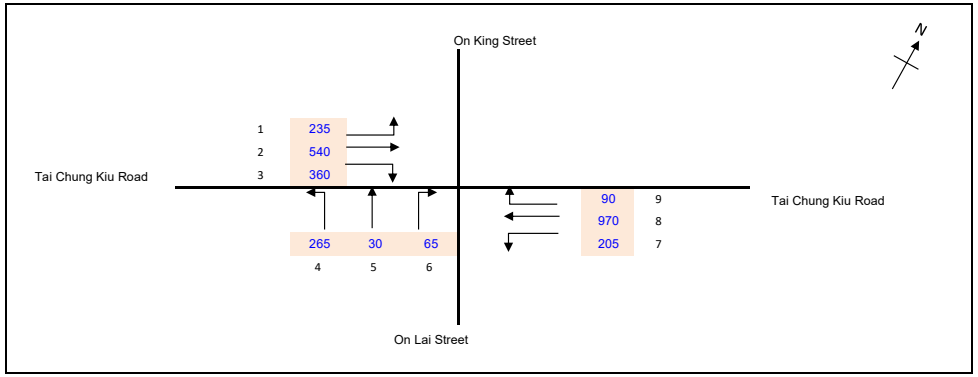
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	2	7	OK
B	7	5		6	71	3	10	OK
C	10	5		8	37	6	6	OK
D	6	5		5	33	6	10	OK
E	9	5		8	20	6	8	OK

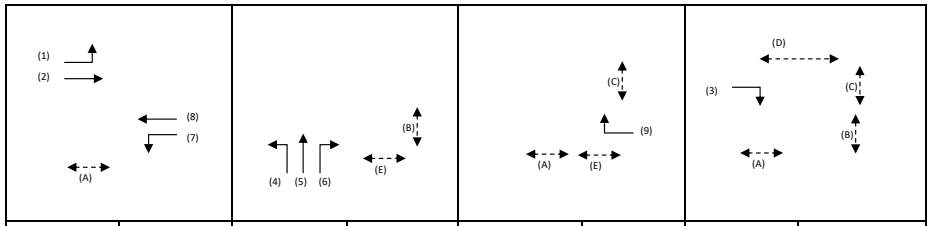
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	205	147		352	0.58	1807			1807	0.195	0.195		41	41	0.615	52
8	1	3.50	I	2				4210		823		823	0.00	4210			4210	0.195			41	41	0.617	61
4	2	3.50	II	1	10		N	1755	195			195	1.00	1526			1526	0.128	0.128		27	27	0.617	37
4,5,6	2	3.50	II	1	15			2105	70	120	65	255	0.53	1999			1999	0.128			27	27	0.616	44
1,2	3	3.50	III	1	10		N	1965	235	121		356	0.66	1788			1788	0.199	0.199		42	42	0.617	52
2	3	3.50	III	1				2105		419		419	0.00	2105			2105	0.199			42	42	0.617	62
3	3	3.50	III	1	15			2105			360	360	1.00	1914			1914	0.188			40	42	0.583	53

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Reference Case (With Planned Improvement)	J5_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.525
Loss time		L =	20 sec
Total Flow		=	2760 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.6 sec
Cm	= L/(1-Y)	=	42.1 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	43.0 %
Cp	= 0.9*L/(0.9-Y)	=	48.0 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	45.2 %



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

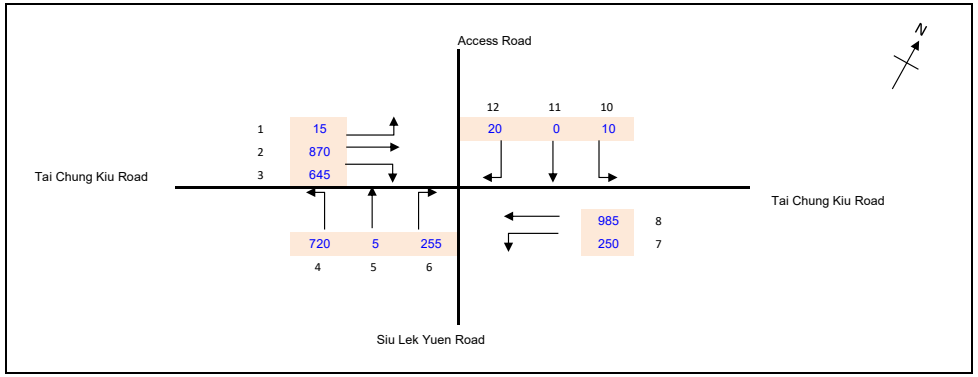
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	110	2	7	OK
B	7	5		6	55	3	10	OK
C	10	5		8	58	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	26	6	8	OK

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.
																				20				
1,2	1	3.50	I	1	15		N	1965	235	129		364	0.65	1846			1846	0.197	0.197		41	41	0.620	54
2	1	3.30	I	1				2085		411		411	0.00	2085			2085	0.197			41	41	0.620	61
3	4	3.50	V	1	20			2105			360	360	1.00	1958			1958	0.184	0.184		48	48	0.494	49
7,8	1	3.40	II	1	15		N	1955	205	156		361	0.57	1850			1850	0.195			41	41	0.614	53
8	1	3.30	II	2				4170		814		814	0.00	4170			4170	0.195			41	41	0.614	60
9	3	3.50	IV	1	15			2105			90	90	1.00	1914			1914	0.047	0.047		10	10	0.620	18
4	2	3.40	III	1	15		N	1955	172	0		172	1.00	1777			1777	0.097	0.097		20	20	0.620	31
4,5,6	2	3.20	III	1	20			2075	93	30	65	188	0.84	1952			1952	0.097			20	20	0.620	34

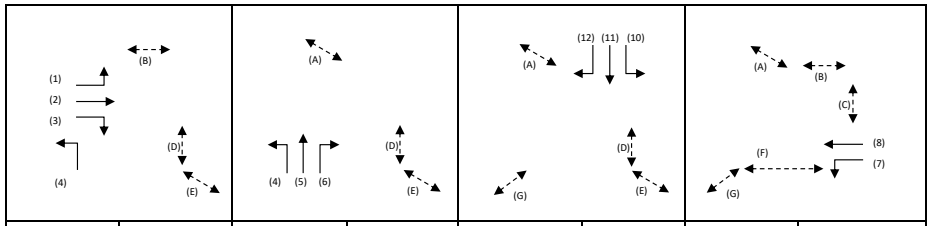
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2032 Reference Case	J6_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	125 sec
Sum(y)		Y =	0.441
Loss time		L =	25 sec
Total Flow		=	3775 pcu
Co	= (1.5*L+5)/(1-Y)	=	76.0 sec
Cm	= L/(1-Y)	=	44.7 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	61.6 %
Cp	= 0.9*L/(0.9-Y)	=	49.0 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	63.3 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

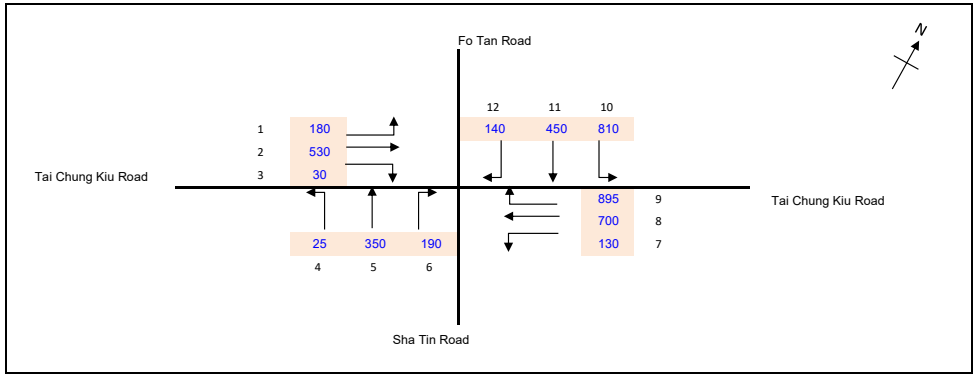
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	67	1	7	OK
B	5	5		5	80	2	13	OK
C	8	5		7	23	6	13	OK
D	9	5		8	73	2	12	OK
E	9	5		8	75	2	10	OK
F	9	5		8	25	6	11	OK
G	9	5		8	41	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	15			15	1.00	1754			1754	0.009			2	48	0.022	2
2	1	3.00	I	2				4110		870		870	0.00	4110			4110	0.212	0.212		48	48	0.551	56
3	1	3.00	I	2	22.5			4110			645	645	1.00	3853			3853	0.167			38	48	0.436	41
4	1,2	3.00	II	1	30		N	1915	346			346	1.00	1824			1824	0.190			43	70	0.337	32
4	1,2	3.00	II	1	35			2055	374			374	1.00	1971			1971	0.190			43	70	0.338	34
5,6	2	3.00	II	1	12.5			2055		5	127	132	0.96	1842			1842	0.072	0.072		16	16	0.551	24
6	2	3.00	II	1	10			2055			128	128	1.00	1787			1787	0.072			16	16	0.551	23
10,11,12	3	4.00	III	1	25		N	2015	10	0	5	15	1.00	1901			1901	0.008			2	5	0.197	3
12	3	4.00	III	1	15			2155			15	15	1.00	1959			1959	0.008			2	5	0.191	3
7	4	4.00	IV	1	20		N	2015	250			250	1.00	1874			1874	0.133			30	36	0.467	37
8	4	3.30	IV	3				6255		985		985	0.00	6255			6255	0.157	0.157		36	36	0.551	49
																	Stage 3 Provision of Min. g			5				

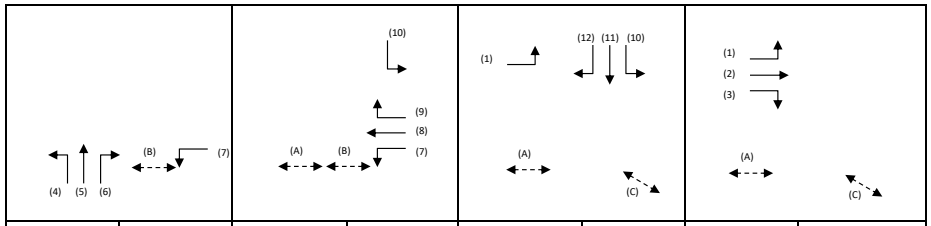
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Reference Case	J7_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.562
Loss time		L =	21 sec
Total Flow		=	4475 pcu
Co	= (1.5*L+5)/(1-Y)	=	83.3 sec
Cm	= L/(1-Y)	=	47.9 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	32.2 %
Cp	= 0.9*L/(0.9-Y)	=	55.9 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	34.3 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

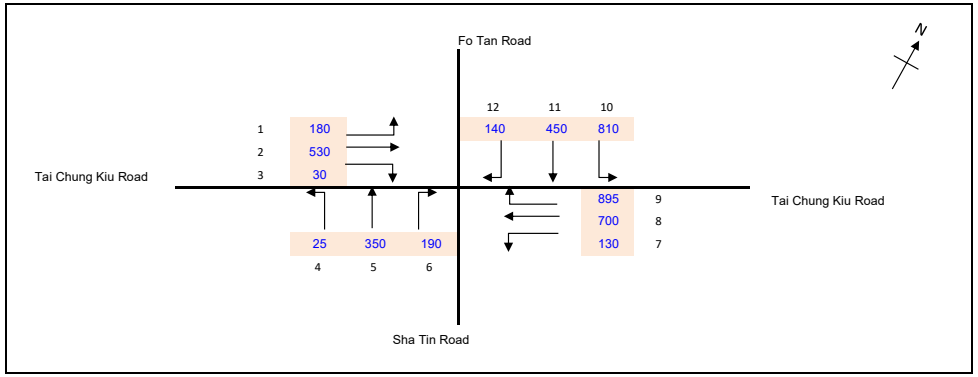
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	91	1	9	OK
B	5	5		5	69	8	8	OK
C	8	5		7	42	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		26	26	0.670	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			26	26	0.670	48
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			26	26	0.670	45
7	1,2	5.00	II	1	35		N	2115	130			130	1.00	2028		-900	1128	0.115			22	85	0.177	10
8	2	3.00	III	3				6165		700		700	0.00	6165			6165	0.114			22	46	0.322	33
9	2	3.00	III	2	17.5			4110			895	895	1.00	3786			3786	0.236	0.236		46	46	0.670	63
10	2,3	3.00	IV	1	12.5		N	1915	387			387	1.00	1710			1710	0.226			44	87	0.337	28
10	2,3	3.00	IV	1	15			2055	423			423	1.00	1868			1868	0.226			44	87	0.337	30
11	3	3.00	V	1				2055		300		300	0.00	2055			2055	0.146	0.146		28	28	0.669	51
11,12	3	3.00	V	1	20			2055		150	140	290	0.48	1983			1983	0.146			28	28	0.670	49
1	3,4	3.00	VI	1	12.5		N	1915	180			180	1.00	1710			1710	0.105			20	49	0.277	24
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.670	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.670	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.670	18

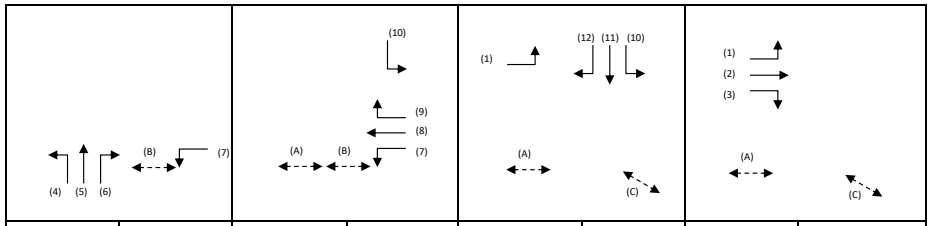
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Reference Case (With Planned Improvement)	J7_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.525
Loss time		L =	21 sec
Total Flow		=	4475 pcu
Co	= (1.5*L+5)/(1-Y)	=	76.9 sec
Cm	= L/(1-Y)	=	44.2 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	41.3 %
Cp	= 0.9*L/(0.9-Y)	=	50.4 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	43.7 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

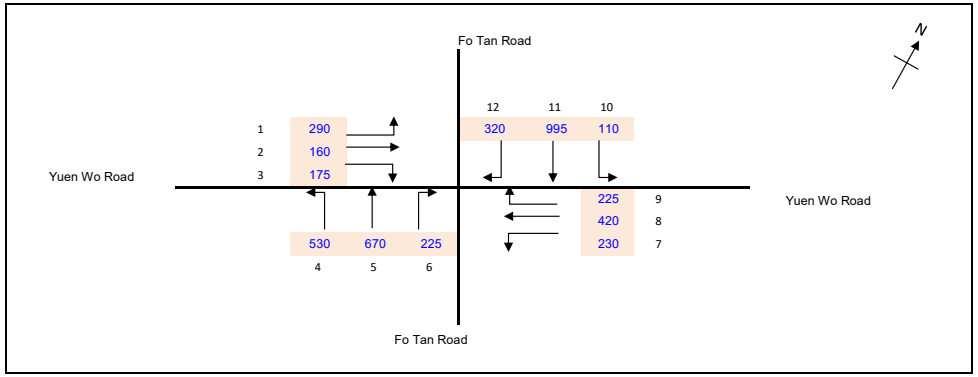
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	89	1	9	OK
B	5	5		5	74	8	8	OK
C	8	5		7	37	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		28	28	0.627	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			28	28	0.627	47
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			28	28	0.627	45
7	1,2	5.00	II	1	35		N	2115	130			130	1.00	2028		-900	1128	0.115			24	90	0.167	9
8	2	3.00	III	3				6165		700		700	0.00	6165			6165	0.114			24	49	0.301	31
9	2	3.00	III	2	17.5			4110			895	895	1.00	3786			3786	0.236	0.236		49	49	0.627	60
10	2,3	3.00	IV	1	12.5		N	1915	387			387	1.00	1710			1710	0.226			47	85	0.347	29
10	2,3	3.00	IV	1	15			2055	423			423	1.00	1868			1868	0.226			47	85	0.347	32
11	3	3.00	V	2				4110		450		450	0.00	4110			4110	0.109	0.109		23	23	0.627	40
12	3	3.00	V	1	20			2055			140	140	1.00	1912			1912	0.073			15	23	0.419	25
1	3,4	3.00	VI	1	12.5		N	1915	180			180	1.00	1710			1710	0.105			22	44	0.309	26
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		10	10	0.627	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			10	10	0.627	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			10	10	0.627	18

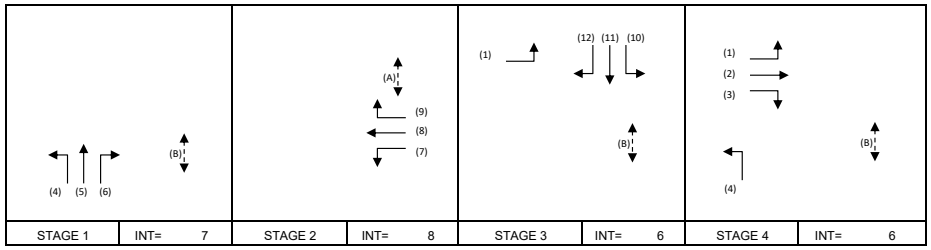
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2032 Reference Case	J8_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.465
Loss time		L =	23 sec
Total Flow		=	4350 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.8 sec
Cm	= L/(1-Y)	=	43.0 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	56.6 %
Cp	= 0.9*L/(0.9-Y)	=	47.5 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.4 %



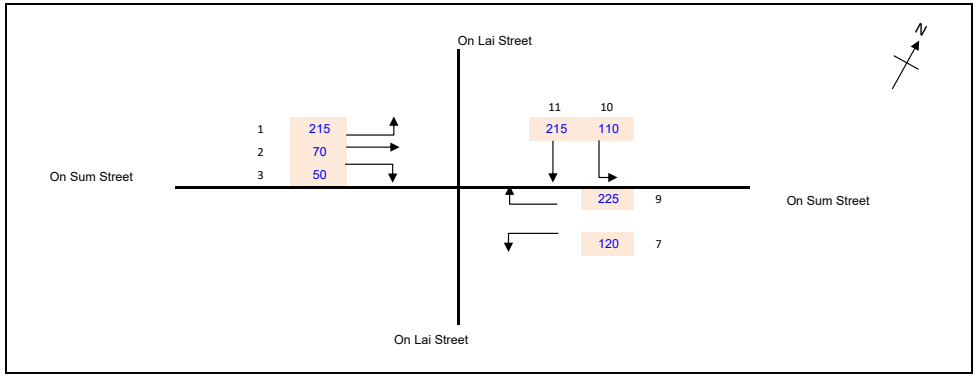
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	23	8	7	OK
B	9	5		8	83	2	11	OK

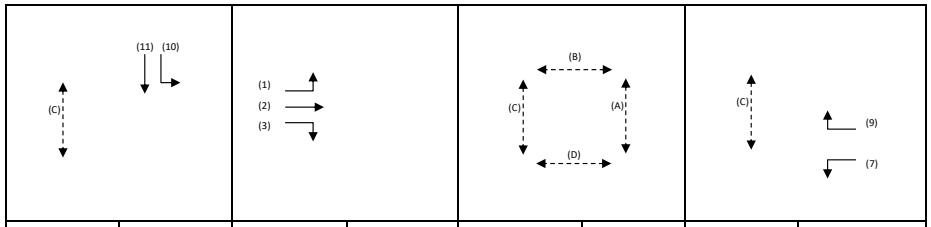
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	530			530	1.00	1741			1741	0.304			70	53	0.751	68
5	1	3.00	I	3				6165		670		670	0.00	6165			6165	0.109			25	27	0.525	38
6	1	3.00	I	1	22.5			2055			225	225	1.00	1927			1927	0.117	0.117		27	27	0.564	39
7	2	3.00	II	1	15		N	1915	230			230	1.00	1741			1741	0.132	0.132		30	30	0.564	38
8	2	3.00	II	1				2055		220		220	0.00	2055			2055	0.107			25	30	0.457	37
8,9	2	3.00	II	1	27.5			2055		200	19	219	0.09	2045			2045	0.107			25	30	0.457	36
9	2	3.00	II	1	22.5			2055			206	206	1.00	1927			1927	0.107			25	30	0.457	34
10	3	3.30	III	1	15		N	1945	110			110	1.00	1768			1768	0.062			14	37	0.219	17
10,11	3	3.30	III	1	20			2085	0	334		334	0.00	2085			2085	0.160	0.160		37	37	0.564	52
11	3	3.30	III	1				2085		334		334	0.00	2085			2085	0.160			37	37	0.564	52
11,12	3	3.30	III	1	27.5			2085		327	7	334	0.02	2083			2083	0.160			37	37	0.564	52
12	3	3.30	III	1	22.5			2085			313	313	1.00	1955			1955	0.160			37	37	0.564	49
1	3,4	3.30	IV	1	15		N	1945	290			290	1.00	1768			1768	0.164			38	62	0.346	33
2	4	3.30	IV	1				2085		116		116	0.00	2085			2085	0.055	0.055		13	13	0.564	23
2,3	4	3.30	IV	1	25			2085		44	67	112	0.60	2012			2012	0.055			13	13	0.564	22
3	4	3.30	IV	1	20			2085			108	108	1.00	1940			1940	0.055			13	13	0.564	21

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2032 Reference Case	J9_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.349
Loss time		L =	34 sec
Total Flow		=	1005 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.0 sec
Cm	= L/(1-Y)	=	52.2 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	84.9 %
Cp	= 0.9*L/(0.9-Y)	=	55.5 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	60.6 %



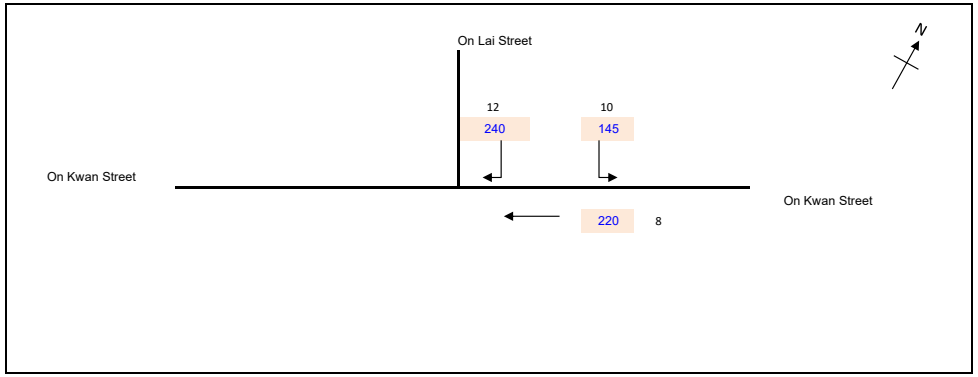
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	58	2	11	OK
D	8	5		7	6	6	11	OK

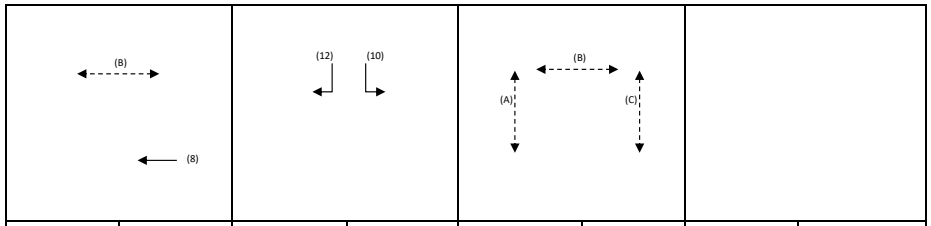
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				11				
10,11	1	3.50	I	1	15		N	1965	110	0		110	1.00	1786			1786	0.062	0.062		10	10	0.560	15
11	1	3.50	I	2				4210		215		215	0.00	4210			4210	0.051			8	10	0.465	14
1,2	2	5.00	II	1	15		N	2115	215	0		215	1.00	1923			1923	0.112	0.112		18	18	0.560	26
2,3	2	5.00	II	1	20			2255		70	50	120	0.42	2187			2187	0.055			9	18	0.275	14
7,9	4	5.00	III	1	20		N	2115	120		225	345	1.00	1967			1967	0.175	0.175		28	28	0.560	36
																		Stage 3 Pedestrian		23				

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION		
		PROJECT NO: -	
J10 - On Lai Street / On Kwan Street	2032 Reference Case	J10_PM	



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.229
Loss time		L =	34 sec
Total Flow		=	605 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.6 sec
Cm	= L/(1-Y)	=	44.1 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	181.5 %
Cp	= 0.9*L/(0.9-Y)	=	45.6 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	144.4 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

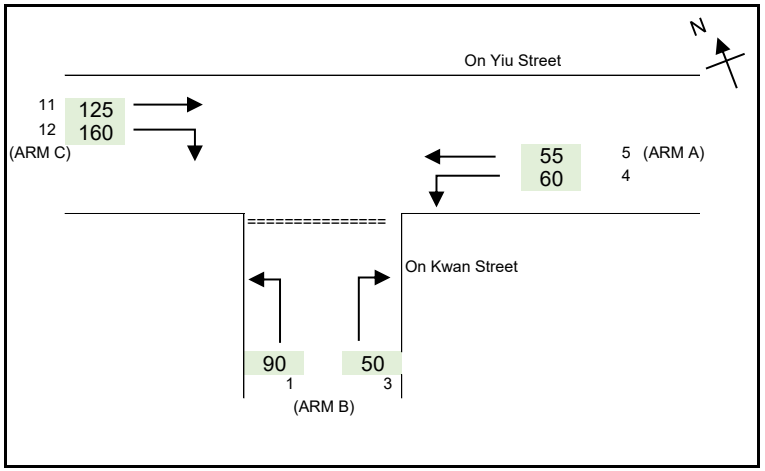
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	42	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		220		220	0.00	2065			2065	0.107	0.107		26	26	0.368	23
10	2	3.50	II	1	15		N	1965	145			145	1.00	1786			1786	0.081			20	30	0.244	15
12	2	3.50	II	1	20			2105			240	240	1.00	1958			1958	0.123	0.123		30	30	0.368	24
																		Stage 3 Pedestrian		24				

Mott MacDonald Restricted

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2032 Reference Case	J11_PM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	60	(pcu/hr)
q a-c	=	55	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	125	(pcu/hr)
q c-b	=	160	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	50	(pcu/hr)
q b-c	=	90	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	432
Q b-c	=	647
Q c-b	=	786
Q b-ac	=	549.4

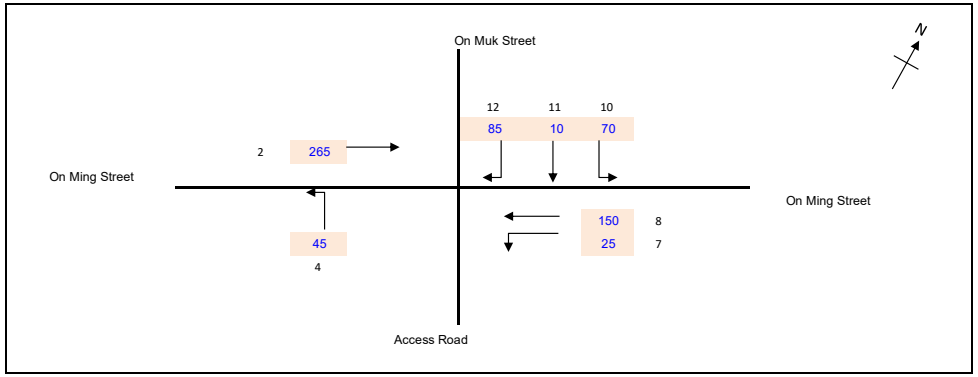
TOTAL FLOW = 540 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

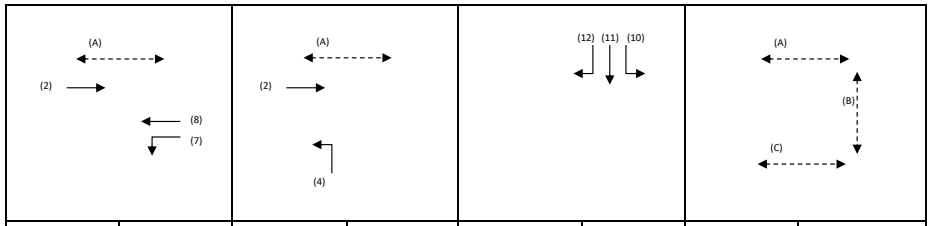
DFC b-a	=	0.1157
DFC b-c	=	0.1391
DFC c-b	=	0.2036
DFC b-ac	=	0.2548

CRITICAL DFC = 0.25

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2032 Reference Case	J12_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.108
Loss time		L =	40 sec
Total Flow		=	650 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.9 sec
Cm	= L/(1-Y)	=	44.8 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	455.3 %
Cp	= 0.9*L/(0.9-Y)	=	45.5 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	430.1 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	69	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		128		128	0.00	2015			2015	0.064			41	41	0.170	15
2	1,2	4.00	I	1				2155		137		137	0.00	2155			2155	0.064			41	41	0.170	16
7,8	1	3.50	II	1	20		N	1965	25	59		84	0.30	1922			1922	0.043	0.043		28	28	0.170	11
8	1	3.50	II	1				2105		92		92	0.00	2105			2105	0.043			28	28	0.170	12
4	2	3.50	III	1	20		N	1965	45			45	1.00	1828			1828	0.025	0.025		16	16	0.170	7
10,11,12	3	5.00	IV	1	30		N	2115	70	10	0	80	0.88	2026			2026	0.039			26	26	0.168	11
12	3	5.00	IV	1	25			2255			85	85	1.00	2127			2127	0.040	0.040		26	26	0.170	12
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2032 Reference Case	J13_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	175	335	70
Qc	=	Circulating flow across entry (pcu/h)	385	240	440
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2382	2070	2264
DFC	=	Design flow/Capacity = Q/Qe	0.07	0.16	0.03

Total In Sum = 580 PCU

DFC of Critical Approach = 0.16

2032 Construction Case

ROUNDABOUT CALCULATION

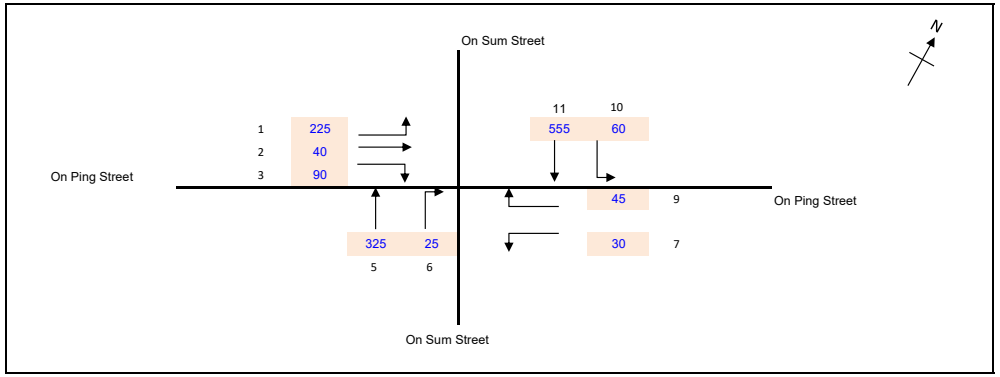
		Project No. -
J1 - Shek Mun Interchange	2032 Constuction Case	J1_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	665	2160	195
Qc	=	Circulating flow across entry (pcu/h)	270	335	1505
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2646	2653	1715
DFC	=	Design flow/Capacity = Q/Qe	0.25	0.81	0.11

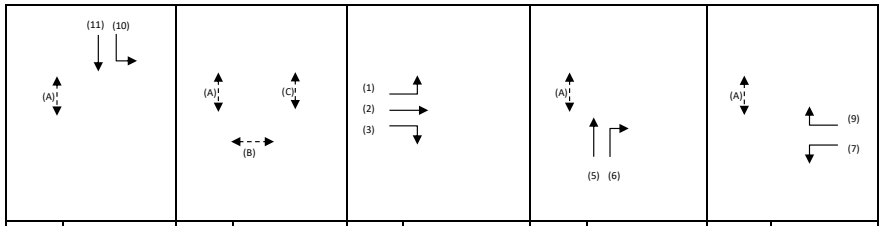
Total In Sum = **3020** **PCU**

DFC of Critical Approach = **0.81**

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2032 Constuction Case	J2_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	130 sec
Sum(y)		Y =	0.326
Loss time		L =	45 sec
Total Flow		=	1395 pcu
Co	= (1.5*L+5)/(1-Y)	=	107.6 sec
Cm	= L/(1-Y)	=	66.8 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	72.3 %
Cp	= 0.9*L/(0.9-Y)	=	70.6 sec
Ymax	= 1-L/C	=	0.654
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	80.2 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

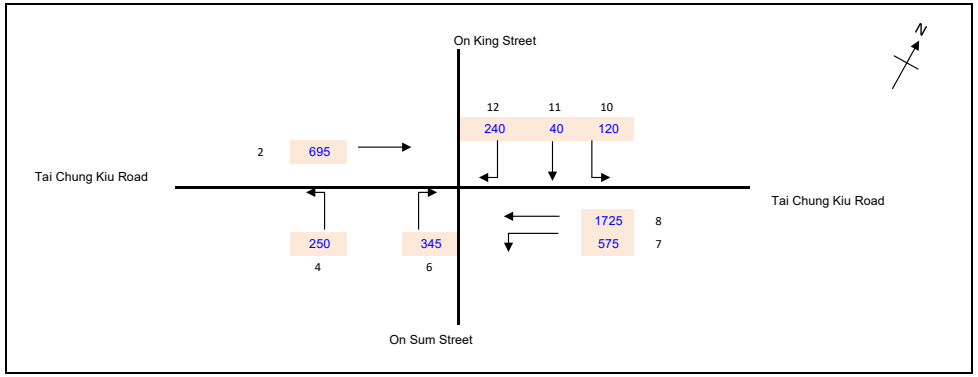
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	112	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	60			60	1.00	1809			1809	0.033			9	35	0.124	10
11	1	3.30	I	2				4170		555		555	0.00	4170			4170	0.133	0.133		35	35	0.499	44
1	3	4.00	II	1	15		N	2015	125			125	1.00	1832			1832	0.068	0.068		18	18	0.498	23
1,2	3	4.00	II	1	20			2155	100	40		140	0.71	2045			2045	0.068			18	18	0.499	26
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			12	18	0.335	17
5	4	3.50	IV	1			N	1965		170		170	0.00	1965			1965	0.086	0.086		22	23	0.498	30
5,6	4	3.50	IV	1	25			2105		156	25	181	0.14	2088			2088	0.086			23	23	0.499	32
7,9	5	4.50	V	1	25		N	2065	30		45	75	1.00	1948			1948	0.038	0.038		10	10	0.499	15
																		Stage 2 Pedestrian		22				

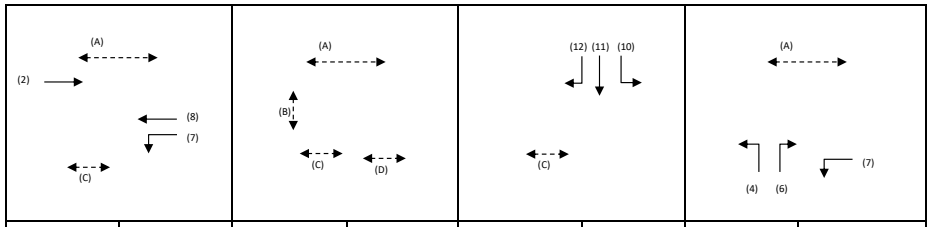
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2032 Constuction Case	J3_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.445	
Loss time	L =	42	sec
Total Flow	=	3990	pcu
Co = (1.5*L+5)/(1-Y)	=	122.6	sec
Cm = L/(1-Y)	=	75.7	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	31.4	%
Cp = 0.9*L/(0.9-Y)	=	83.1	sec
Ymax = 1-L/C	=	0.677	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	36.9	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

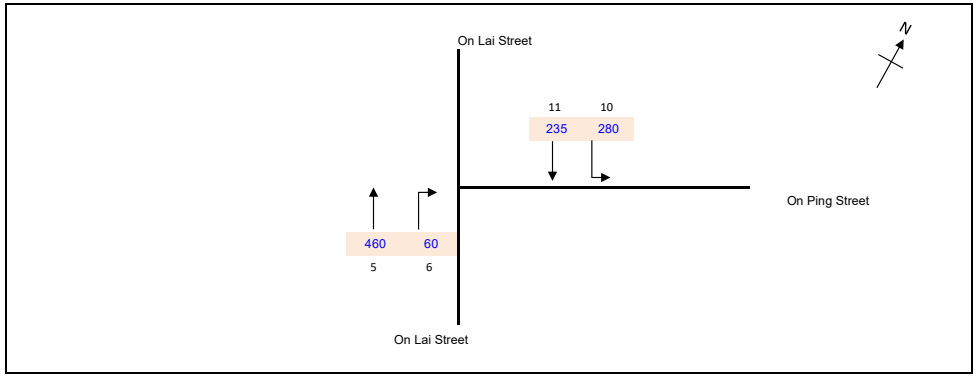
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	67	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	89	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		221		221	0.00	1965			1965	0.113			22	55	0.268	28
2	1	3.50	I	2				4210		474		474	0.00	4210			4210	0.113			22	55	0.268	30
8	1	3.30	II	3				6255		1725		1725	0.00	6255			6255	0.276	0.276		55	55	0.658	72
7	1,4	5.00	III	1	20		N	2115	575			575	1.00	1967			1967	0.292			58	58	0.658	69
10	3	3.50	IV	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	12	0.453	15
10,11	3	3.30	IV	1	20			2085	45	40		85	0.53	2005			2005	0.042			8	12	0.457	17
12	3	3.30	IV	2	25			4170			240	240	1.00	3934			3934	0.061	0.061		12	12	0.658	24
4	4	3.00	V	1	12.5		N	1915	185			185	1.00	1710			1710	0.108	0.108		21	21	0.658	34
4,6	4	3.00	V	1	20			2055	65		143	207	1.00	1912			1912	0.108			21	21	0.658	37
6	4	3.00	V	1	15			2055			202	202	1.00	1868			1868	0.108			21	21	0.658	37
																		Stage 2 Pedestrian		24				

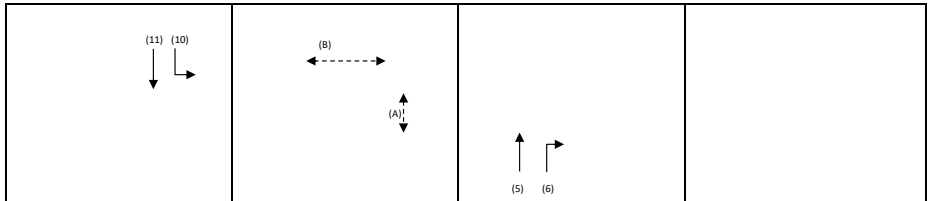
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2032 Constuction Case	J4_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.296
Loss time		L =	26 sec
Total Flow		=	1035 pcu
Co	= (1.5*L+5)/(1-Y)	=	62.5 sec
Cm	= L/(1-Y)	=	36.9 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	138.3 %
Cp	= 0.9*L/(0.9-Y)	=	38.7 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	143.3 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

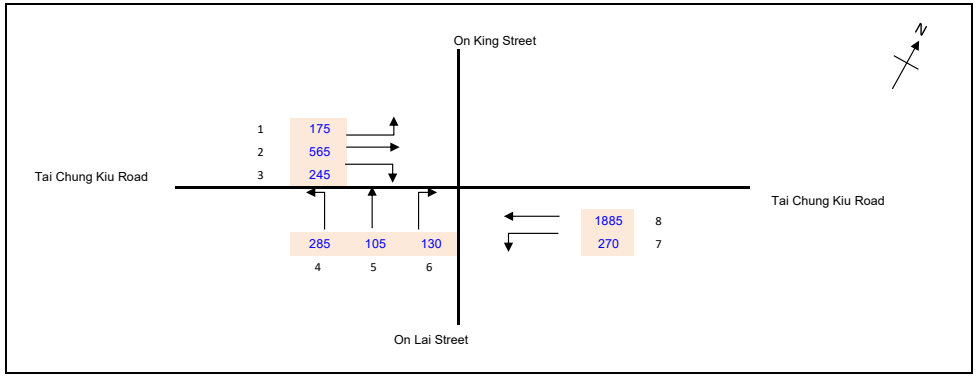
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	280	0		280	1.00	1726			1726	0.162	0.162		57	57	0.370	34
11	1	3.10	I	1				2065		235		235	0.00	2065			2065	0.114			40	57	0.259	29
5	3	2.80	II	1			N	1895		253		253	0.00	1895			1895	0.134	0.134		47	47	0.369	35
5,6	3	2.80	II	1	18			2035		207	60	267	0.22	1998			1998	0.134			47	47	0.370	37
																		Stage 2 Pedestrian		18				

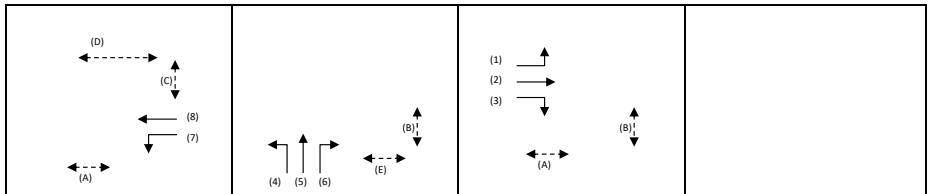
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Construction Case	J5_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	3	
Cycle time	C =	130	sec
Sum(y)	Y =	0.692	
Loss time	L =	20	sec
Total Flow	=	3660	pcu
Co = (1.5*L+5)/(1-Y)	=	113.8	sec
Cm = L/(1-Y)	=	65.0	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	8.3	%
Cp = 0.9*L/(0.9-Y)	=	86.7	sec
Ymax = 1-L/C	=	0.846	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	10.0	%



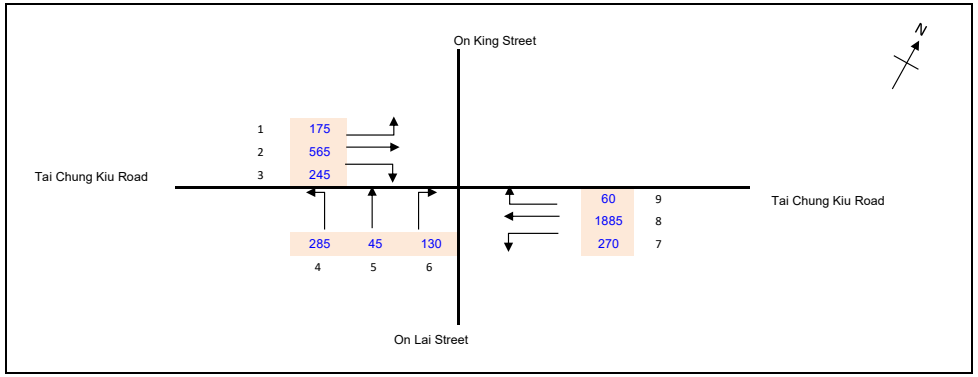
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	93	2	7	OK
B	7	5		6	56	3	10	OK
C	10	5		8	52	6	6	OK
D	6	5		5	48	6	10	OK
E	9	5		8	17	6	8	OK

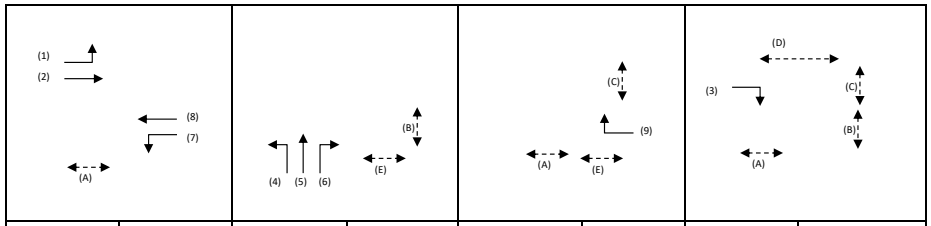
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	270	388		658	0.41	1851			1851	0.356	0.356		56	56	0.818	81
8	1	3.50	I	2				4210		1497		1497	0.00	4210			4210	0.356			56	56	0.818	92
4	2	3.50	II	1	10		N	1755	227			227	1.00	1526			1526	0.148	0.148		24	24	0.818	45
4,5,6	2	3.50	II	1	15			2105	59	105	130	294	0.64	1978			1978	0.148			24	24	0.818	52
1,2	3	3.50	III	1	10		N	1965	175	169		344	0.51	1826			1826	0.188	0.188		30	30	0.818	57
2	3	3.50	III	1				2105		396		396	0.00	2105			2105	0.188			30	30	0.817	66
3	3	3.50	III	1	15			2105			245	245	1.00	1914			1914	0.128			20	30	0.556	41

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Constuction Case (With Planned Improvement)	J5_AM_PI



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.636	
Loss time	L =	20	sec
Total Flow	=	3660	pcu
Co = (1.5*L+5)/(1-Y)	=	96.2	sec
Cm = L/(1-Y)	=	55.0	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	17.9	%
Cp = 0.9*L/(0.9-Y)	=	68.2	sec
Ymax = 1-L/C	=	0.846	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	19.7	%



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

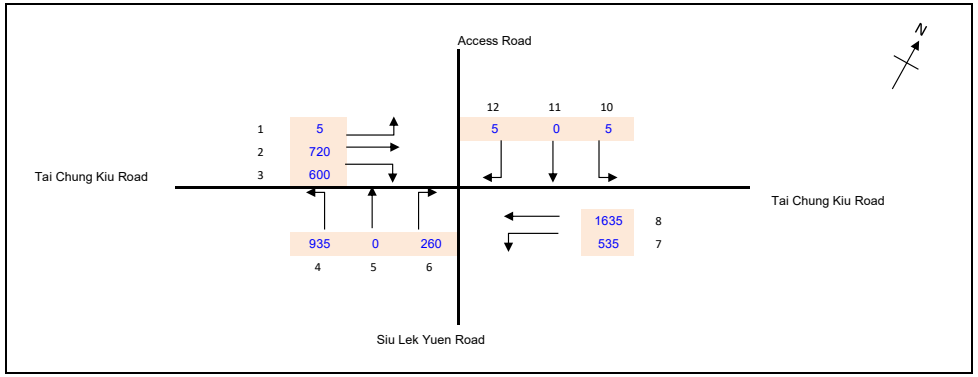
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	104	2	7	OK
B	7	5		6	34	3	10	OK
C	10	5		8	32	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	23	6	8	OK

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.
																				20				
1,2	1	3.50	I	1	15		N	1965	175	175		350	0.50	1871			1871	0.187			32	62	0.395	40
2	1	3.30	I	1				2085		390		390	0.00	2085			2085	0.187			32	62	0.395	44
3	4	3.50	V	1	20			2105			245	245	1.00	1958			1958	0.125	0.125		27	27	0.601	42
7,8	1	3.40	II	1	15		N	1955	270	399		669	0.40	1879			1879	0.356	0.356		62	62	0.751	76
8	1	3.30	II	2				4170		1486		1486	0.00	4170			4170	0.356			62	62	0.752	85
9	3	3.50	IV	1	15			2105			60	60	1.00	1914			1914	0.031	0.031		5	5	0.752	12
4	2	3.40	III	1	15		N	1955	219			219	1.00	1777			1777	0.123	0.123		21	21	0.752	40
4,5,6	2	3.20	III	1	20			2075	66	45	130	241	0.81	1956			1956	0.123			21	21	0.752	44

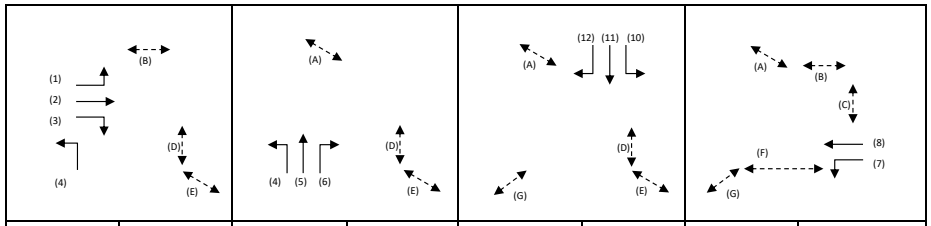
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2032 Constuction Case	J6_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.533
Loss time		L =	25 sec
Total Flow		=	4700 pcu
Co	= (1.5*L+5)/(1-Y)	=	90.9 sec
Cm	= L/(1-Y)	=	53.5 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	33.8 %
Cp	= 0.9*L/(0.9-Y)	=	61.2 sec
Ymax	= 1-L/C	=	0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	36.5 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

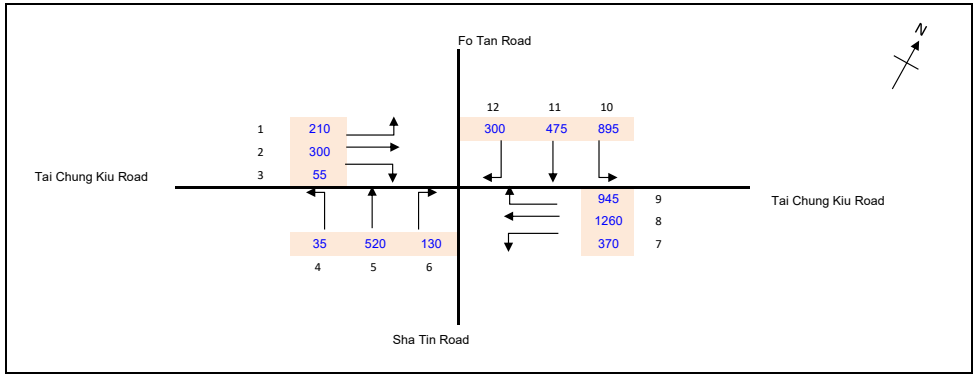
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	85	1	7	OK
B	5	5		5	87	2	13	OK
C	8	5		7	43	6	13	OK
D	9	5		8	58	2	12	OK
E	9	5		8	60	2	10	OK
F	9	5		8	45	6	11	OK
G	9	5		8	61	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	5			5	1.00	1754			1754	0.003			1	35	0.011	1
2	1	3.00	I	2				4110		720		720	0.00	4110			4110	0.175	0.175		35	35	0.659	57
3	1	3.00	I	2	22.5			4110			600	600	1.00	3853			3853	0.156			31	35	0.586	48
4	1,2	3.00	II	1	30		N	1915	450			450	1.00	1824			1824	0.246			49	55	0.585	56
4	1,2	3.00	II	1	35			2055	486			486	1.00	1971			1971	0.246			49	55	0.585	61
5,6	2	3.00	II	1	12.5			2055		0	132	132	1.00	1835			1835	0.072	0.072		14	14	0.659	25
6	2	3.00	II	1	10			2055			128	128	1.00	1787			1787	0.072			14	14	0.656	25
10,11,12	3	4.00	III	1	25		N	2015	5	0	0	5	1.00	1901			1901	0.003			1	5	0.068	1
12	3	4.00	III	1	15			2155			5	5	1.00	1959			1959	0.003			1	5	0.066	1
7	4	4.00	IV	1	20		N	2015	535			535	1.00	1874			1874	0.285	0.285		56	56	0.659	66
8	4	3.30	IV	3				6255		1635		1635	0.00	6255			6255	0.261			52	56	0.604	67
																	Stage 3 Provision of Min. g			5				

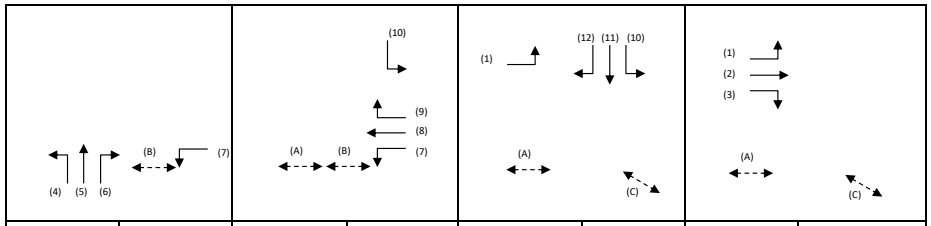
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Constuction Case	J7_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.631
Loss time		L =	21 sec
Total Flow		=	5495 pcu
Co	= (1.5*L+5)/(1-Y)	=	98.9 sec
Cm	= L/(1-Y)	=	56.9 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	17.7 %
Cp	= 0.9*L/(0.9-Y)	=	70.2 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	19.6 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

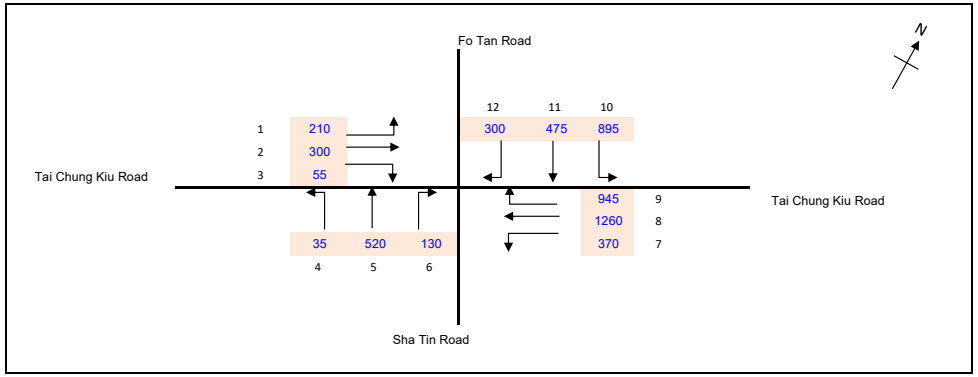
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	93	1	9	OK
B	5	5		5	64	8	8	OK
C	8	5		7	47	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	231		266	0.13	1915			1915	0.139	0.139		24	24	0.752	47
5,6	1	3.30	I	1	30			2085		289	0	289	0.00	2085			2085	0.139			24	24	0.751	51
6	1	3.30	I	1	25			2085			130	130	1.00	1967			1967	0.066			11	24	0.358	23
7	1,2	5.00	II	1	35		N	2115	370			370	1.00	2028		-900	1128	0.328			57	80	0.532	31
8	2	3.00	III	3				6165		1260		1260	0.00	6165			6165	0.204			35	43	0.616	61
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		43	43	0.752	68
10	2,3	3.00	IV	1	12.5		N	1915	428			428	1.00	1710			1710	0.250			43	90	0.363	29
10	2,3	3.00	IV	1	15			2055	467			467	1.00	1868			1868	0.250			43	90	0.362	31
11	3	3.00	V	1				2055		398		398	0.00	2055			2055	0.194	0.194		33	34	0.750	64
11,12	3	3.00	V	1	20			2055		77	300	377	0.80	1939			1939	0.194			34	34	0.752	61
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			21	54	0.296	27
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		8	8	0.752	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			8	8	0.752	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	8	0.439	11

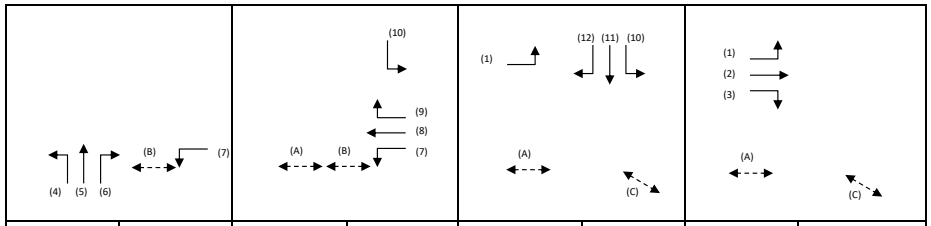
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Constuction Case (With Planned Improvement)	J7_AM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.594
Loss time		L =	21 sec
Total Flow		=	5495 pcu
Co	= (1.5*L+5)/(1-Y)	=	89.9 sec
Cm	= L/(1-Y)	=	51.7 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	25.0 %
Cp	= 0.9*L/(0.9-Y)	=	61.8 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	27.0 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

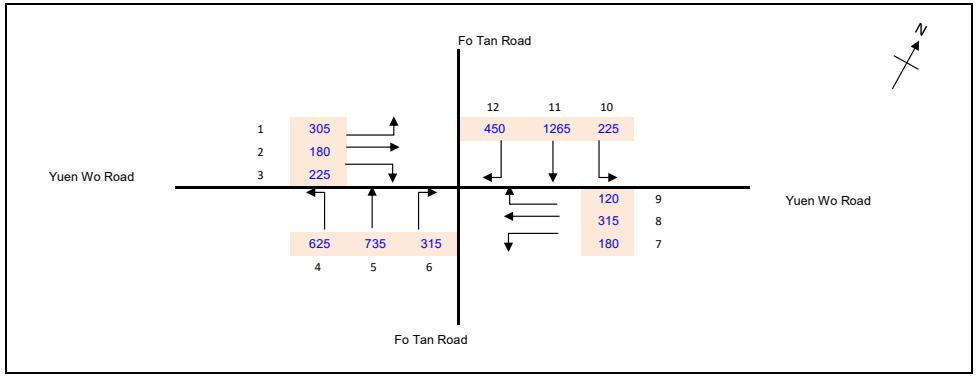
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	92	1	9	OK
B	5	5		5	68	8	8	OK
C	8	5		7	43	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	231		266	0.13	1915			1915	0.139	0.139		25	25	0.709	46
5,6	1	3.30	I	1	30			2085		289	0	289	0.00	2085			2085	0.139			25	25	0.707	50
6	1	3.30	I	1	25			2085			130	130	1.00	1967			1967	0.066			12	25	0.337	23
7	1,2	5.00	II	1	35		N	2115	370			370	1.00	2028		-900	1128	0.328			60	84	0.506	28
8	2	3.00	III	3				6165		1260		1260	0.00	6165			6165	0.204			37	46	0.580	59
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		46	46	0.709	66
10	2,3	3.00	IV	1	12.5		N	1915	428			428	1.00	1710			1710	0.250			46	88	0.372	30
10	2,3	3.00	IV	1	15			2055	467			467	1.00	1868			1868	0.250			46	88	0.371	33
11	3	3.00	V	2				4110		475		475	0.00	4110			4110	0.116			21	29	0.522	40
12	3	3.00	V	1	20			2055			300	300	1.00	1912			1912	0.157	0.157		29	29	0.709	51
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			23	50	0.321	28
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		9	9	0.709	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			9	9	0.709	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	9	0.413	11

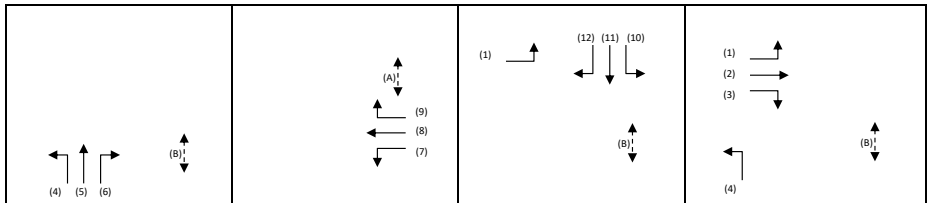
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2032 Constuction Case	J8_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.544
Loss time		L =	23 sec
Total Flow		=	4940 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.5 sec
Cm	= L/(1-Y)	=	50.4 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	33.8 %
Cp	= 0.9*L/(0.9-Y)	=	58.1 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	36.3 %



STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	13	8	7	OK
B	9	5		8	93	2	11	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.
																				23				
4	1,4	3.00	I	1	15		N	1915	625			625	1.00	1741			1741	0.359			71	58	0.798	75
5	1	3.00	I	3				6165		735		735	0.00	6165			6165	0.119			23	32	0.482	40
6	1	3.00	I	1	22.5			2055			315	315	1.00	1927			1927	0.164	0.164		32	32	0.660	51
7	2	3.00	II	1	15		N	1915	180			180	1.00	1741			1741	0.103	0.103		20	20	0.660	33
8	2	3.00	II	1				2055		158		158	0.00	2055			2055	0.077			15	20	0.490	29
8,9	2	3.00	II	1	27.5			2055		158	0	158	0.00	2055			2055	0.077			15	20	0.490	29
9	2	3.00	II	1	22.5			2055			120	120	1.00	1927			1927	0.062			12	20	0.398	22
10	3	3.30	III	1	15		N	1945	225			225	1.00	1768			1768	0.127			25	41	0.402	33
10,11	3	3.30	III	1	20			2085	0	436		436	0.00	2085			2085	0.209	0.209		41	41	0.660	65
11	3	3.30	III	1				2085		436		436	0.00	2085			2085	0.209			41	41	0.660	65
11,12	3	3.30	III	1	27.5			2085		393	41	434	0.09	2074			2074	0.209			41	41	0.660	64
12	3	3.30	III	1	22.5			2085			409	409	1.00	1955			1955	0.209			41	41	0.660	61
1	3,4	3.30	IV	1	15		N	1945	305			305	1.00	1768			1768	0.172			34	66	0.337	32
2	4	3.30	IV	1				2085		140		140	0.00	2085			2085	0.067	0.067		13	13	0.657	27
2,3	4	3.30	IV	1	25			2085		40	95	135	0.70	2001			2001	0.067			13	13	0.660	26
3	4	3.30	IV	1	20			2085			130	130	1.00	1940			1940	0.067			13	13	0.656	25

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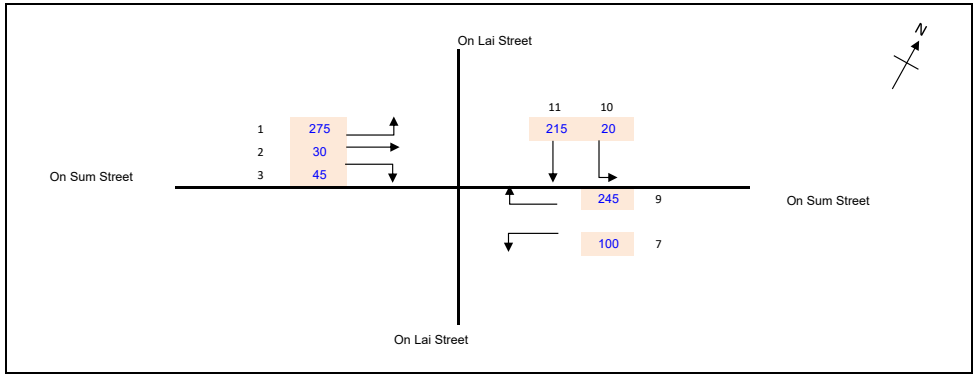
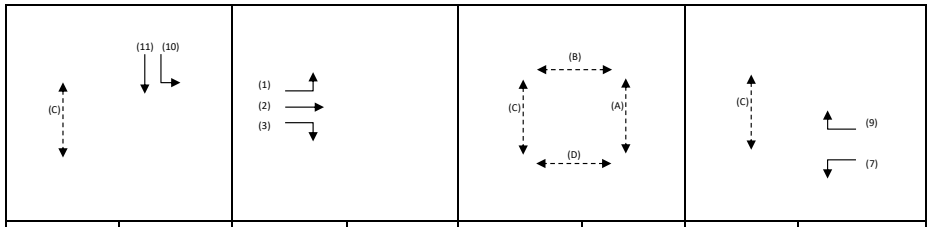
MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2032 Constuction Case	J9_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.357
Loss time		L =	34 sec
Total Flow		=	930 pcu
Co	= (1.5*L+5)/(1-Y)	=	87.1 sec
Cm	= L/(1-Y)	=	52.9 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	80.8 %
Cp	= 0.9*L/(0.9-Y)	=	56.3 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	56.9 %

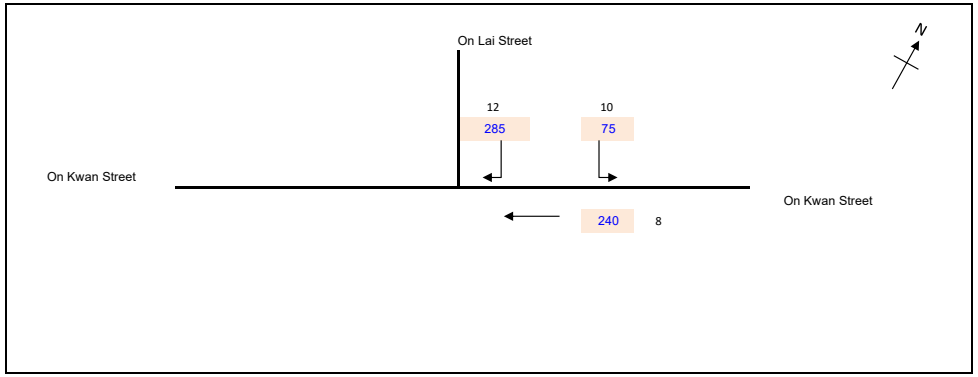


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

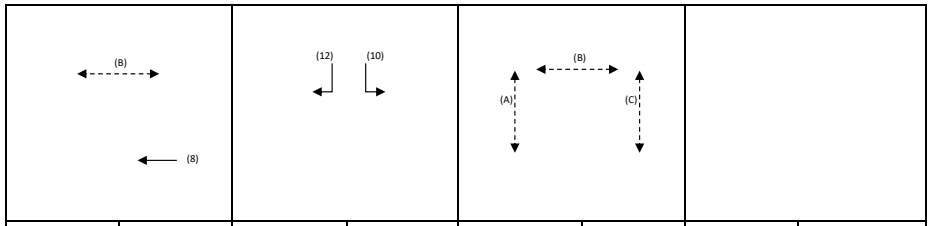
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	54	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	20	54		74	0.27	1913			1913	0.038	0.038		6	6	0.573	10
11	1	3.50	I	2				4210		162		162	0.00	4210			4210	0.038			6	6	0.573	11
1,2	2	5.00	II	1	15		N	2115	275	0		275	1.00	1923			1923	0.143	0.143		22	22	0.573	31
2,3	2	5.00	II	1	20			2255		30	45	75	0.60	2158			2158	0.035			5	22	0.139	8
7,9	4	5.00	III	1	20		N	2115	100		245	345	1.00	1967			1967	0.175	0.175		28	28	0.573	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2032 Constuction Case	J10_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	85 sec
Sum(y)		Y =	0.262
Loss time		L =	34 sec
Total Flow		=	600 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.9 sec
Cm	= L/(1-Y)	=	46.1 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	146.4 %
Cp	= 0.9*L/(0.9-Y)	=	47.9 sec
Ymax	= 1-L/C	=	0.600
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	106.3 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	39	3	12	OK
C	8	5		7	6	6	7	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.
																				10				
8	1	4.50	I	1			N	2065		240		240	0.00	2065			2065	0.116	0.116		23	23	0.436	25
10	2	3.50	II	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	28	0.126	7
12	2	3.50	II	1	20			2105			285	285	1.00	1958			1958	0.146	0.146		28	28	0.436	27
																		Stage 3 Pedestrian		24				

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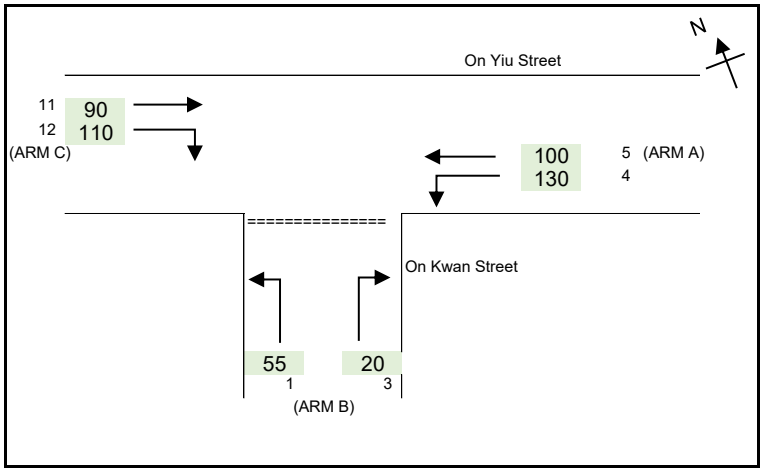
PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2032 Constuction Case	J11_AM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	130	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	90	(pcu/hr)
q c-b	=	110	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	20	(pcu/hr)
q b-c	=	55	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	437
Q b-c	=	627
Q c-b	=	748
Q b-ac	=	561.9

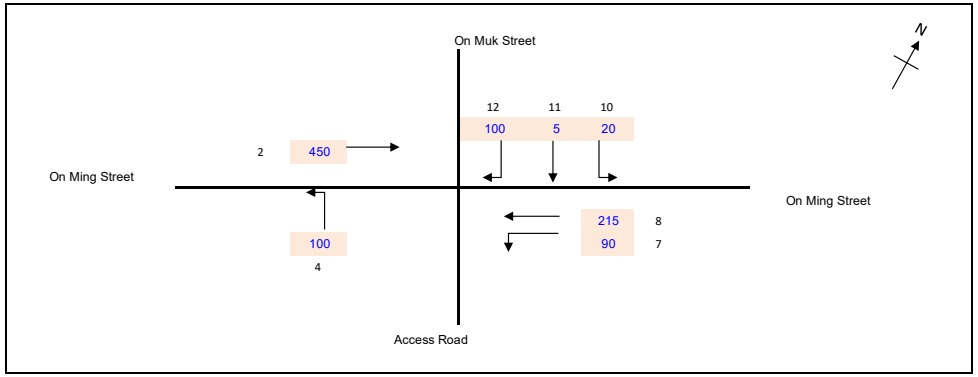
TOTAL FLOW = 505 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

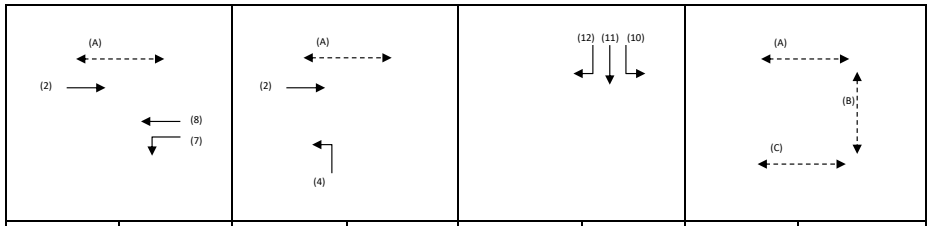
DFC b-a	=	0.0458
DFC b-c	=	0.0877
DFC c-b	=	0.1471
DFC b-ac	=	0.1335

CRITICAL DFC = 0.15

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION		
		PROJECT NO:	-
J12 - On Ming Street / On Muk Street	2032 Constuction Case	J12_AM	



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.162
Loss time		L =	40 sec
Total Flow		=	980 pcu
Co	= (1.5*L+5)/(1-Y)	=	77.5 sec
Cm	= L/(1-Y)	=	47.7 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	271.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	254.5 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	82	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		218		218	0.00	2015			2015	0.108			47	47	0.254	23
2	1,2	4.00	I	1				2155		232		232	0.00	2155			2155	0.108			47	47	0.253	24
7,8	1	3.50	II	1	20		N	1965	90	54		144	0.63	1877			1877	0.077	0.077		33	33	0.253	18
8	1	3.50	II	1				2105		161		161	0.00	2105			2105	0.077			33	33	0.254	21
4	2	3.50	III	1	20		N	1965	100			100	1.00	1828			1828	0.055	0.055		24	24	0.254	14
10,11,12	3	5.00	IV	1	30		N	2115	20	5	36	61	0.92	2022			2022	0.030			13	13	0.254	10
12	3	5.00	IV	1	25			2255			64	64	1.00	2127			2127	0.030	0.030		13	13	0.253	10
																		Stage 4 Pedestrian		28				

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

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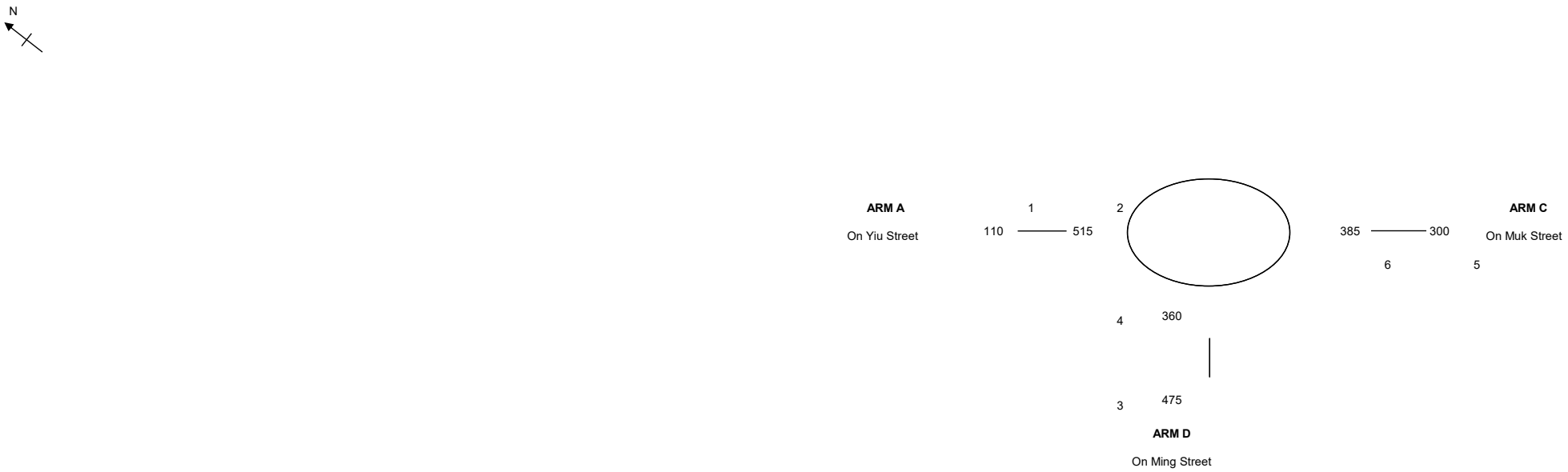
ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2032 Constuction Case	J13_AM



ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	110	475	300
Qc	=	Circulating flow across entry (pcu/h)	515	360	385
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2273	1979	2310
DFC	=	Design flow/Capacity = Q/Qe	0.05	0.24	0.13

Total In Sum = 885 PCU

DFC of Critical Approach = 0.24

ROUNDABOUT CALCULATION

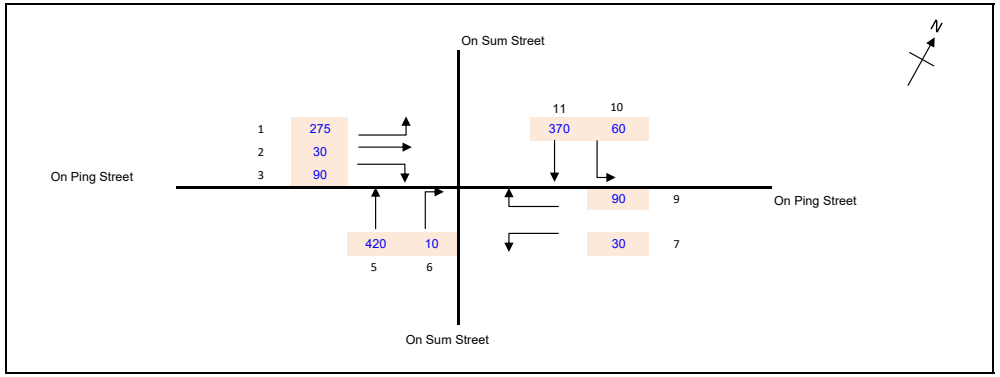
	Project No. -	
J1 - Shek Mun Interchange	2032 Constuction Case	J1_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	470	1330	220
Qc	=	Circulating flow across entry (pcu/h)	255	680	995
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2655	2436	2018
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.55	0.11

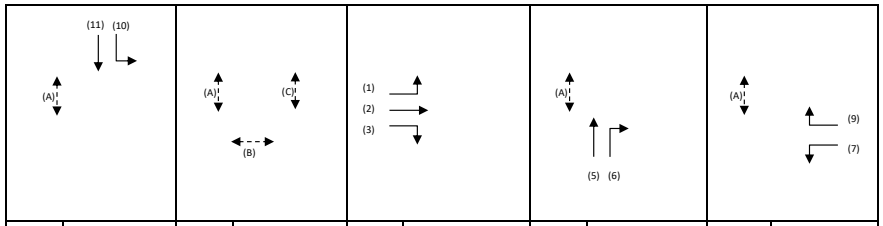
Total In Sum = 2020 PCU

DFC of Critical Approach = 0.55

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2032 Constuction Case	J2_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	125 sec
Sum(y)		Y =	0.335
Loss time		L =	45 sec
Total Flow		=	1375 pcu
Co	= (1.5*L+5)/(1-Y)	=	109.1 sec
Cm	= L/(1-Y)	=	67.7 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	67.7 %
Cp	= 0.9*L/(0.9-Y)	=	71.7 sec
Ymax	= 1-L/C	=	0.640
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	71.8 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	101	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	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 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.
																				23				
10	1	3.30	I	1	20		N	1945	60			60	1.00	1809			1809	0.033			8	21	0.196	10
11	1	3.30	I	2				4170		370		370	0.00	4170			4170	0.089	0.089		21	21	0.524	32
1	3	4.00	II	1	15		N	2015	145			145	1.00	1832			1832	0.079	0.079		19	19	0.524	26
1,2	3	4.00	II	1	20			2155	130	30		160	0.81	2031			2031	0.079			19	19	0.521	28
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			11	19	0.304	16
5	4	3.50	IV	1			N	1965		208		208	0.00	1965			1965	0.106	0.106		25	25	0.524	35
5,6	4	3.50	IV	1	25			2105		212	10	222	0.05	2099			2099	0.106			25	25	0.523	37
7,9	5	4.50	V	1	25		N	2065	30		90	120	1.00	1948			1948	0.062	0.062		15	15	0.524	22
																		Stage 2 Pedestrian		22				

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

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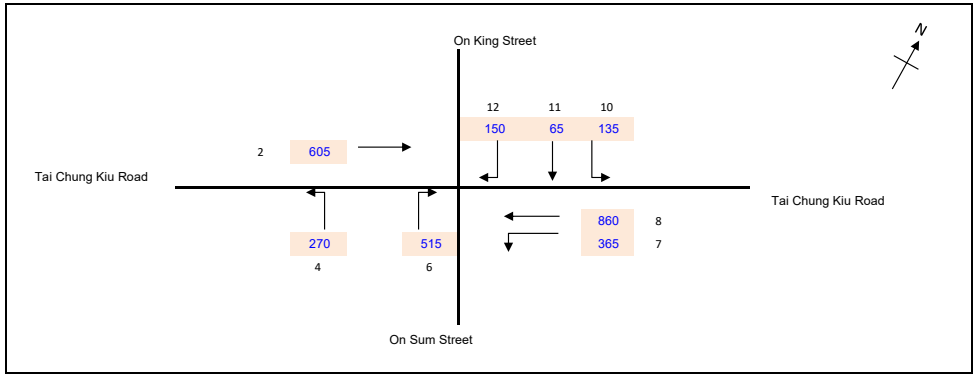
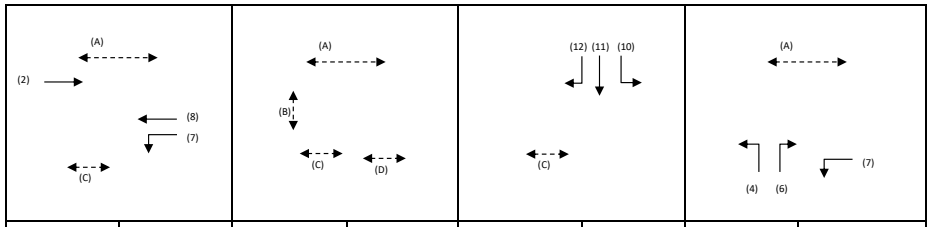
MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2032 Constuction Case	J3_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.333	
Loss time	L =	42	sec
Total Flow	=	2965	pcu
Co = (1.5*L+5)/(1-Y)	=	101.9	sec
Cm = L/(1-Y)	=	63.0	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	75.7	%
Cp = 0.9*L/(0.9-Y)	=	66.7	sec
Ymax = 1-L/C	=	0.664	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	79.5	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

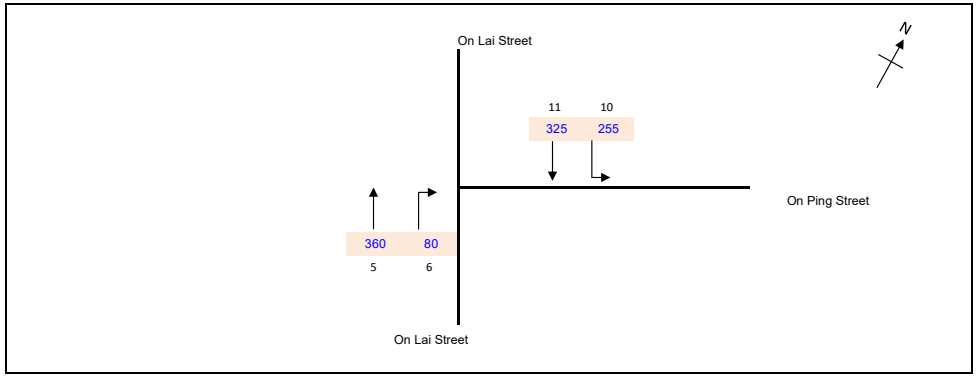
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	55	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	69	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		192		192	0.00	1965			1965	0.098			24	34	0.356	29
2	1	3.50	I	2				4210		413		413	0.00	4210			4210	0.098			24	34	0.358	31
8	1	3.30	II	3				6255		860		860	0.00	6255			6255	0.137	0.137		34	34	0.501	43
7	1,4	5.00	III	1	20		N	2115	365			365	1.00	1967			1967	0.186			46	46	0.501	48
10	3	3.50	IV	1	15		N	1965	94			94	1.00	1786			1786	0.052	0.052		13	13	0.501	17
10,11	3	3.30	IV	1	20			2085	41	65		106	0.39	2026			2026	0.052			13	13	0.501	20
12	3	3.30	IV	2	25			4170			150	150	1.00	3934			3934	0.038			10	13	0.364	14
4	4	3.00	V	1	12.5		N	1915	245			245	1.00	1710			1710	0.143	0.143		36	36	0.501	36
4,6	4	3.00	V	1	20			2055	25		248	273	1.00	1912			1912	0.143			36	36	0.501	41
6	4	3.00	V	1	15			2055			267	267	1.00	1868			1868	0.143			36	36	0.501	40
																		Stage 2 Pedestrian		24				

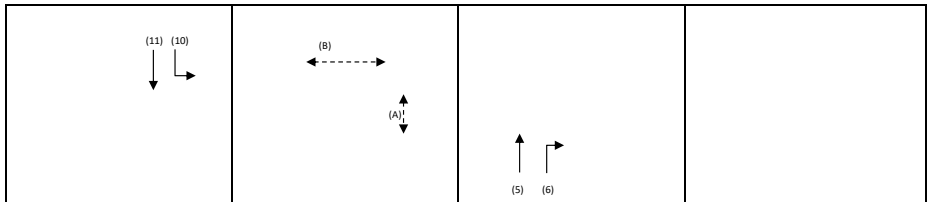
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2032 Constuction Case	J4_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	125 sec
Sum(y)		Y =	0.267
Loss time		L =	26 sec
Total Flow		=	1020 pcu
Co	= (1.5*L+5)/(1-Y)	=	60.0 sec
Cm	= L/(1-Y)	=	35.5 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	164.4 %
Cp	= 0.9*L/(0.9-Y)	=	36.9 sec
Ymax	= 1-L/C	=	0.792
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	167.3 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

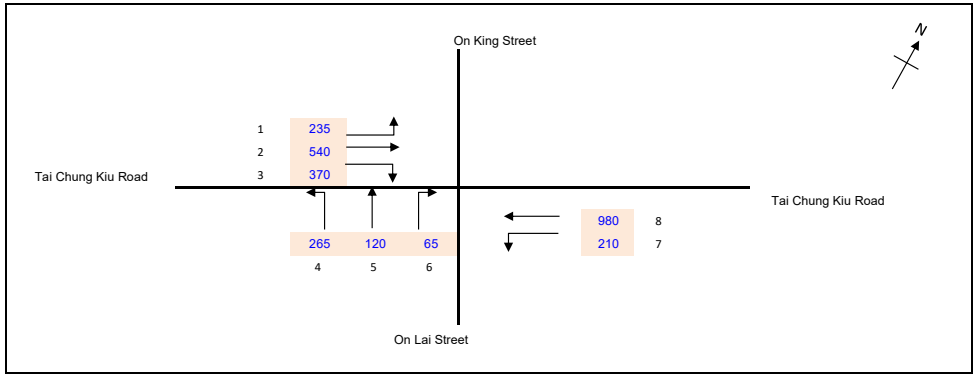
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	255	10		265	0.96	1733			1733	0.153	0.153		57	57	0.337	30
11	1	3.10	I	1				2065		315		315	0.00	2065			2065	0.153			57	57	0.336	36
5	3	2.80	II	1			N	1895		216		216	0.00	1895			1895	0.114	0.114		42	42	0.337	30
5,6	3	2.80	II	1	18			2035		145	80	225	0.36	1976			1976	0.114			42	42	0.337	31
																		Stage 2 Pedestrian		18				

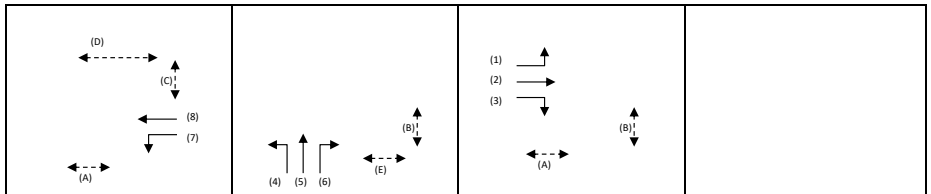
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Construction Case	J5_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	3	
Cycle time	C =	130	sec
Sum(y)	Y =	0.525	
Loss time	L =	20	sec
Total Flow	=	2785	pcu
Co = (1.5*L+5)/(1-Y)	=	73.7	sec
Cm = L/(1-Y)	=	42.1	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	42.9	%
Cp = 0.9*L/(0.9-Y)	=	48.0	sec
Ymax = 1-L/C	=	0.831	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	42.5	%



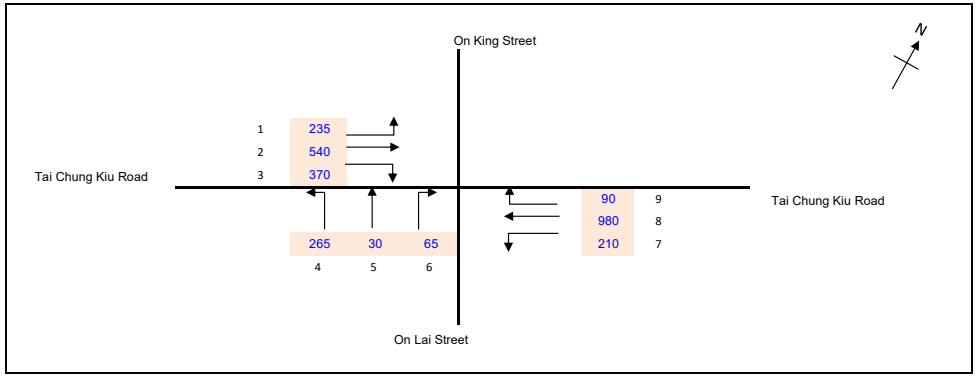
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	2	7	OK
B	7	5		6	71	3	10	OK
C	10	5		8	37	6	6	OK
D	6	5		5	33	6	10	OK
E	9	5		8	20	6	8	OK

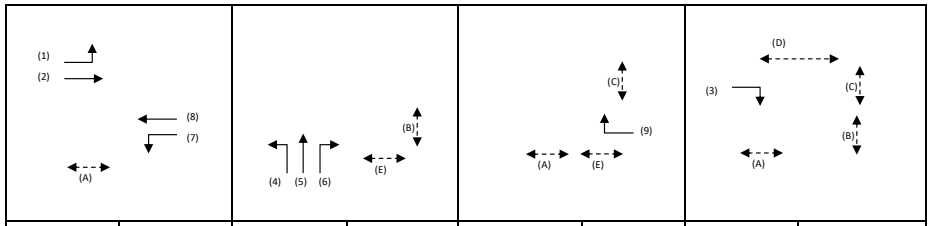
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	210	147		357	0.59	1806			1806	0.198	0.198		41	41	0.620	53
8	1	3.50	I	2				4210		833		833	0.00	4210			4210	0.198			41	41	0.620	61
4	2	3.50	II	1	10		N	1755	195			195	1.00	1526			1526	0.128	0.128		27	27	0.620	37
4,5,6	2	3.50	II	1	15			2105	70	120	65	255	0.53	1999			1999	0.128			27	27	0.619	44
1,2	3	3.50	III	1	10		N	1965	235	121		356	0.66	1788			1788	0.199	0.199		42	42	0.620	52
2	3	3.50	III	1				2105		419		419	0.00	2105			2105	0.199			42	42	0.620	62
3	3	3.50	III	1	15			2105			370	370	1.00	1914			1914	0.193			41	42	0.602	54

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2032 Constuction Case (With Planned Improvement)	J5_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.530
Loss time		L =	20 sec
Total Flow		=	2785 pcu
Co	= (1.5*L+5)/(1-Y)	=	74.5 sec
Cm	= L/(1-Y)	=	42.6 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	41.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.7 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	43.6 %



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

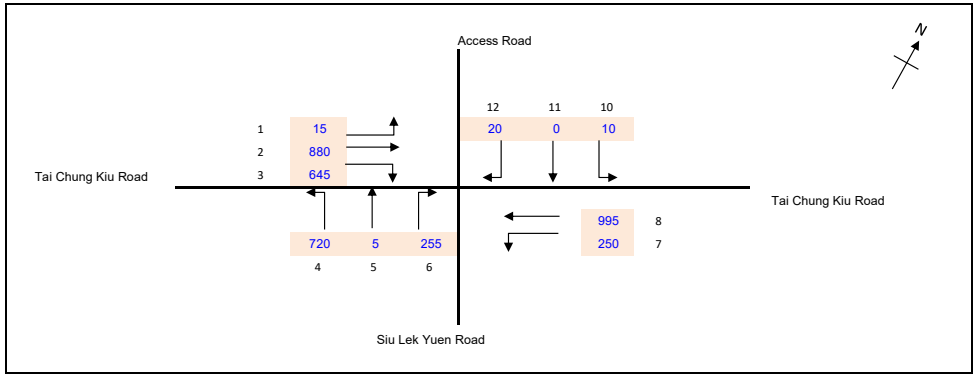
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	110	2	7	OK
B	7	5		6	55	3	10	OK
C	10	5		8	59	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	26	6	8	OK

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.
																				20				
1,2	1	3.50	I	1	15		N	1965	235	129		364	0.65	1846			1846	0.197			41	41	0.625	54
2	1	3.30	I	1				2085		411		411	0.00	2085			2085	0.197			41	41	0.624	61
3	4	3.50	V	1	20			2105			370	370	1.00	1958			1958	0.189	0.189		49	49	0.502	50
7,8	1	3.40	II	1	15		N	1955	210	156		366	0.57	1849			1849	0.198	0.198		41	41	0.627	54
8	1	3.30	II	2				4170		824		824	0.00	4170			4170	0.198			41	41	0.626	61
9	3	3.50	IV	1	15			2105			90	90	1.00	1914			1914	0.047	0.047		10	10	0.627	18
4	2	3.40	III	1	15		N	1955	172	0		172	1.00	1777			1777	0.097	0.097		20	20	0.627	31
4,5,6	2	3.20	III	1	20			2075	93	30	65	188	0.84	1952			1952	0.097			20	20	0.627	35

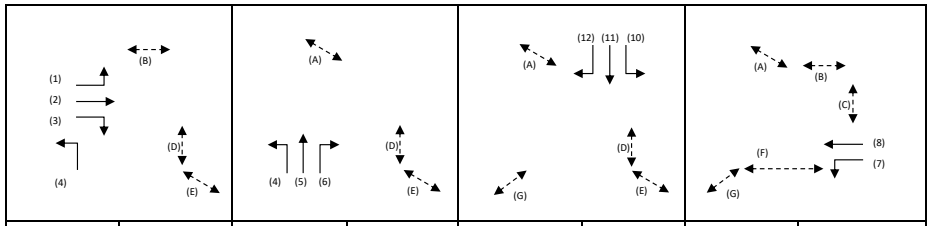
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2032 Constuction Case	J6_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	125 sec
Sum(y)		Y =	0.445
Loss time		L =	25 sec
Total Flow		=	3795 pcu
Co	= (1.5*L+5)/(1-Y)	=	76.6 sec
Cm	= L/(1-Y)	=	45.0 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	60.2 %
Cp	= 0.9*L/(0.9-Y)	=	49.4 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	61.9 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

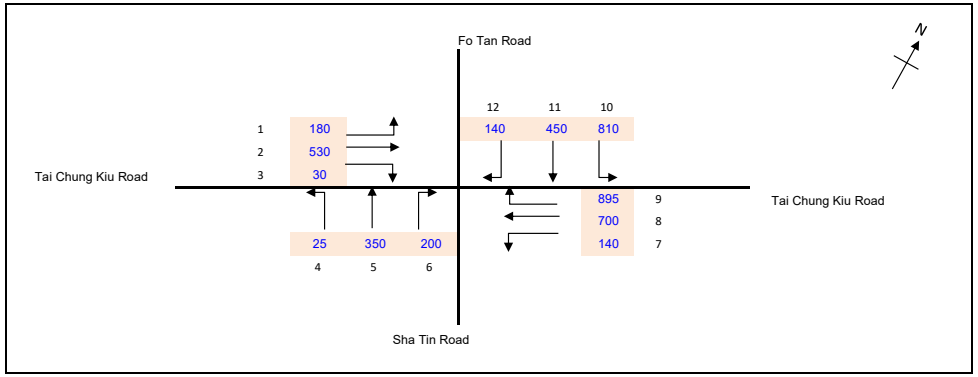
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	67	1	7	OK
B	5	5		5	80	2	13	OK
C	8	5		7	23	6	13	OK
D	9	5		8	73	2	12	OK
E	9	5		8	75	2	10	OK
F	9	5		8	25	6	11	OK
G	9	5		8	41	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	15			15	1.00	1754			1754	0.009			2	48	0.022	2
2	1	3.00	I	2				4110		880		880	0.00	4110			4110	0.214	0.214		48	48	0.556	56
3	1	3.00	I	2	22.5			4110			645	645	1.00	3853			3853	0.167			38	48	0.435	41
4	1,2	3.00	II	1	30		N	1915	346			346	1.00	1824			1824	0.190			43	70	0.338	32
4	1,2	3.00	II	1	35			2055	374			374	1.00	1971			1971	0.190			43	70	0.338	34
5,6	2	3.00	II	1	12.5			2055		5	127	132	0.96	1842			1842	0.072	0.072		16	16	0.556	24
6	2	3.00	II	1	10			2055			128	128	1.00	1787			1787	0.072			16	16	0.556	23
10,11,12	3	4.00	III	1	25		N	2015	10	0	5	15	1.00	1901			1901	0.008			2	5	0.197	3
12	3	4.00	III	1	15			2155			15	15	1.00	1959			1959	0.008			2	5	0.191	3
7	4	4.00	IV	1	20		N	2015	250			250	1.00	1874			1874	0.133			30	36	0.466	37
8	4	3.30	IV	3				6255		995		995	0.00	6255			6255	0.159	0.159		36	36	0.556	49
																	Stage 3 Provision of Min. g			5				

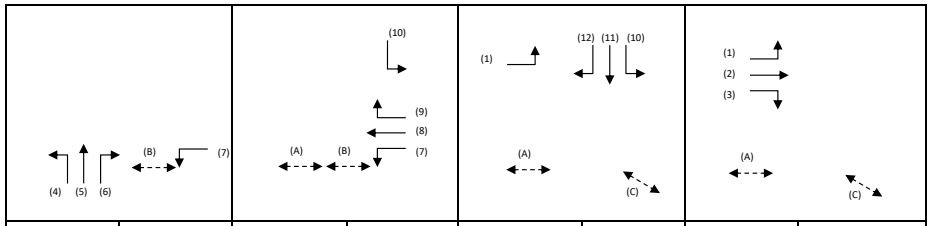
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Constuction Case	J7_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.562	
Loss time	L =	21	sec
Total Flow	=	4485	pcu
Co = (1.5*L+5)/(1-Y)	=	83.3	sec
Cm = L/(1-Y)	=	47.9	sec
Yult	=	0.743	
R.C.ult = (Yult-Y)/Y*100%	=	32.2	%
Cp = 0.9*L/(0.9-Y)	=	55.9	sec
Ymax = 1-L/C	=	0.838	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	34.3	%



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

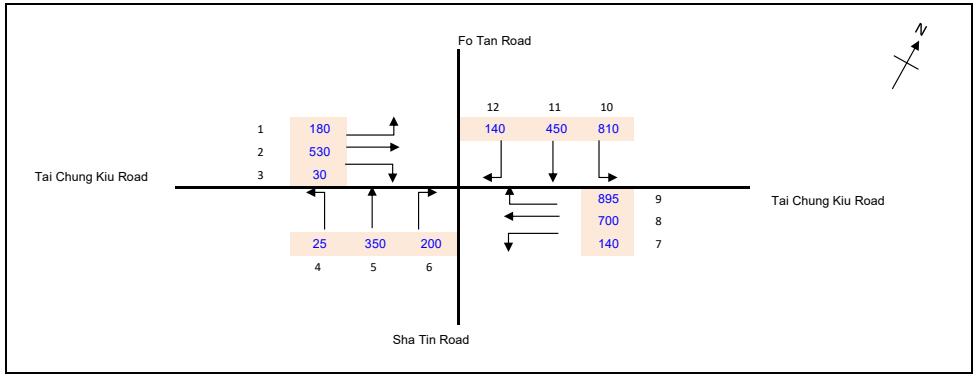
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	91	1	9	OK
B	5	5		5	69	8	8	OK
C	8	5		7	42	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		26	26	0.670	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			26	26	0.670	48
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			26	26	0.670	45
7	1,2	5.00	II	1	35		N	2115	140			140	1.00	2028		-900	1128	0.124			24	85	0.190	11
8	2	3.00	III	3				6165		700		700	0.00	6165			6165	0.114			22	46	0.322	33
9	2	3.00	III	2	17.5			4110			895	895	1.00	3786			3786	0.236	0.236		46	46	0.670	63
10	2,3	3.00	IV	1	12.5		N	1915	387			387	1.00	1710			1710	0.226			44	87	0.337	28
10	2,3	3.00	IV	1	15			2055	423			423	1.00	1868			1868	0.226			44	87	0.337	30
11	3	3.00	V	1				2055		300		300	0.00	2055			2055	0.146	0.146		28	28	0.669	51
11,12	3	3.00	V	1	20			2055		150	140	290	0.48	1983			1983	0.146			28	28	0.670	49
1	3,4	3.00	VI	1	12.5		N	1915	180			180	1.00	1710			1710	0.105			20	49	0.277	24
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.670	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.670	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.670	18

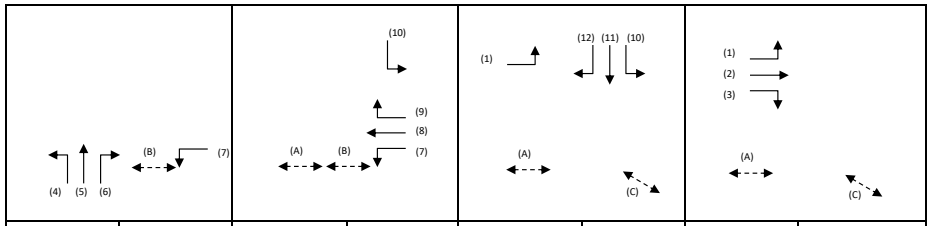
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2032 Constuction Case (With Planned Improvement)	J7_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.525
Loss time		L =	21 sec
Total Flow		=	4485 pcu
Co	= (1.5*L+5)/(1-Y)	=	76.9 sec
Cm	= L/(1-Y)	=	44.2 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	41.3 %
Cp	= 0.9*L/(0.9-Y)	=	50.4 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	43.7 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

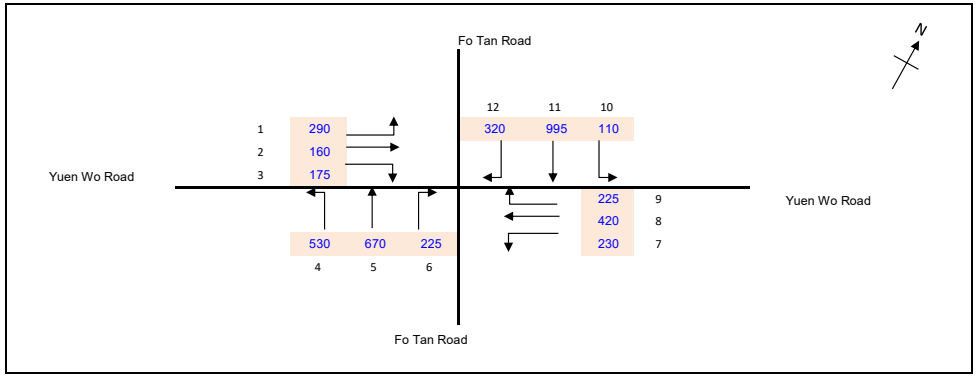
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	89	1	9	OK
B	5	5		5	74	8	8	OK
C	8	5		7	37	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		28	28	0.627	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			28	28	0.627	47
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			28	28	0.627	45
7	1,2	5.00	II	1	35		N	2115	140			140	1.00	2028		-900	1128	0.124			26	90	0.180	9
8	2	3.00	III	3				6165		700		700	0.00	6165			6165	0.114			24	49	0.301	31
9	2	3.00	III	2	17.5			4110			895	895	1.00	3786			3786	0.236	0.236		49	49	0.627	60
10	2,3	3.00	IV	1	12.5		N	1915	387			387	1.00	1710			1710	0.226			47	85	0.347	29
10	2,3	3.00	IV	1	15			2055	423			423	1.00	1868			1868	0.226			47	85	0.347	32
11	3	3.00	V	2				4110		450		450	0.00	4110			4110	0.109	0.109		23	23	0.627	40
12	3	3.00	V	1	20			2055			140	140	1.00	1912			1912	0.073			15	23	0.419	25
1	3,4	3.00	VI	1	12.5		N	1915	180			180	1.00	1710			1710	0.105			22	44	0.309	26
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		10	10	0.627	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			10	10	0.627	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			10	10	0.627	18

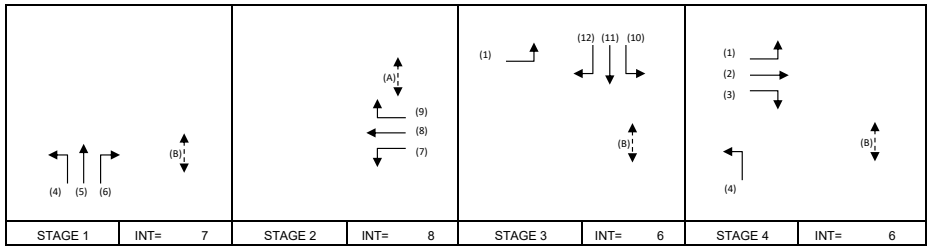
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2032 Constuction Case	J8_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.465
Loss time		L =	23 sec
Total Flow		=	4350 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.8 sec
Cm	= L/(1-Y)	=	43.0 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	56.6 %
Cp	= 0.9*L/(0.9-Y)	=	47.5 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.4 %



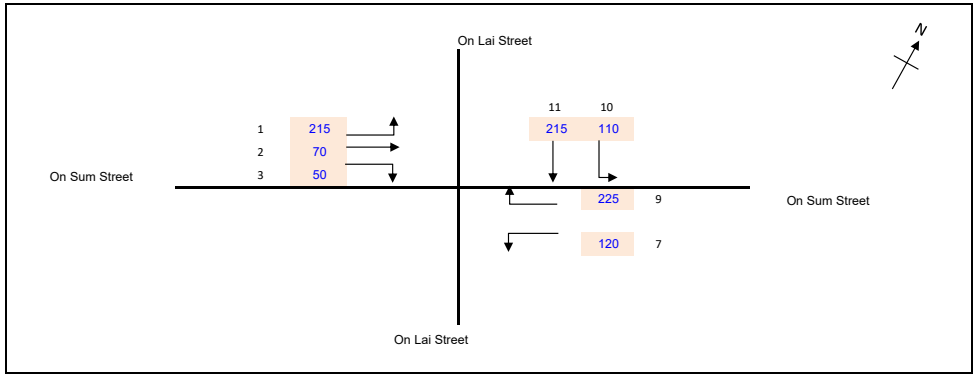
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	23	8	7	OK
B	9	5		8	83	2	11	OK

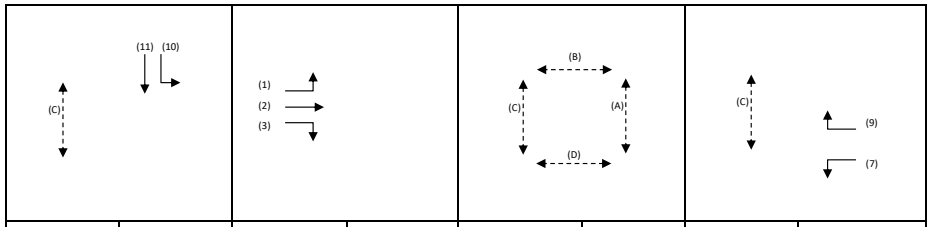
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	530			530	1.00	1741			1741	0.304			70	53	0.751	68
5	1	3.00	I	3				6165		670		670	0.00	6165			6165	0.109			25	27	0.525	38
6	1	3.00	I	1	22.5			2055			225	225	1.00	1927			1927	0.117	0.117		27	27	0.564	39
7	2	3.00	II	1	15		N	1915	230			230	1.00	1741			1741	0.132	0.132		30	30	0.564	38
8	2	3.00	II	1				2055		220		220	0.00	2055			2055	0.107			25	30	0.457	37
8,9	2	3.00	II	1	27.5			2055		200	19	219	0.09	2045			2045	0.107			25	30	0.457	36
9	2	3.00	II	1	22.5			2055			206	206	1.00	1927			1927	0.107			25	30	0.457	34
10	3	3.30	III	1	15		N	1945	110			110	1.00	1768			1768	0.062			14	37	0.219	17
10,11	3	3.30	III	1	20			2085	0	334		334	0.00	2085			2085	0.160	0.160		37	37	0.564	52
11	3	3.30	III	1				2085		334		334	0.00	2085			2085	0.160			37	37	0.564	52
11,12	3	3.30	III	1	27.5			2085		327	7	334	0.02	2083			2083	0.160			37	37	0.564	52
12	3	3.30	III	1	22.5			2085			313	313	1.00	1955			1955	0.160			37	37	0.564	49
1	3,4	3.30	IV	1	15		N	1945	290			290	1.00	1768			1768	0.164			38	62	0.346	33
2	4	3.30	IV	1				2085		116		116	0.00	2085			2085	0.055	0.055		13	13	0.564	23
2,3	4	3.30	IV	1	25			2085		44	67	112	0.60	2012			2012	0.055			13	13	0.564	22
3	4	3.30	IV	1	20			2085			108	108	1.00	1940			1940	0.055			13	13	0.564	21

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2032 Constuction Case	J9_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.349
Loss time		L =	34 sec
Total Flow		=	1005 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.0 sec
Cm	= L/(1-Y)	=	52.2 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	84.9 %
Cp	= 0.9*L/(0.9-Y)	=	55.5 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	60.6 %

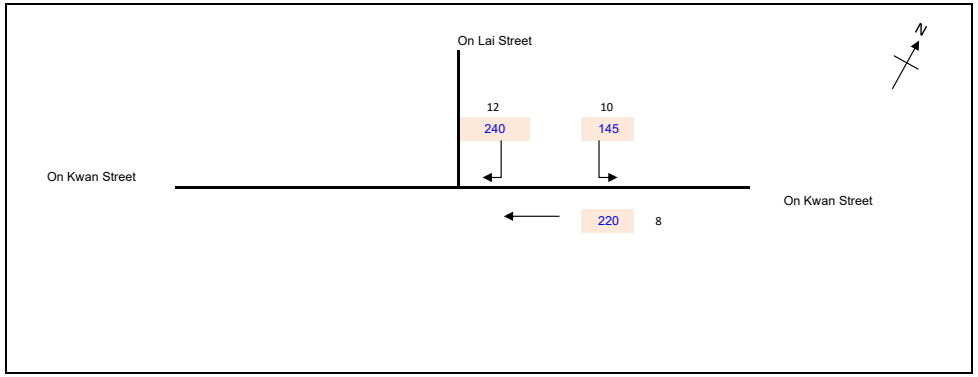


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

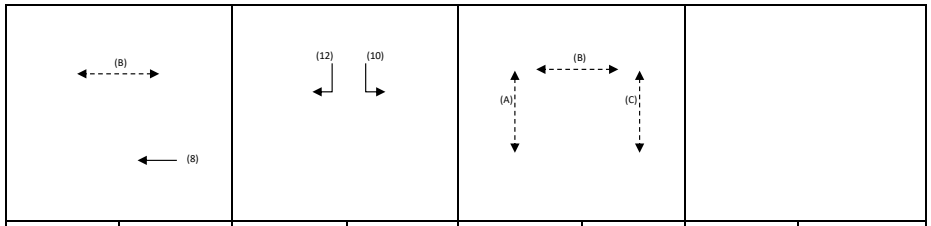
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	58	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	110	0		110	1.00	1786			1786	0.062	0.062		10	10	0.560	15
11	1	3.50	I	2				4210		215		215	0.00	4210			4210	0.051			8	10	0.465	14
1,2	2	5.00	II	1	15		N	2115	215	0		215	1.00	1923			1923	0.112	0.112		18	18	0.560	26
2,3	2	5.00	II	1	20			2255		70	50	120	0.42	2187			2187	0.055			9	18	0.275	14
7,9	4	5.00	III	1	20		N	2115	120		225	345	1.00	1967			1967	0.175	0.175		28	28	0.560	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION		
		PROJECT NO: -	
J10 - On Lai Street / On Kwan Street	2032 Constuction Case	J10_PM	



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.229
Loss time		L =	34 sec
Total Flow		=	605 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.6 sec
Cm	= L/(1-Y)	=	44.1 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	181.5 %
Cp	= 0.9*L/(0.9-Y)	=	45.6 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	144.4 %



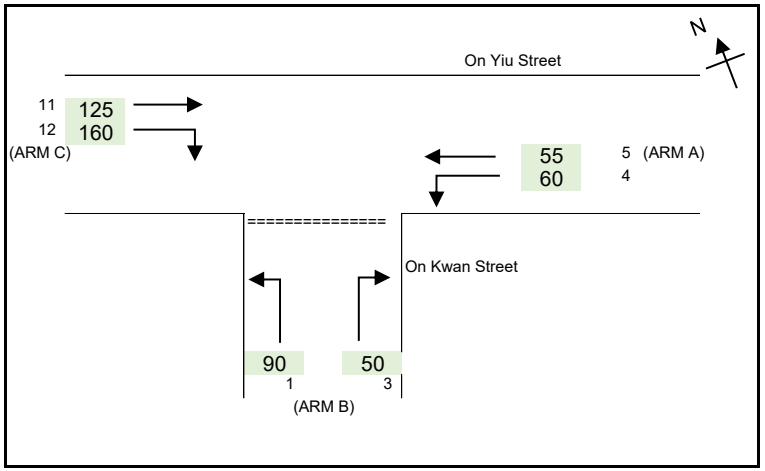
STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	42	3	12	OK
C	8	5		7	6	6	7	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.
																				10				
8	1	4.50	I	1			N	2065		220		220	0.00	2065			2065	0.107	0.107		26	26	0.368	23
10	2	3.50	II	1	15		N	1965	145			145	1.00	1786			1786	0.081			20	30	0.244	15
12	2	3.50	II	1	20			2105			240	240	1.00	1958			1958	0.123	0.123		30	30	0.368	24
																		Stage 3 Pedestrian		24				

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2032 Constuction Case	J11_PM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	60	(pcu/hr)
q a-c	=	55	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	125	(pcu/hr)
q c-b	=	160	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	50	(pcu/hr)
q b-c	=	90	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	432
Q b-c	=	647
Q c-b	=	786
Q b-ac	=	549.4

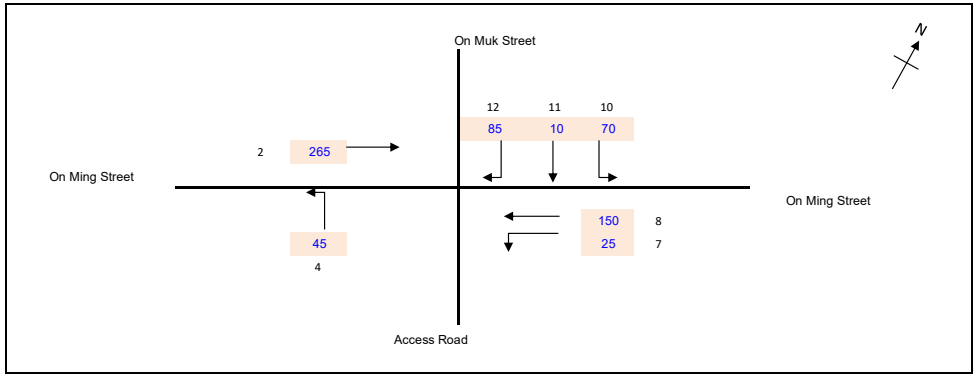
TOTAL FLOW = 540 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

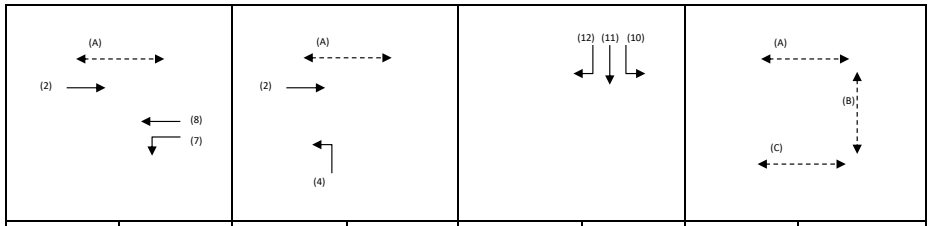
DFC b-a	=	0.1157
DFC b-c	=	0.1391
DFC c-b	=	0.2036
DFC b-ac	=	0.2548

CRITICAL DFC = 0.25

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2032 Constuction Case	J12_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.108
Loss time		L =	40 sec
Total Flow		=	650 pcu
Co	= (1.5*L+5)/(1-Y)	=	72.9 sec
Cm	= L/(1-Y)	=	44.8 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	455.3 %
Cp	= 0.9*L/(0.9-Y)	=	45.5 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	430.1 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	69	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		128		128	0.00	2015			2015	0.064			41	41	0.170	15
2	1,2	4.00	I	1				2155		137		137	0.00	2155			2155	0.064			41	41	0.170	16
7,8	1	3.50	II	1	20		N	1965	25	59		84	0.30	1922			1922	0.043	0.043		28	28	0.170	11
8	1	3.50	II	1				2105		92		92	0.00	2105			2105	0.043			28	28	0.170	12
4	2	3.50	III	1	20		N	1965	45			45	1.00	1828			1828	0.025	0.025		16	16	0.170	7
10,11,12	3	5.00	IV	1	30		N	2115	70	10	0	80	0.88	2026			2026	0.039			26	26	0.168	11
12	3	5.00	IV	1	25			2255			85	85	1.00	2127			2127	0.040	0.040		26	26	0.170	12
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2032 Constuction Case	J13_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	175	335	70
Qc	=	Circulating flow across entry (pcu/h)	385	240	440
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2382	2070	2264
DFC	=	Design flow/Capacity = Q/Qe	0.07	0.16	0.03

Total In Sum = 580 PCU

DFC of Critical Approach = 0.16

2036 Reference Case

ROUNDABOUT CALCULATION

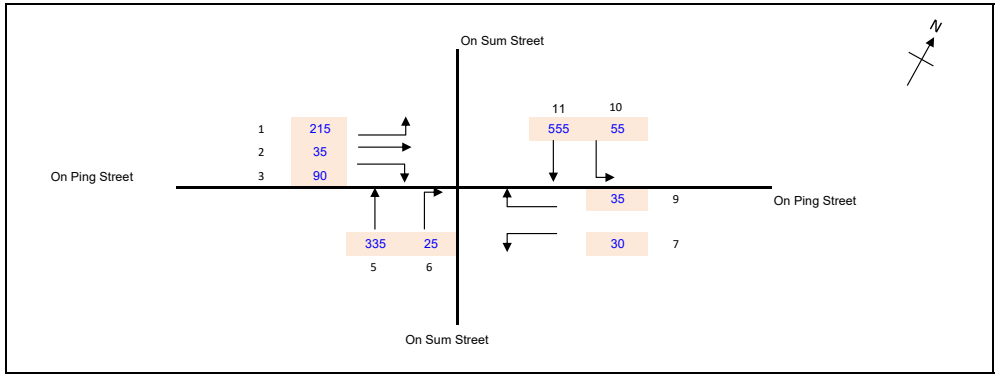
	Project No. -	
J1 - Shek Mun Interchange	2036 Reference Case	J1_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	650	2190	195
Qc	=	Circulating flow across entry (pcu/h)	270	325	1530
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2646	2659	1700
DFC	=	Design flow/Capacity = Q/Qe	0.25	0.82	0.11

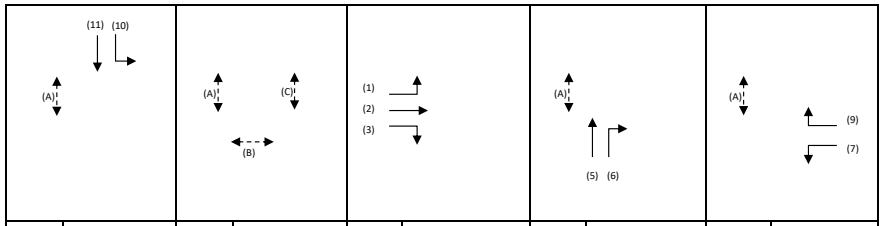
Total In Sum = 3035 PCU

DFC of Critical Approach = 0.82

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2036 Reference Case	J2_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	5	
Cycle time	C =	130	sec
Sum(y)	Y =	0.320	
Loss time	L =	45	sec
Total Flow	=	1375	pcu
Co = (1.5*L+5)/(1-Y)	=	106.6	sec
Cm = L/(1-Y)	=	66.2	sec
Yult	=	0.563	
R.C.ult = (Yult-Y)/Y*100%	=	75.8	%
Cp = 0.9*L/(0.9-Y)	=	69.8	sec
Ymax = 1-L/C	=	0.654	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	83.9	%



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

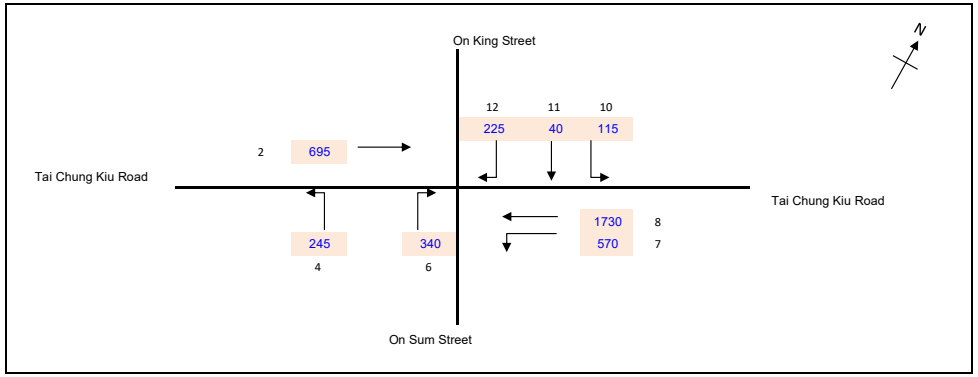
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	113	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	55			55	1.00	1809			1809	0.030			8	35	0.112	9
11	1	3.30	I	2				4170		555		555	0.00	4170			4170	0.133	0.133		35	35	0.489	44
1	3	4.00	II	1	15		N	2015	118			118	1.00	1832			1832	0.065	0.065		17	17	0.489	22
1,2	3	4.00	II	1	20			2155	97	35		132	0.73	2042			2042	0.065			17	17	0.489	25
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			12	17	0.348	17
5	4	3.50	IV	1			N	1965		175		175	0.00	1965			1965	0.089	0.089		24	24	0.489	31
5,6	4	3.50	IV	1	25			2105		160	25	185	0.14	2088			2088	0.089			24	24	0.487	33
7,9	5	4.50	V	1	25		N	2065	30		35	65	1.00	1948			1948	0.033	0.033		9	9	0.489	13
																		Stage 2 Pedestrian		22				

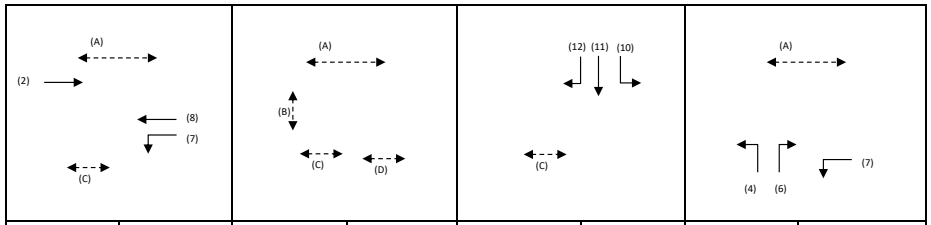
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2036 Reference Case	J3_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.440	
Loss time	L =	42	sec
Total Flow	=	3960	pcu
Co = (1.5*L+5)/(1-Y)	=	121.5	sec
Cm = L/(1-Y)	=	75.0	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	32.9	%
Cp = 0.9*L/(0.9-Y)	=	82.2	sec
Ymax = 1-L/C	=	0.677	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	38.4	%



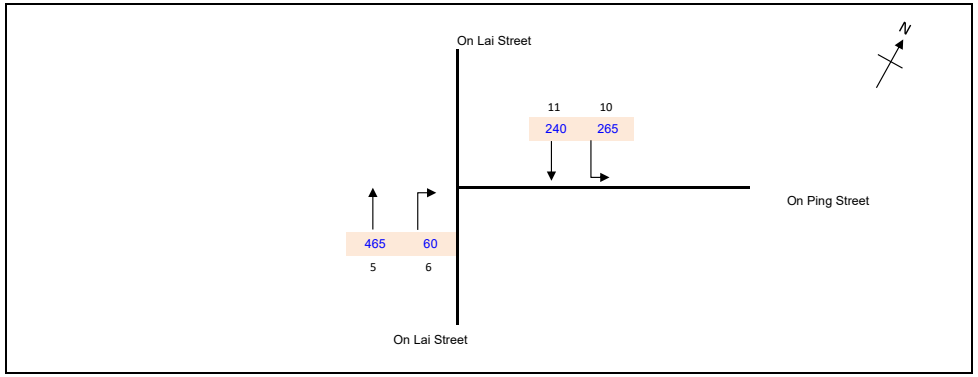
STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	67	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	89	2	9	OK
D	11	5		9	5	1	9	OK

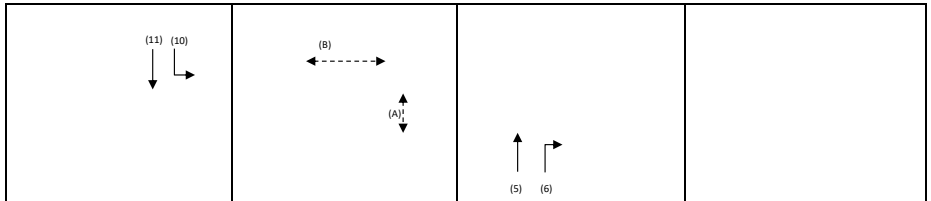
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				18				
2	1	3.50	I	1			N	1965		221		221	0.00	1965			1965	0.113			22	55	0.265	28
2	1	3.50	I	2				4210		474		474	0.00	4210			4210	0.113			22	55	0.265	30
8	1	3.30	II	3				6255		1730		1730	0.00	6255			6255	0.277	0.277		55	55	0.650	72
7	1,4	5.00	III	1	20		N	2115	570			570	1.00	1967			1967	0.290			58	58	0.650	68
10	3	3.50	IV	1	15		N	1965	73			73	1.00	1786			1786	0.041			8	11	0.462	14
10,11	3	3.30	IV	1	20			2085	43	40		83	0.52	2007			2007	0.041			8	11	0.467	16
12	3	3.30	IV	2	25			4170			225	225	1.00	3934			3934	0.057	0.057		11	11	0.650	22
4	4	3.00	V	1	12.5		N	1915	182			182	1.00	1710			1710	0.107	0.107		21	21	0.650	33
4,6	4	3.00	V	1	20			2055	63		141	204	1.00	1912			1912	0.107			21	21	0.650	37
6	4	3.00	V	1	15			2055			199	199	1.00	1868			1868	0.107			21	21	0.650	36
																		Stage 2 Pedestrian		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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2036 Reference Case	J4_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.289
Loss time		L =	26 sec
Total Flow		=	1030 pcu
Co	= (1.5*L+5)/(1-Y)	=	61.9 sec
Cm	= L/(1-Y)	=	36.6 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	144.2 %
Cp	= 0.9*L/(0.9-Y)	=	38.3 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	149.4 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

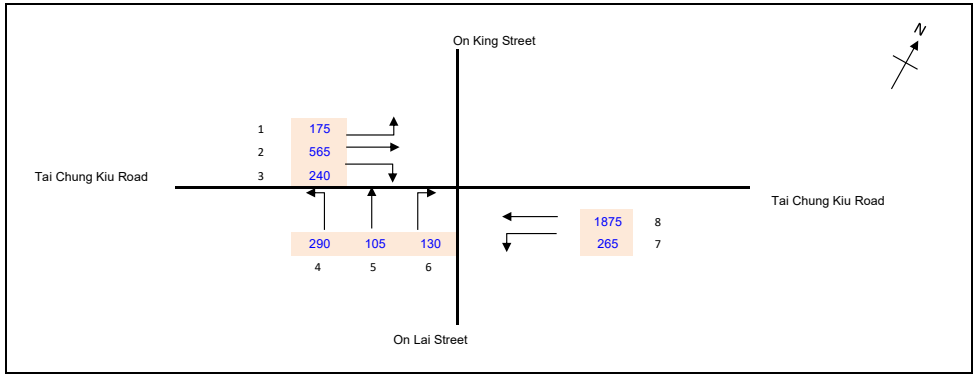
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	265	0		265	1.00	1726			1726	0.154	0.154		55	55	0.361	33
11	1	3.10	I	1				2065		240		240	0.00	2065			2065	0.116			42	55	0.273	30
5	3	2.80	II	1			N	1895		255		255	0.00	1895			1895	0.135	0.135		48	49	0.359	35
5,6	3	2.80	II	1	18			2035		210	60	270	0.22	1998			1998	0.135			49	49	0.361	37
																		Stage 2 Pedestrian		18				

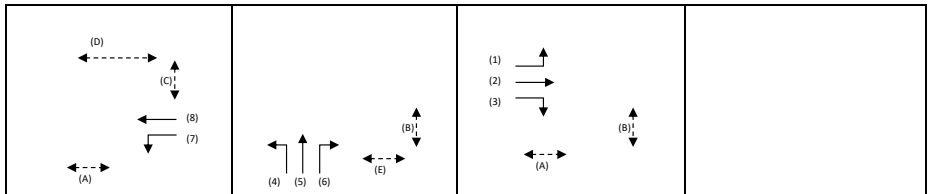
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Reference Case	J5_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	3	
Cycle time	C =	130	sec
Sum(y)	Y =	0.692	
Loss time	L =	20	sec
Total Flow	=	3645	pcu
Co = (1.5*L+5)/(1-Y)	=	113.5	sec
Cm = L/(1-Y)	=	64.8	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	8.4	%
Cp = 0.9*L/(0.9-Y)	=	86.4	sec
Ymax = 1-L/C	=	0.846	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	10.1	%



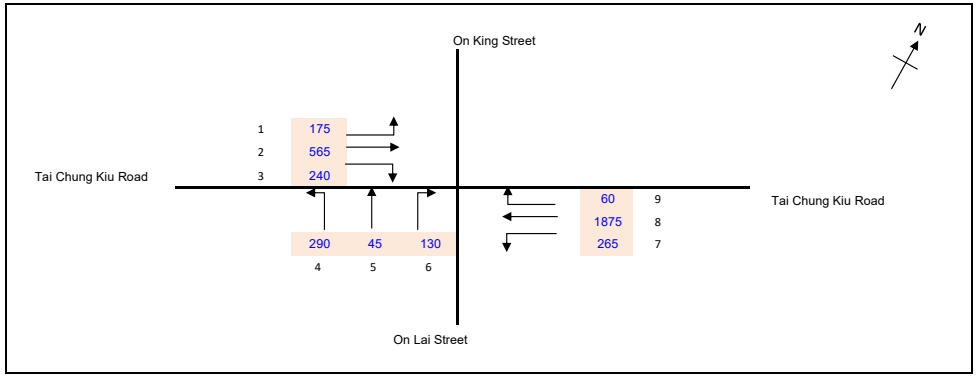
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	93	2	7	OK
B	7	5		6	56	3	10	OK
C	10	5		8	52	6	6	OK
D	6	5		5	48	6	10	OK
E	9	5		8	17	6	8	OK

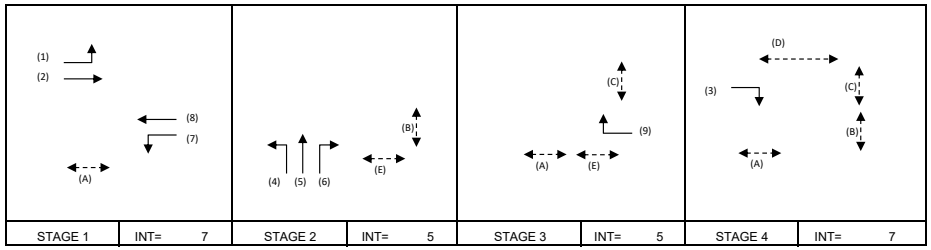
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	265	389		654	0.41	1852			1852	0.353	0.353		56	56	0.817	80
8	1	3.50	I	2				4210		1486		1486	0.00	4210			4210	0.353			56	56	0.817	91
4	2	3.50	II	1	10		N	1755	229			229	1.00	1526			1526	0.150	0.150		24	24	0.817	45
4,5,6	2	3.50	II	1	15			2105	61	105	130	296	0.65	1977			1977	0.150			24	24	0.815	52
1,2	3	3.50	III	1	10		N	1965	175	169		344	0.51	1826			1826	0.188	0.188		30	30	0.817	57
2	3	3.50	III	1				2105		396		396	0.00	2105			2105	0.188			30	30	0.816	66
3	3	3.50	III	1	15			2105			240	240	1.00	1914			1914	0.125			20	30	0.544	40

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Reference Case (With Planned Improvement)	J5_AM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.632
Loss time		L =	20 sec
Total Flow		=	3645 pcu
Co	= (1.5*L+5)/(1-Y)	=	95.2 sec
Cm	= L/(1-Y)	=	54.4 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	18.6 %
Cp	= 0.9*L/(0.9-Y)	=	67.2 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	20.4 %



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

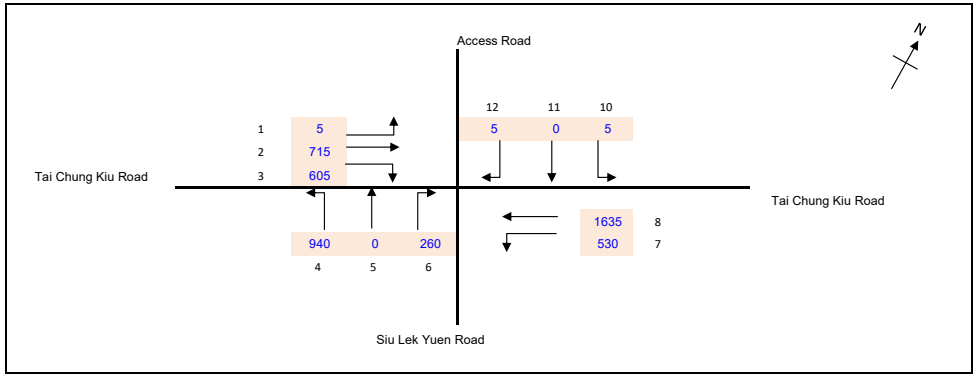
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	104	2	7	OK
B	7	5		6	34	3	10	OK
C	10	5		8	32	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	23	6	8	OK

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.
																				20				
1,2	1	3.50	I	1	15		N	1965	175	175		350	0.50	1871			1871	0.187			33	62	0.395	40
2	1	3.30	I	1				2085		390		390	0.00	2085			2085	0.187			33	62	0.395	44
3	4	3.50	V	1	20			2105			240	240	1.00	1958			1958	0.123	0.123		27	27	0.595	41
7,8	1	3.40	II	1	15		N	1955	265	400		665	0.40	1880			1880	0.354	0.354		62	62	0.747	76
8	1	3.30	II	2				4170		1475		1475	0.00	4170			4170	0.354			62	62	0.747	84
9	3	3.50	IV	1	15			2105			60	60	1.00	1914			1914	0.031	0.031		5	5	0.747	12
4	2	3.40	III	1	15		N	1955	222			222	1.00	1777			1777	0.125	0.125		22	22	0.747	40
4,5,6	2	3.20	III	1	20			2075	69	45	130	244	0.82	1955			1955	0.125			22	22	0.747	44

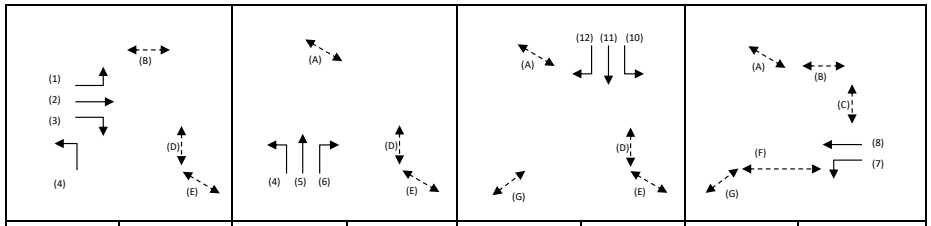
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2036 Reference Case	J6_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.529
Loss time		L =	25 sec
Total Flow		=	4700 pcu
Co	= (1.5*L+5)/(1-Y)	=	90.2 sec
Cm	= L/(1-Y)	=	53.0 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	34.8 %
Cp	= 0.9*L/(0.9-Y)	=	60.6 sec
Ymax	= 1-L/C	=	0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	37.5 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

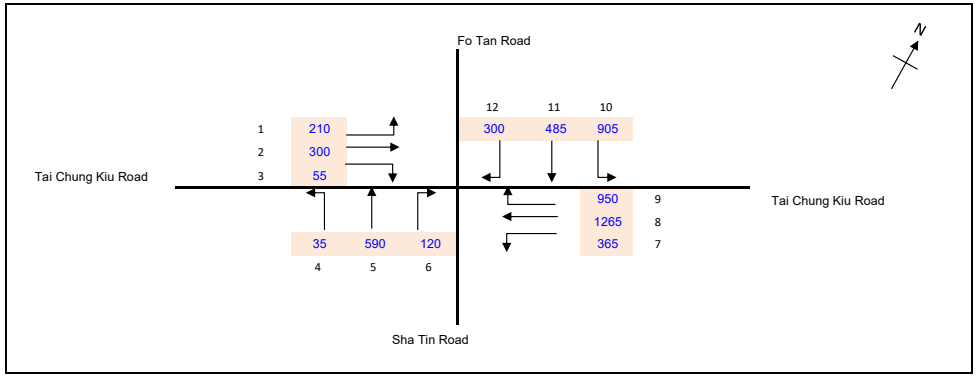
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	85	1	7	OK
B	5	5		5	87	2	13	OK
C	8	5		7	43	6	13	OK
D	9	5		8	58	2	12	OK
E	9	5		8	60	2	10	OK
F	9	5		8	45	6	11	OK
G	9	5		8	61	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	5			5	1.00	1754			1754	0.003			1	35	0.011	1
2	1	3.00	I	2				4110		715		715	0.00	4110			4110	0.174	0.174		35	35	0.655	57
3	1	3.00	I	2	22.5			4110			605	605	1.00	3853			3853	0.157			31	35	0.591	48
4	1,2	3.00	II	1	30		N	1915	452			452	1.00	1824			1824	0.248			49	55	0.587	57
4	1,2	3.00	II	1	35			2055	488			488	1.00	1971			1971	0.248			49	55	0.587	61
5,6	2	3.00	II	1	12.5			2055		0	132	132	1.00	1835			1835	0.072	0.072		14	14	0.655	25
6	2	3.00	II	1	10			2055			128	128	1.00	1787			1787	0.072			14	14	0.652	25
10,11,12	3	4.00	III	1	25		N	2015	5	0	0	5	1.00	1901			1901	0.003			1	5	0.068	1
12	3	4.00	III	1	15			2155			5	5	1.00	1959			1959	0.003			1	5	0.066	1
7	4	4.00	IV	1	20		N	2015	530			530	1.00	1874			1874	0.283	0.283		56	56	0.655	65
8	4	3.30	IV	3				6255		1635		1635	0.00	6255			6255	0.261			52	56	0.605	67
																	Stage 3 Provision of Min. g			5				

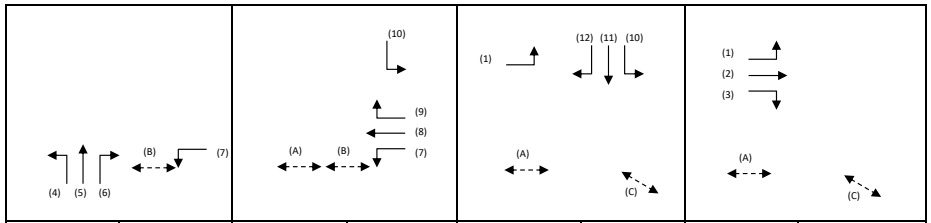
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Reference Case	J7_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.653
Loss time		L =	21 sec
Total Flow		=	5580 pcu
Co	= (1.5*L+5)/(1-Y)	=	105.0 sec
Cm	= L/(1-Y)	=	60.4 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	13.8 %
Cp	= 0.9*L/(0.9-Y)	=	76.4 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	15.6 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

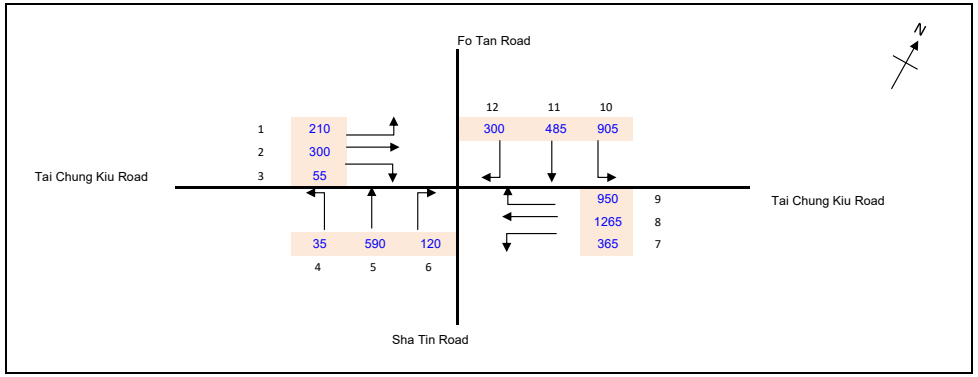
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	91	1	9	OK
B	5	5		5	65	8	8	OK
C	8	5		7	46	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	265		300	0.12	1918			1918	0.156	0.156		26	26	0.778	52
5,6	1	3.30	I	1	30			2085		325	0	325	0.00	2085			2085	0.156			26	26	0.776	56
6	1	3.30	I	1	25			2085			120	120	1.00	1967			1967	0.061			10	26	0.304	21
7	1,2	5.00	II	1	35		N	2115	365			365	1.00	2028		-900	1128	0.324			54	81	0.519	30
8	2	3.00	III	3				6165		1265		1265	0.00	6165			6165	0.205			34	42	0.636	62
9	2	3.00	III	2	17.5			4110			950	950	1.00	3786			3786	0.251	0.251		42	42	0.778	70
10	2,3	3.00	IV	1	12.5		N	1915	432			432	1.00	1710			1710	0.253			42	88	0.374	30
10	2,3	3.00	IV	1	15			2055	473			473	1.00	1868			1868	0.253			42	88	0.375	33
11	3	3.00	V	1				2055		404		404	0.00	2055			2055	0.196	0.196		33	33	0.778	65
11,12	3	3.00	V	1	20			2055		81	300	381	0.79	1940			1940	0.196			33	33	0.778	62
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			21	53	0.302	27
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		8	8	0.778	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			8	8	0.778	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	8	0.454	11

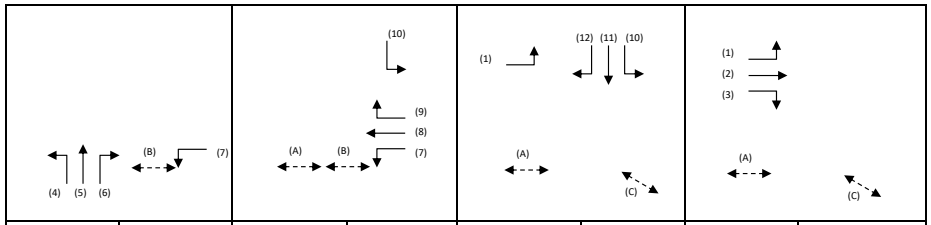
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Reference Case (With Planned Improvement)	J7_AM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.613
Loss time		L =	21 sec
Total Flow		=	5580 pcu
Co	= (1.5*L+5)/(1-Y)	=	94.3 sec
Cm	= L/(1-Y)	=	54.3 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	21.1 %
Cp	= 0.9*L/(0.9-Y)	=	65.8 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	23.1 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

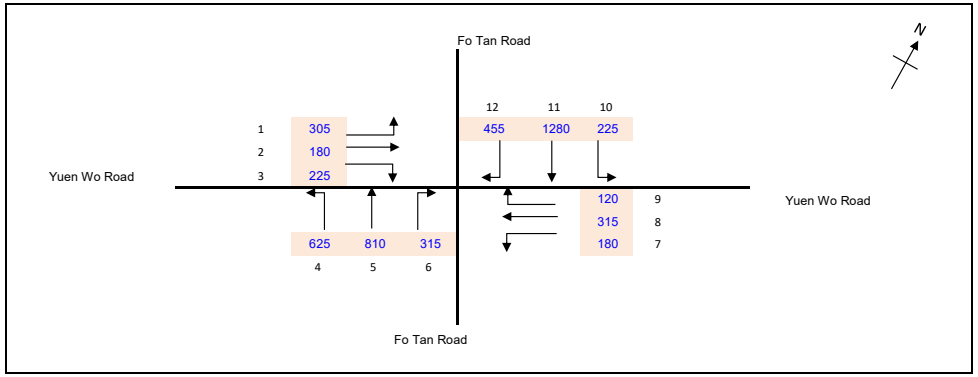
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	89	1	9	OK
B	5	5		5	69	8	8	OK
C	8	5		7	42	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	265		300	0.12	1918			1918	0.156	0.156		28	28	0.731	51
5,6	1	3.30	I	1	30			2085		325	0	325	0.00	2085			2085	0.156			28	28	0.729	55
6	1	3.30	I	1	25			2085			120	120	1.00	1967			1967	0.061			11	28	0.285	20
7	1,2	5.00	II	1	35		N	2115	365			365	1.00	2028		-900	1128	0.324			58	85	0.492	27
8	2	3.00	III	3				6165		1265		1265	0.00	6165			6165	0.205			36	45	0.598	60
9	2	3.00	III	2	17.5			4110			950	950	1.00	3786			3786	0.251	0.251		45	45	0.731	68
10	2,3	3.00	IV	1	12.5		N	1915	432			432	1.00	1710			1710	0.253			45	86	0.384	32
10	2,3	3.00	IV	1	15			2055	473			473	1.00	1868			1868	0.253			45	86	0.385	35
11	3	3.00	V	2				4110		485		485	0.00	4110			4110	0.118			21	28	0.550	41
12	3	3.00	V	1	20			2055			300	300	1.00	1912			1912	0.157	0.157		28	28	0.731	51
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			22	49	0.329	29
2	4	3.00	VII	2				4110		200		200	0.00	4110			4110	0.049	0.049		9	9	0.731	20
2,3	4	3.00	VII	1	30			2055		100	0	100	0.00	2055			2055	0.049			9	9	0.731	20
3	4	3.00	VII	1	25			2055			55	55	1.00	1939			1939	0.028			5	9	0.426	11

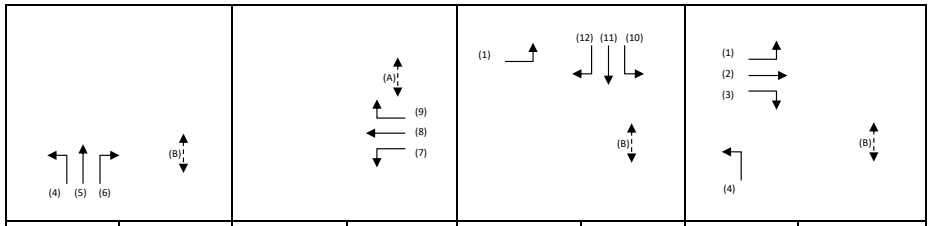
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2036 Reference Case	J8_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.546
Loss time		L =	23 sec
Total Flow		=	5035 pcu
Co	= (1.5*L+5)/(1-Y)	=	87.0 sec
Cm	= L/(1-Y)	=	50.7 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	33.2 %
Cp	= 0.9*L/(0.9-Y)	=	58.5 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	35.7 %



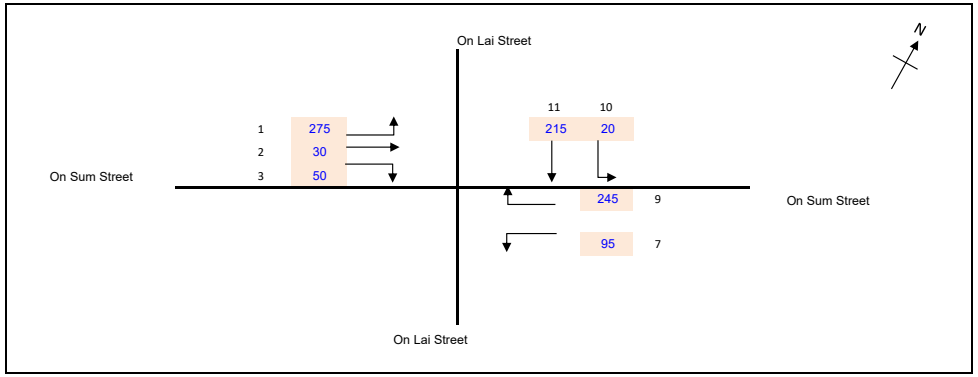
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	13	8	7	OK
B	9	5		8	93	2	11	OK

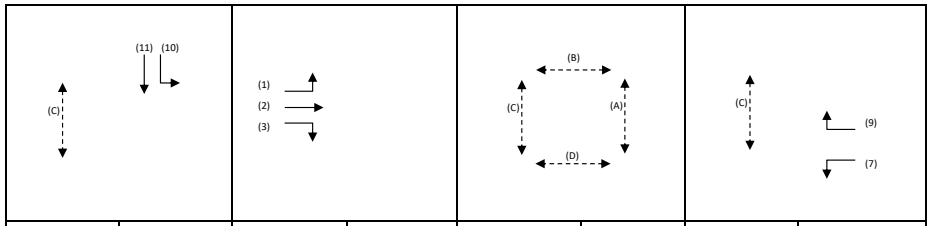
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	625			625	1.00	1741			1741	0.359			70	58	0.801	75
5	1	3.00	I	3				6165		810		810	0.00	6165			6165	0.131	0.164		26	32	0.533	44
6	1	3.00	I	1	22.5			2055			315	315	1.00	1927			1927	0.164			32	32	0.663	51
7	2	3.00	II	1	15		N	1915	180			180	1.00	1741			1741	0.103	0.103		20	20	0.663	33
8	2	3.00	II	1				2055		158		158	0.00	2055			2055	0.077			15	20	0.492	29
8,9	2	3.00	II	1	27.5			2055		158	0	158	0.00	2055			2055	0.077			15	20	0.492	29
9	2	3.00	II	1	22.5			2055			120	120	1.00	1927			1927	0.062			12	20	0.400	22
10	3	3.30	III	1	15		N	1945	225			225	1.00	1768			1768	0.127			25	41	0.399	33
10,11	3	3.30	III	1	20			2085	0	441		441	0.00	2085			2085	0.212	0.212		41	41	0.663	65
11	3	3.30	III	1				2085		441		441	0.00	2085			2085	0.212			41	41	0.663	65
11,12	3	3.30	III	1	27.5			2085		398	41	439	0.09	2074			2074	0.212			41	41	0.663	65
12	3	3.30	III	1	22.5			2085			414	414	1.00	1955			1955	0.212			41	41	0.663	61
1	3,4	3.30	IV	1	15		N	1945	305			305	1.00	1768			1768	0.172			34	67	0.336	32
2	4	3.30	IV	1				2085		140		140	0.00	2085			2085	0.067	0.067		13	13	0.660	27
2,3	4	3.30	IV	1	25			2085		40	95	135	0.70	2001			2001	0.067			13	13	0.663	26
3	4	3.30	IV	1	20			2085			130	130	1.00	1940			1940	0.067			13	13	0.659	25

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2036 Reference Case	J9_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.354
Loss time		L =	34 sec
Total Flow		=	930 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.7 sec
Cm	= L/(1-Y)	=	52.7 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	82.1 %
Cp	= 0.9*L/(0.9-Y)	=	56.1 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	58.1 %

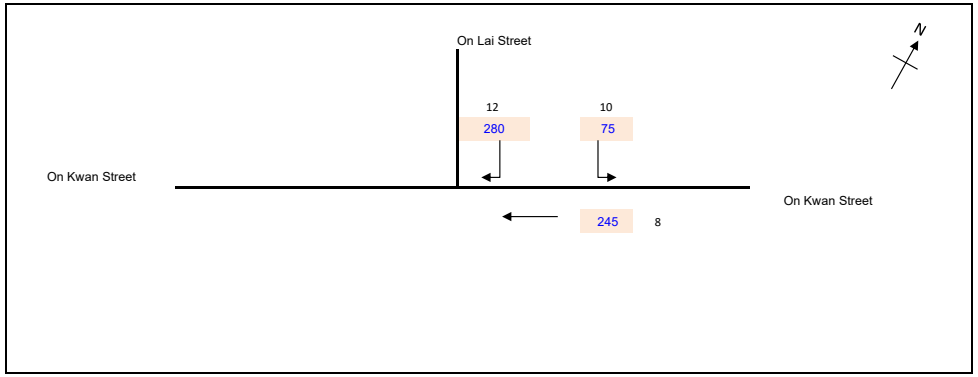


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

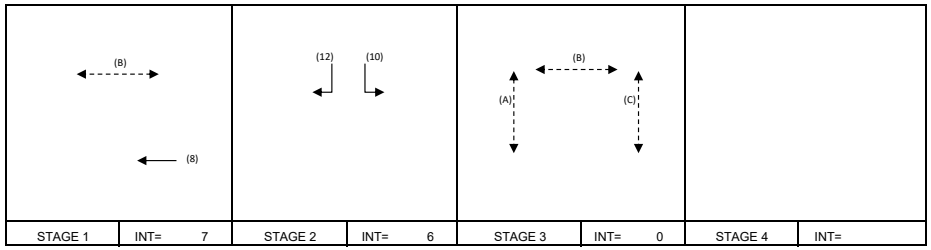
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	53	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	20	54		74	0.27	1913			1913	0.038	0.038		6	6	0.569	10
11	1	3.50	I	2				4210		162		162	0.00	4210			4210	0.038			6	6	0.568	11
1,2	2	5.00	II	1	15		N	2115	275	0		275	1.00	1923			1923	0.143	0.143		23	23	0.569	31
2,3	2	5.00	II	1	20			2255		30	50	80	0.63	2154			2154	0.037			6	23	0.148	9
7,9	4	5.00	III	1	20		N	2115	95		245	340	1.00	1967			1967	0.173	0.173		27	27	0.569	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2036 Reference Case	J10_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	85 sec
Sum(y)		Y =	0.262
Loss time		L =	34 sec
Total Flow		=	600 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.8 sec
Cm	= L/(1-Y)	=	46.0 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	146.5 %
Cp	= 0.9*L/(0.9-Y)	=	47.9 sec
Ymax	= 1-L/C	=	0.600
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	106.4 %

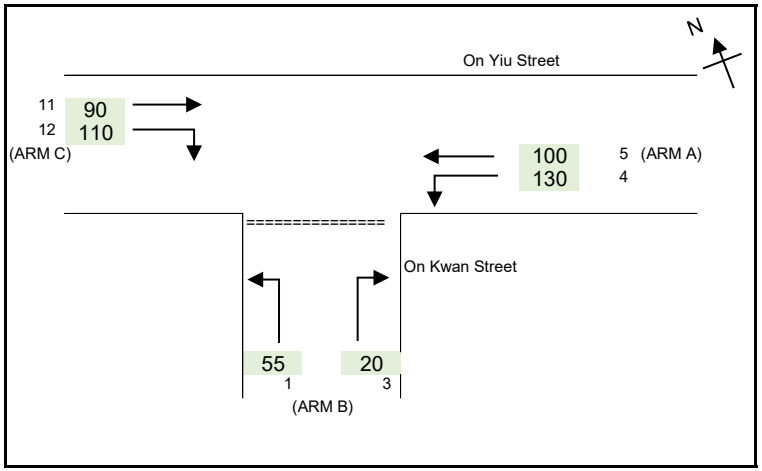


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	39	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		245		245	0.00	2065			2065	0.119	0.119		23	23	0.436	25
10	2	3.50	II	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	28	0.128	7
12	2	3.50	II	1	20			2105			280	280	1.00	1958			1958	0.143	0.143		28	28	0.436	27
																		Stage 3 Pedestrian		24				

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2036 Reference Case	J11_AM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	130	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	90	(pcu/hr)
q c-b	=	110	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	20	(pcu/hr)
q b-c	=	55	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	437
Q b-c	=	627
Q c-b	=	748
Q b-ac	=	561.9

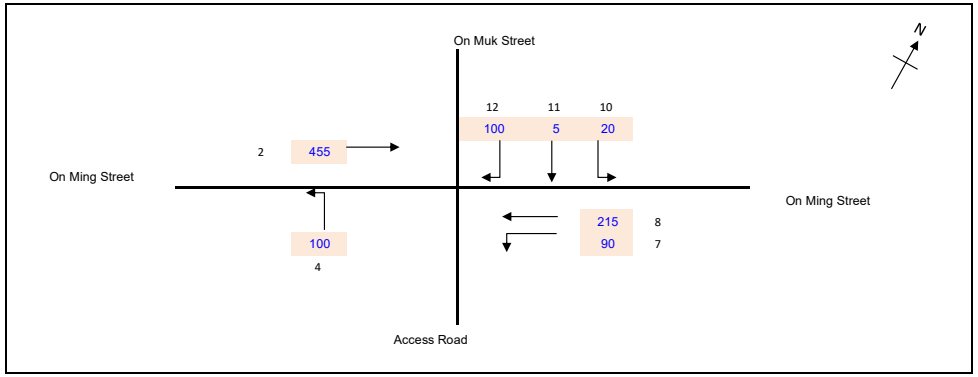
TOTAL FLOW = 505 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

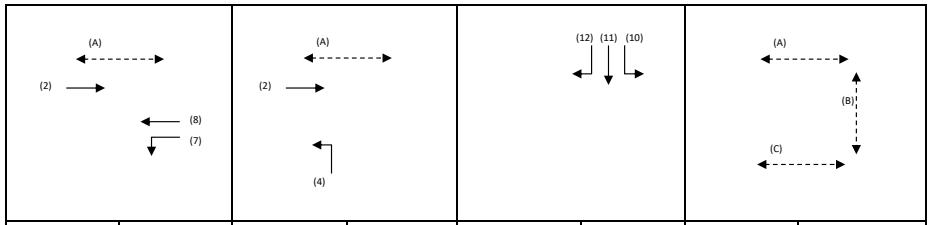
DFC b-a	=	0.0458
DFC b-c	=	0.0877
DFC c-b	=	0.1471
DFC b-ac	=	0.1335

CRITICAL DFC = 0.15

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2036 Reference Case	J12_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.162
Loss time		L =	40 sec
Total Flow		=	985 pcu
Co	= (1.5*L+5)/(1-Y)	=	77.5 sec
Cm	= L/(1-Y)	=	47.7 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	271.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	254.5 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	82	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		220		220	0.00	2015			2015	0.109			47	47	0.254	23
2	1,2	4.00	I	1				2155		235		235	0.00	2155			2155	0.109			47	47	0.254	25
7,8	1	3.50	II	1	20		N	1965	90	54		144	0.63	1877			1877	0.077	0.077		33	33	0.253	18
8	1	3.50	II	1				2105		161		161	0.00	2105			2105	0.077			33	33	0.254	21
4	2	3.50	III	1	20		N	1965	100			100	1.00	1828			1828	0.055	0.055		24	24	0.254	14
10,11,12	3	5.00	IV	1	30		N	2115	20	5	36	61	0.92	2022			2022	0.030			13	13	0.254	10
12	3	5.00	IV	1	25			2255			64	64	1.00	2127			2127	0.030	0.030		13	13	0.253	10
																		Stage 4 Pedestrian		28				

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

ROUNDABOUT CALCULATION

Project No. -

J13 - On Ming Street / On Muk Street / On Yiu Street | 2036 Reference Case | J13_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	110	475	295
Qc	=	Circulating flow across entry (pcu/h)	510	355	385
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2277	1983	2310
DFC	=	Design flow/Capacity = Q/Qe	0.05	0.24	0.13

Total In Sum = 880 PCU

DFC of Critical Approach = 0.24

ROUNDABOUT CALCULATION

Project No. -

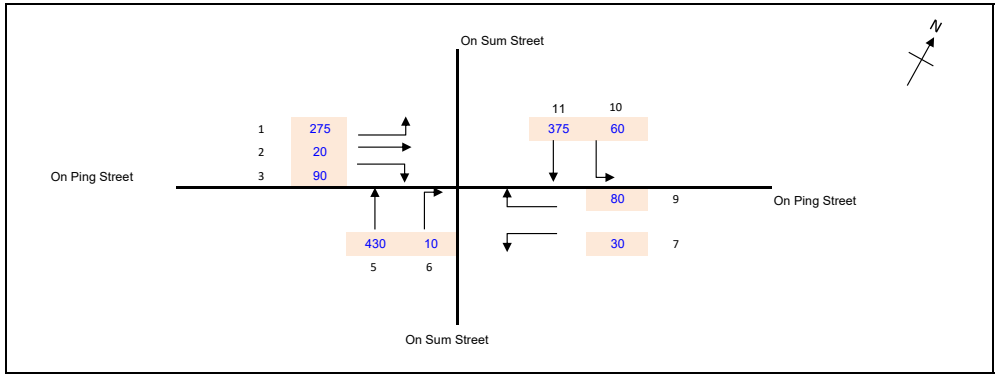
J1 - Shek Mun Interchange | 2036 Reference Case | J1_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	470	1375	225
Qc	=	Circulating flow across entry (pcu/h)	260	685	1035
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2652	2432	1995
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.57	0.11

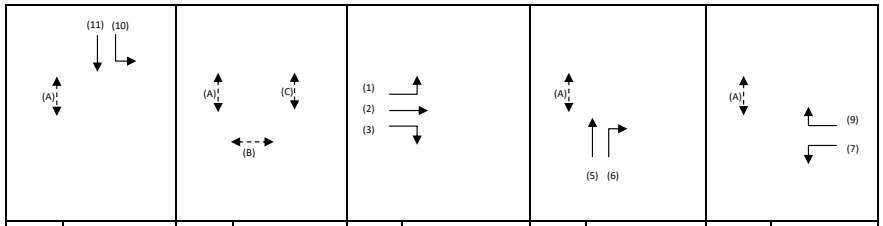
Total In Sum = 2070 PCU

DFC of Critical Approach = 0.57

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2036 Reference Case	J2_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	5	
Cycle time	C =	125	sec
Sum(y)	Y =	0.331	
Loss time	L =	45	sec
Total Flow	=	1370	pcu
Co = (1.5*L+5)/(1-Y)	=	108.4	sec
Cm = L/(1-Y)	=	67.3	sec
Yult	=	0.563	
R.C.ult = (Yult-Y)/Y*100%	=	69.8	%
Cp = 0.9*L/(0.9-Y)	=	71.2	sec
Ymax = 1-L/C	=	0.640	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	73.8	%



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

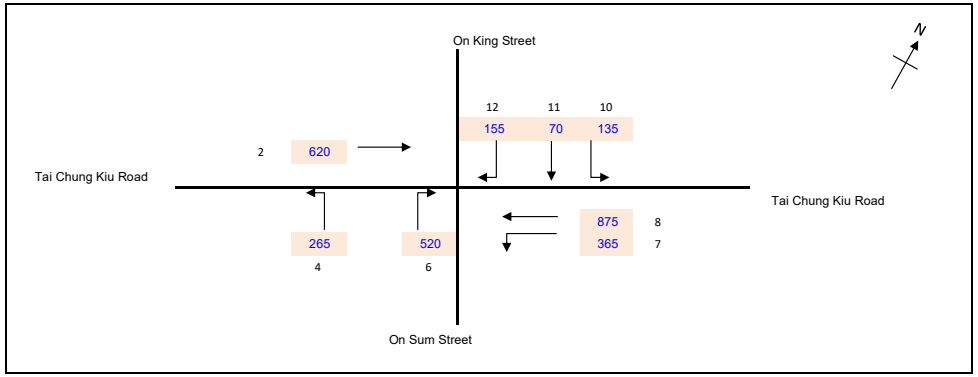
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	102	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	60			60	1.00	1809			1809	0.033			8	22	0.191	10
11	1	3.30	I	2				4170		375		375	0.00	4170			4170	0.090	0.090		22	22	0.518	32
1	3	4.00	II	1	15		N	2015	140			140	1.00	1832			1832	0.077	0.077		18	18	0.518	25
1,2	3	4.00	II	1	20			2155	135	20		155	0.87	2023			2023	0.077			18	18	0.518	27
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			11	18	0.311	16
5	4	3.50	IV	1			N	1965		213		213	0.00	1965			1965	0.108	0.108		26	26	0.518	35
5,6	4	3.50	IV	1	25			2105		217	10	227	0.04	2099			2099	0.108			26	26	0.516	37
7,9	5	4.50	V	1	25		N	2065	30		80	110	1.00	1948			1948	0.056	0.056		14	14	0.518	20
																		Stage 2 Pedestrian		22				

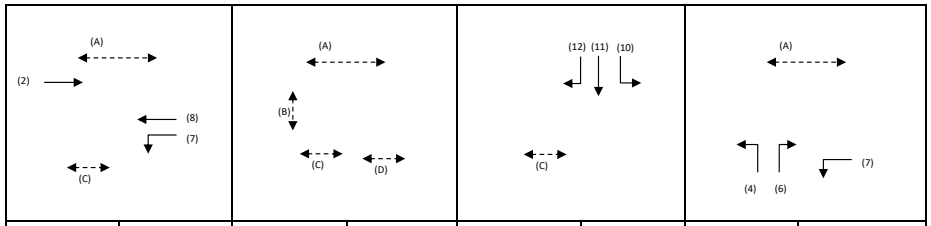
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2036 Reference Case	J3_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.337	
Loss time	L =	42	sec
Total Flow	=	3005	pcu
Co = (1.5*L+5)/(1-Y)	=	102.5	sec
Cm = L/(1-Y)	=	63.3	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	73.8	%
Cp = 0.9*L/(0.9-Y)	=	67.1	sec
Ymax = 1-L/C	=	0.664	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	77.5	%



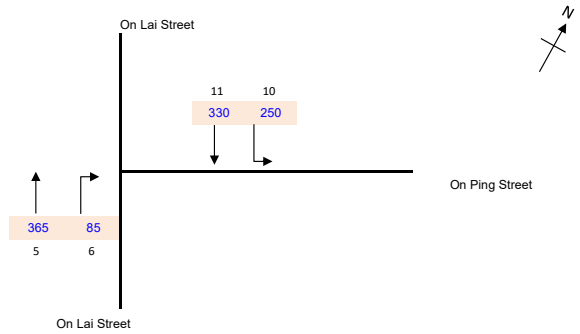
STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	55	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	70	2	9	OK
D	11	5		9	5	1	9	OK

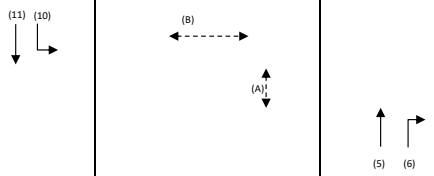
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				18				
2	1	3.50	I	1			N	1965		197		197	0.00	1965			1965	0.100			25	34	0.363	30
2	1	3.50	I	2				4210		423		423	0.00	4210			4210	0.100			25	34	0.364	32
8	1	3.30	II	3				6255		875		875	0.00	6255			6255	0.140	0.140		34	34	0.507	44
7	1,4	5.00	III	1	20		N	2115	365			365	1.00	1967			1967	0.186			46	46	0.507	48
10	3	3.50	IV	1	15		N	1965	96			96	1.00	1786			1786	0.054	0.054		13	13	0.507	18
10,11	3	3.30	IV	1	20			2085	39	70		109	0.36	2031			2031	0.054			13	13	0.506	20
12	3	3.30	IV	2	25			4170			155	155	1.00	3934			3934	0.039			10	13	0.372	14
4	4	3.00	V	1	12.5		N	1915	244			244	1.00	1710			1710	0.143	0.143		35	35	0.507	37
4,6	4	3.00	V	1	20			2055	21		253	273	1.00	1912			1912	0.143			35	35	0.507	41
6	4	3.00	V	1	15			2055			267	267	1.00	1868			1868	0.143			35	35	0.507	40
																		Stage 2 Pedestrian		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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2036 Reference Case	J4_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	125 sec
Sum(y)		Y =	0.276
Loss time		L =	26 sec
Total Flow		=	1030 pcu
Co	= (1.5*L+5)/(1-Y)	=	60.8 sec
Cm	= L/(1-Y)	=	35.9 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	155.3 %
Cp	= 0.9*L/(0.9-Y)	=	37.5 sec
Ymax	= 1-L/C	=	0.792
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	158.1 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

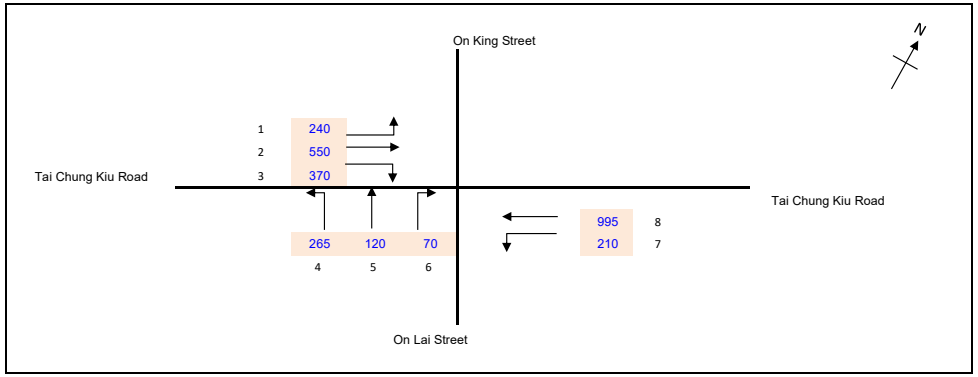
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	250	0		250	1.00	1726			1726	0.145			52	57	0.316	28
11	1	3.10	I	1				2065		330		330	0.00	2065			2065	0.160	0.160		57	57	0.349	37
5	3	2.80	II	1			N	1895		221		221	0.00	1895			1895	0.116	0.116		42	42	0.349	31
5,6	3	2.80	II	1	18			2035		145	85	230	0.37	1974			1974	0.116			42	42	0.349	32
																		Stage 2 Pedestrian		18				

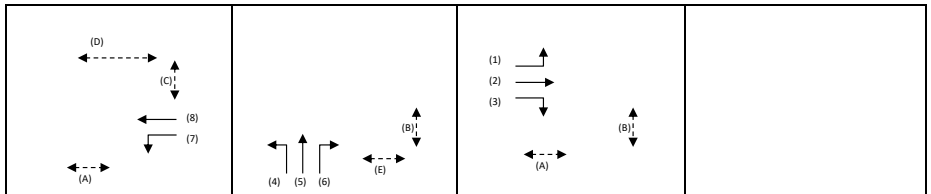
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Reference Case	J5_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	3	
Cycle time	C =	130	sec
Sum(y)	Y =	0.532	
Loss time	L =	20	sec
Total Flow	=	2820	pcu
Co = (1.5*L+5)/(1-Y)	=	74.9	sec
Cm = L/(1-Y)	=	42.8	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	40.9	%
Cp = 0.9*L/(0.9-Y)	=	49.0	sec
Ymax = 1-L/C	=	0.831	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	40.4	%



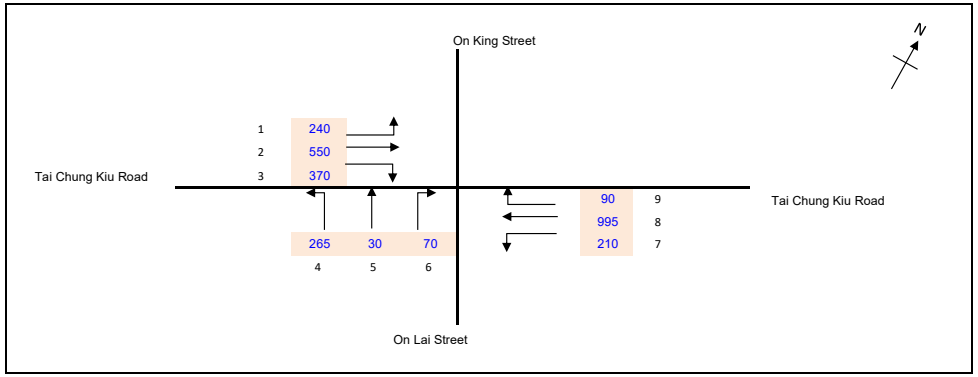
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	2	7	OK
B	7	5		6	71	3	10	OK
C	10	5		8	37	6	6	OK
D	6	5		5	33	6	10	OK
E	9	5		8	20	6	8	OK

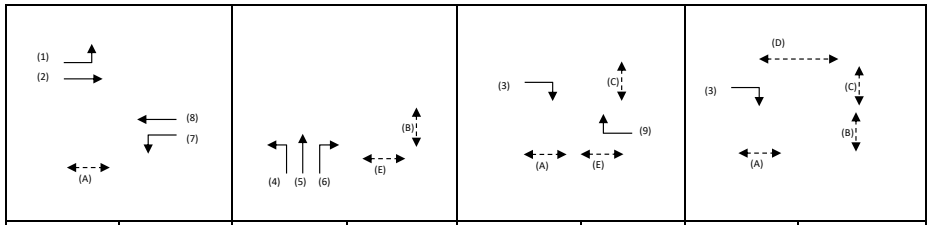
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	210	152		362	0.58	1808			1808	0.200	0.200		41	41	0.629	53
8	1	3.50	I	2				4210		843		843	0.00	4210			4210	0.200			41	41	0.629	62
4	2	3.50	II	1	10		N	1755	197			197	1.00	1526			1526	0.129	0.129		27	27	0.629	38
4,5,6	2	3.50	II	1	15			2105	68	120	70	258	0.53	1998			1998	0.129			27	27	0.629	44
1,2	3	3.50	III	1	10		N	1965	240	123		363	0.66	1788			1788	0.203	0.203		42	42	0.629	53
2	3	3.50	III	1				2105		427		427	0.00	2105			2105	0.203			42	42	0.629	63
3	3	3.50	III	1	15			2105			370	370	1.00	1914			1914	0.193			40	42	0.599	54

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Reference Case (With Planned Improvement)	J5_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.535
Loss time		L =	20 sec
Total Flow		=	2820 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.3 sec
Cm	= L/(1-Y)	=	43.0 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	40.1 %
Cp	= 0.9*L/(0.9-Y)	=	49.4 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	42.3 %



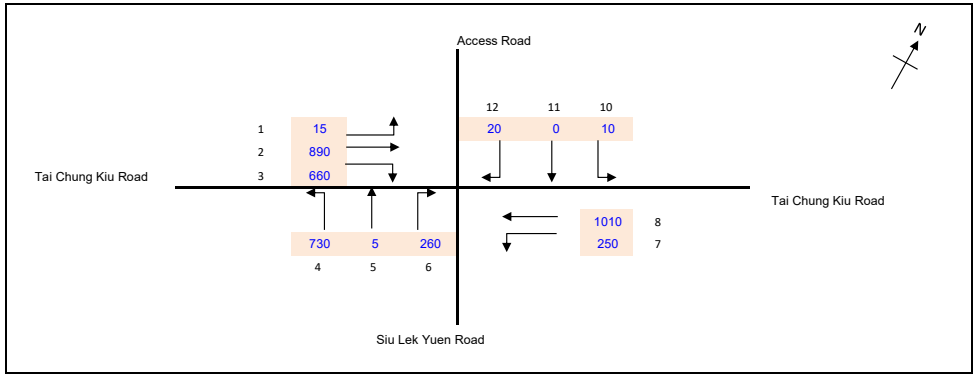
STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 7

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	109	2	7	OK
B	7	5		6	55	3	10	OK
C	10	5		8	58	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	26	6	8	OK

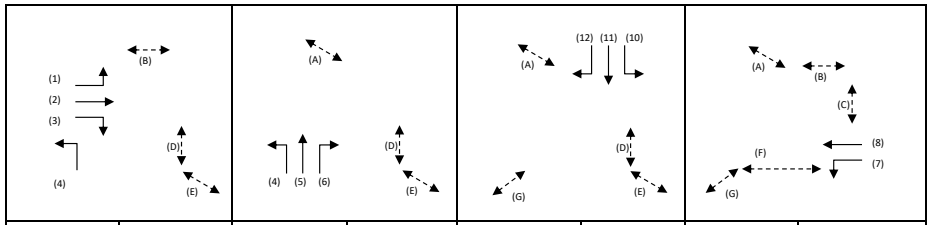
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
1,2	1	3.50	I	1	15		N	1965	240	130		370	0.65	1845			1845	0.201	0.201		41	41	0.634	55
2	1	3.30	I	1				2085		420		420	0.00	2085			2085	0.201			41	41	0.636	62
3	4	3.50	V	1	20			2105			370	370	1.00	1958			1958	0.189	0.189		48	48	0.507	50
7,8	1	3.40	II	1	15		N	1955	210	160		370	0.57	1850			1850	0.200			41	41	0.632	55
8	1	3.30	II	2				4170		835		835	0.00	4170			4170	0.200			41	41	0.633	62
9	3	3.50	IV	1	15			2105			90	90	1.00	1914			1914	0.047	0.047		10	10	0.633	18
4	2	3.40	III	1	15		N	1955	174	0		174	1.00	1777			1777	0.098	0.098		20	20	0.633	32
4,5,6	2	3.20	III	1	20			2075	91	30	70	191	0.84	1952			1952	0.098			20	20	0.632	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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2036 Reference Case	J6_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	125 sec
Sum(y)		Y =	0.451
Loss time		L =	25 sec
Total Flow		=	3850 pcu
Co	= (1.5*L+5)/(1-Y)	=	77.5 sec
Cm	= L/(1-Y)	=	45.6 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	57.9 %
Cp	= 0.9*L/(0.9-Y)	=	50.1 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.5 %



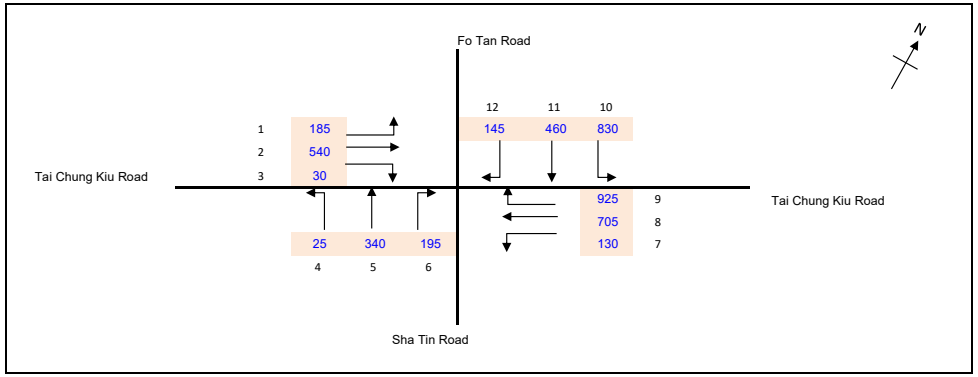
STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	67	1	7	OK
B	5	5		5	80	2	13	OK
C	8	5		7	23	6	13	OK
D	9	5		8	73	2	12	OK
E	9	5		8	75	2	10	OK
F	9	5		8	25	6	11	OK
G	9	5		8	41	2	11	OK

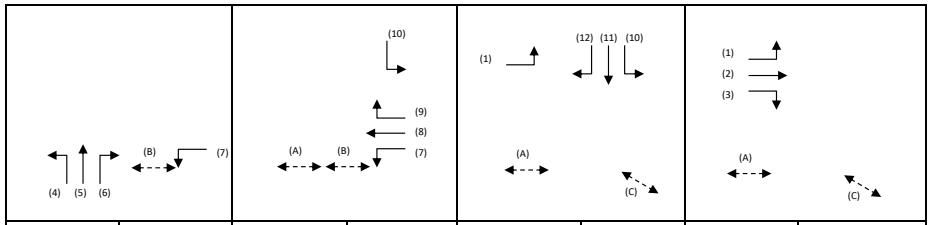
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
1	1	3.50	I	1	12.5		N	1965	15			15	1.00	1754			1754	0.009			2	48	0.022	2
2	1	3.00	I	2				4110		890		890	0.00	4110			4110	0.217	0.217		48	48	0.564	57
3	1	3.00	I	2	22.5			4110			660	660	1.00	3853			3853	0.171			38	48	0.446	42
4	1,2	3.00	II	1	30		N	1915	351			351	1.00	1824			1824	0.192			43	70	0.343	32
4	1,2	3.00	II	1	35			2055	379			379	1.00	1971			1971	0.192			43	70	0.342	35
5,6	2	3.00	II	1	12.5			2055		5	130	135	0.96	1842			1842	0.073	0.073		16	16	0.564	24
6	2	3.00	II	1	10			2055			130	130	1.00	1787			1787	0.073			16	16	0.560	24
10,11,12	3	4.00	III	1	25		N	2015	10	0	5	15	1.00	1901			1901	0.008			2	5	0.197	3
12	3	4.00	III	1	15			2155			15	15	1.00	1959			1959	0.008			2	5	0.191	3
7	4	4.00	IV	1	20		N	2015	250			250	1.00	1874			1874	0.133			30	36	0.466	37
8	4	3.30	IV	3				6255		1010		1010	0.00	6255			6255	0.161	0.161		36	36	0.564	50
																	Stage 3 Provision of Min. g			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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Reference Case	J7_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.574
Loss time		L =	21 sec
Total Flow		=	4550 pcu
Co	= (1.5*L+5)/(1-Y)	=	85.6 sec
Cm	= L/(1-Y)	=	49.3 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	29.4 %
Cp	= 0.9*L/(0.9-Y)	=	57.9 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	31.6 %



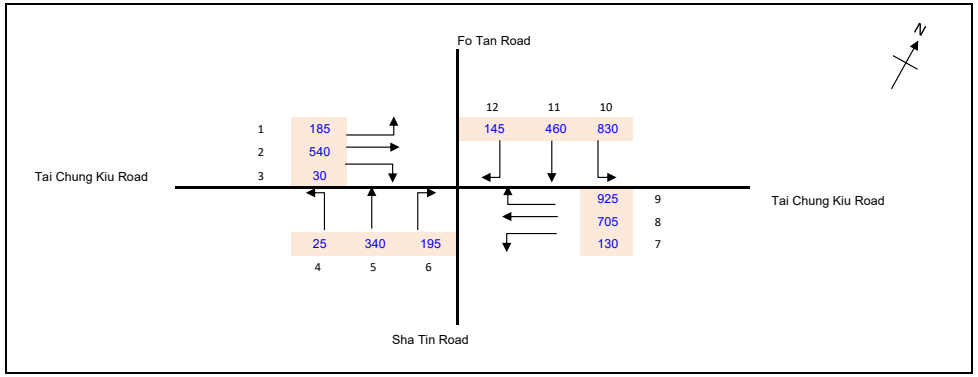
STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	92	1	9	OK
B	5	5		5	69	8	8	OK
C	8	5		7	42	2	5	OK

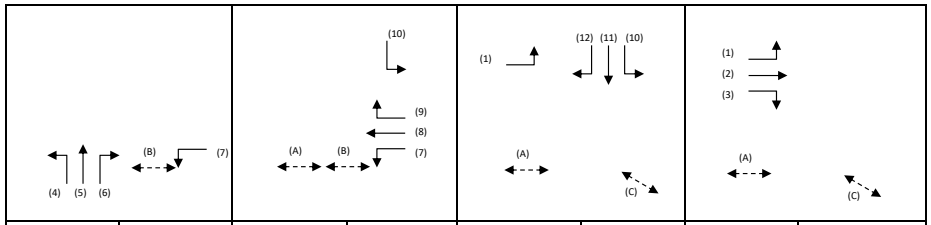
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		25	25	0.684	45
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			25	25	0.684	48
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			25	25	0.684	46
7	1,2	5.00	II	1	35		N	2115	130			130	1.00	2028		-900	1128	0.115			22	85	0.177	10
8	2	3.00	III	3				6165		705		705	0.00	6165			6165	0.114			22	46	0.320	33
9	2	3.00	III	2	17.5			4110			925	925	1.00	3786			3786	0.244	0.244		46	46	0.684	64
10	2,3	3.00	IV	1	12.5		N	1915	397			397	1.00	1710			1710	0.232			44	88	0.343	28
10	2,3	3.00	IV	1	15			2055	433			433	1.00	1868			1868	0.232			44	88	0.343	30
11	3	3.00	V	1				2055		308		308	0.00	2055			2055	0.150	0.150		28	28	0.684	52
11,12	3	3.00	V	1	20			2055		152	145	297	0.49	1982			1982	0.150			28	28	0.684	50
1	3,4	3.00	VI	1	12.5		N	1915	185			185	1.00	1710			1710	0.108			21	49	0.286	25
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.684	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.684	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.684	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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Reference Case (With Planned Improvement)	J7_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.536
Loss time		L =	21 sec
Total Flow		=	4550 pcu
Co	= (1.5*L+5)/(1-Y)	=	78.6 sec
Cm	= L/(1-Y)	=	45.2 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	38.6 %
Cp	= 0.9*L/(0.9-Y)	=	51.9 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	40.9 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

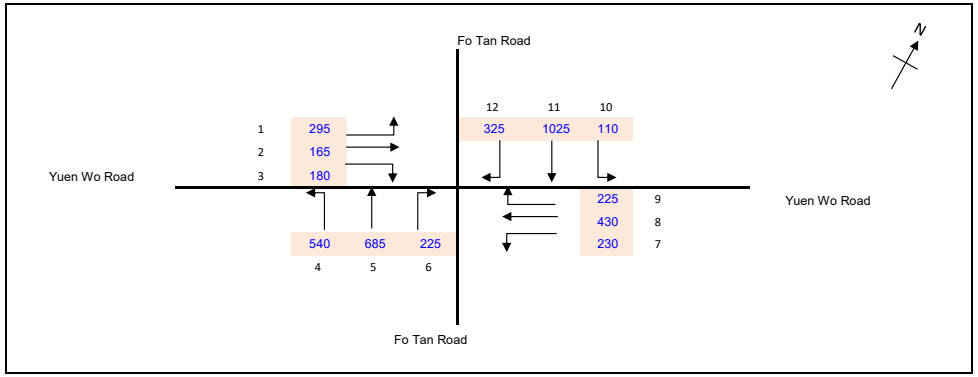
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	1	9	OK
B	5	5		5	74	8	8	OK
C	8	5		7	37	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		27	27	0.639	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			27	27	0.639	48
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			27	27	0.639	45
7	1,2	5.00	II	1	35		N	2115	130			130	1.00	2028		-900	1128	0.115			23	90	0.167	9
8	2	3.00	III	3				6165		705		705	0.00	6165			6165	0.114			23	50	0.299	31
9	2	3.00	III	2	17.5			4110			925	925	1.00	3786			3786	0.244	0.244		50	50	0.639	62
10	2,3	3.00	IV	1	12.5		N	1915	397			397	1.00	1710			1710	0.232			47	85	0.353	29
10	2,3	3.00	IV	1	15			2055	433			433	1.00	1868			1868	0.232			47	85	0.352	32
11	3	3.00	V	2				4110		460		460	0.00	4110			4110	0.112	0.112		23	23	0.639	41
12	3	3.00	V	1	20			2055			145	145	1.00	1912			1912	0.076			15	23	0.433	26
1	3,4	3.00	VI	1	12.5		N	1915	185			185	1.00	1710			1710	0.108			22	44	0.318	26
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.639	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.639	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.639	18

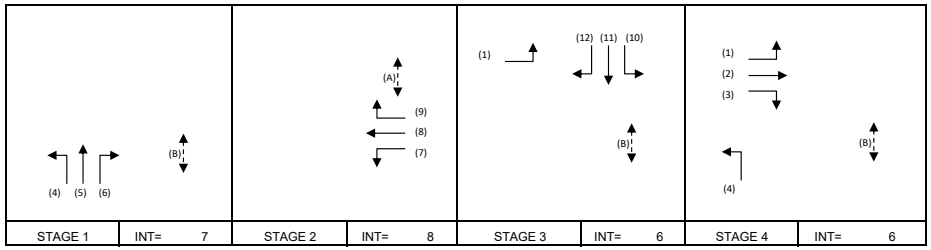
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2036 Reference Case	J8_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.471
Loss time		L =	23 sec
Total Flow		=	4435 pcu
Co	= (1.5*L+5)/(1-Y)	=	74.6 sec
Cm	= L/(1-Y)	=	43.4 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	54.6 %
Cp	= 0.9*L/(0.9-Y)	=	48.2 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	57.4 %

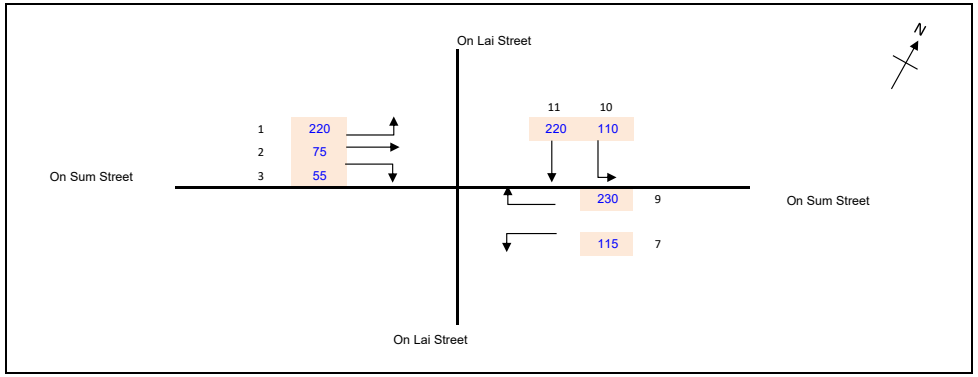


STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

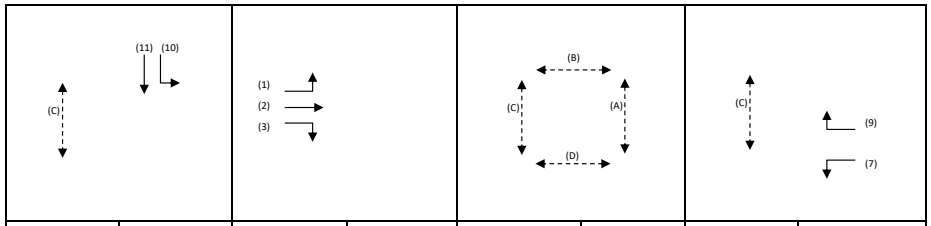
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	23	8	7	OK
B	9	5		8	83	2	11	OK

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.
																				23				
4	1,4	3.00	I	1	15		N	1915	540			540	1.00	1741			1741	0.310			71	53	0.767	70
5	1	3.00	I	3				6165		685		685	0.00	6165			6165	0.111			25	27	0.544	39
6	1	3.00	I	1	22.5			2055			225	225	1.00	1927			1927	0.117	0.117		27	27	0.572	39
7	2	3.00	II	1	15		N	1915	230			230	1.00	1741			1741	0.132	0.132		30	30	0.572	38
8	2	3.00	II	1				2055		223		223	0.00	2055			2055	0.109			25	30	0.470	37
8,9	2	3.00	II	1	27.5			2055		207	15	222	0.07	2047			2047	0.109			25	30	0.470	37
9	2	3.00	II	1	22.5			2055			210	210	1.00	1927			1927	0.109			25	30	0.471	35
10	3	3.30	III	1	15		N	1945	110			110	1.00	1768			1768	0.062			14	37	0.216	17
10,11	3	3.30	III	1	20			2085	0	343		343	0.00	2085			2085	0.164	0.164		37	37	0.572	53
11	3	3.30	III	1				2085		343		343	0.00	2085			2085	0.164			37	37	0.572	53
11,12	3	3.30	III	1	27.5			2085		339	4	343	0.01	2084			2084	0.164			37	37	0.572	53
12	3	3.30	III	1	22.5			2085			321	321	1.00	1955			1955	0.164			37	37	0.572	50
1	3,4	3.30	IV	1	15		N	1945	295			295	1.00	1768			1768	0.167			38	62	0.348	33
2	4	3.30	IV	1				2085		119		119	0.00	2085			2085	0.057	0.057		13	13	0.570	23
2,3	4	3.30	IV	1	25			2085		46	69	115	0.60	2013			2013	0.057			13	13	0.571	22
3	4	3.30	IV	1	20			2085			111	111	1.00	1940			1940	0.057			13	13	0.572	22

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2036 Reference Case	J9_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.351
Loss time		L =	34 sec
Total Flow		=	1025 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.3 sec
Cm	= L/(1-Y)	=	52.4 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	83.6 %
Cp	= 0.9*L/(0.9-Y)	=	55.8 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.4 %

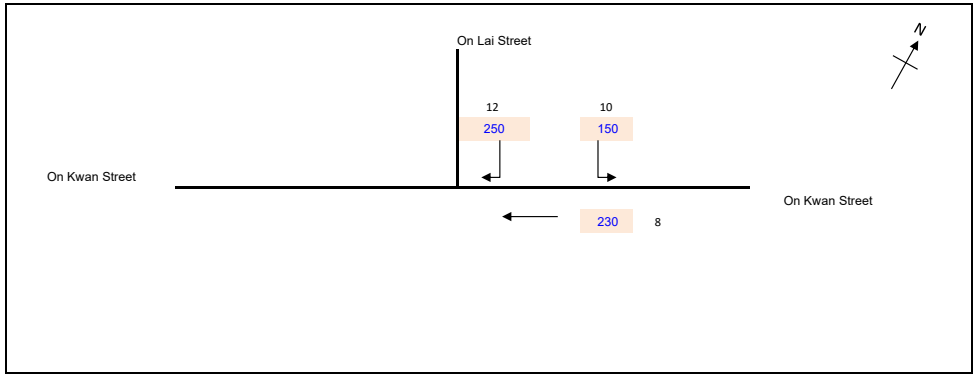


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

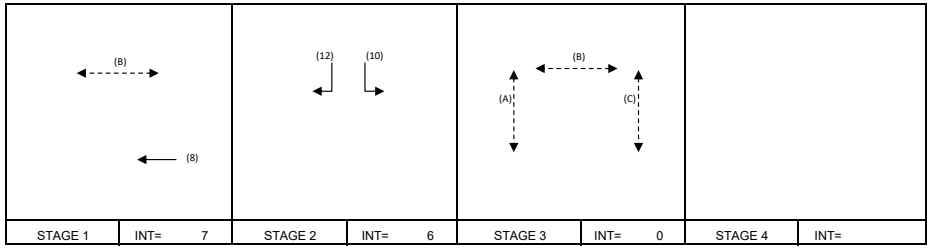
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	58	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	110	0		110	1.00	1786			1786	0.062	0.062		10	10	0.565	15
11	1	3.50	I	2				4210		220		220	0.00	4210			4210	0.052			8	10	0.479	15
1,2	2	5.00	II	1	15		N	2115	220	0		220	1.00	1923			1923	0.114	0.114		18	18	0.565	26
2,3	2	5.00	II	1	20			2255		75	55	130	0.42	2186			2186	0.059			9	18	0.294	16
7,9	4	5.00	III	1	20		N	2115	115		230	345	1.00	1967			1967	0.175	0.175		28	28	0.565	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2036 Reference Case	J10_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.239
Loss time		L =	34 sec
Total Flow		=	630 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.6 sec
Cm	= L/(1-Y)	=	44.7 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	169.8 %
Cp	= 0.9*L/(0.9-Y)	=	46.3 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	134.3 %

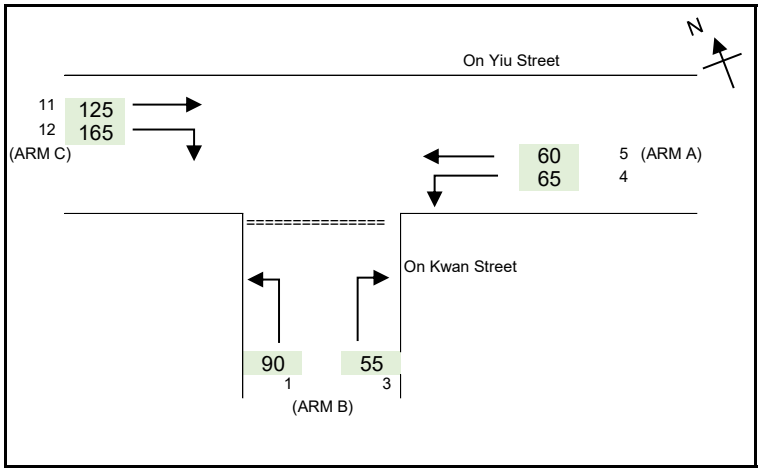


Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	42	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		230		230	0.00	2065			2065	0.111	0.111		26	26	0.384	24
10	2	3.50	II	1	15		N	1965	150			150	1.00	1786			1786	0.084			20	30	0.253	15
12	2	3.50	II	1	20			2105			250	250	1.00	1958			1958	0.128	0.128		30	30	0.384	25
																		Stage 3 Pedestrian		24				

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2036 Reference Case	J11_PM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	65	(pcu/hr)
q a-c	=	60	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	125	(pcu/hr)
q c-b	=	165	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	55	(pcu/hr)
q b-c	=	90	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	428
Q b-c	=	645
Q c-b	=	783
Q b-ac	=	541

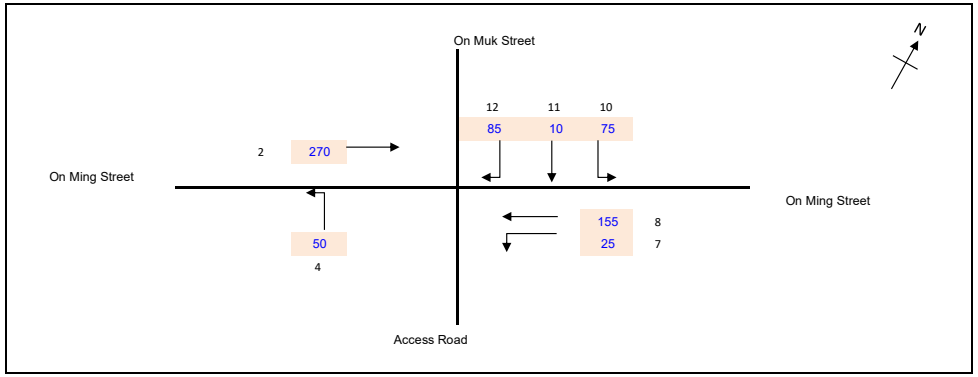
TOTAL FLOW = 560 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

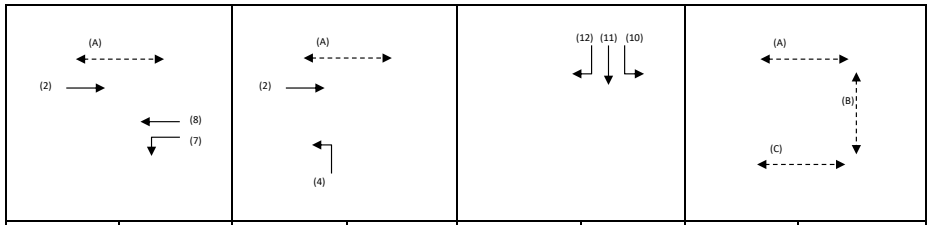
DFC b-a	=	0.1285
DFC b-c	=	0.1395
DFC c-b	=	0.2107
DFC b-ac	=	0.2680

CRITICAL DFC = 0.27

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2036 Reference Case	J12_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.114
Loss time		L =	40 sec
Total Flow		=	670 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.4 sec
Cm	= L/(1-Y)	=	45.1 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	426.1 %
Cp	= 0.9*L/(0.9-Y)	=	45.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	402.2 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	69	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		130		130	0.00	2015			2015	0.065			40	40	0.178	15
2	1,2	4.00	I	1				2155		140		140	0.00	2155			2155	0.065			40	40	0.179	16
7,8	1	3.50	II	1	20		N	1965	25	61		86	0.29	1923			1923	0.045	0.045		27	27	0.179	12
8	1	3.50	II	1				2105		94		94	0.00	2105			2105	0.045			27	27	0.179	13
4	2	3.50	III	1	20		N	1965	50			50	1.00	1828			1828	0.027	0.027		17	17	0.179	8
10,11,12	3	5.00	IV	1	30		N	2115	75	10	0	85	0.88	2026			2026	0.042			26	26	0.179	12
12	3	5.00	IV	1	25			2255			85	85	1.00	2127			2127	0.040	0.042		25	26	0.171	12
																		Stage 4 Pedestrian		28				

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

ROUNDABOUT CALCULATION

Project No. -

J13 - On Ming Street / On Muk Street / On Yiu Street | 2036 Reference Case | J13_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	180	345	75
Qc	=	Circulating flow across entry (pcu/h)	400	250	450
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2370	2062	2256
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.17	0.03

Total In Sum = 600 PCU

DFC of Critical Approach = 0.17

2036 Design Case

ROUNDABOUT CALCULATION

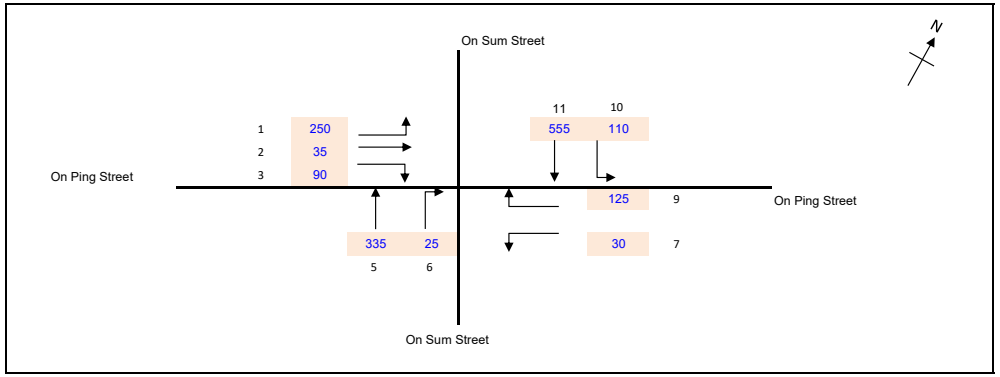
	Project No. -	
J1 - Shek Mun Interchange	2036 Design Case	J1_AM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	680	2225	195
Qc	=	Circulating flow across entry (pcu/h)	270	350	1565
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2646	2643	1679
DFC	=	Design flow/Capacity = Q/Qe	0.26	0.84	0.12

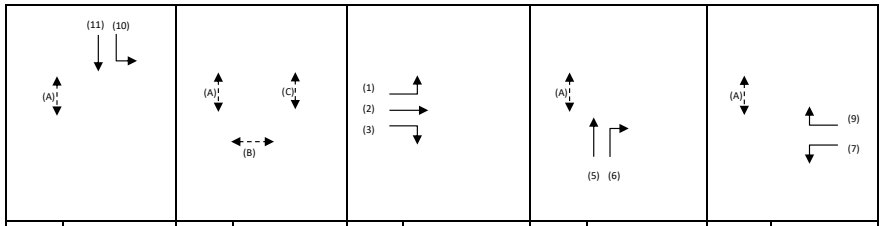
Total In Sum = **3100** **PCU**

DFC of Critical Approach = **0.84**

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2036 Design Case	J2_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	5	
Cycle time	C =	130	sec
Sum(y)	Y =	0.375	
Loss time	L =	45	sec
Total Flow	=	1555	pcu
Co = (1.5*L+5)/(1-Y)	=	116.1	sec
Cm = L/(1-Y)	=	72.0	sec
Yult	=	0.563	
R.C.ult = (Yult-Y)/Y*100%	=	49.8	%
Cp = 0.9*L/(0.9-Y)	=	77.2	sec
Ymax = 1-L/C	=	0.654	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	56.8	%



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

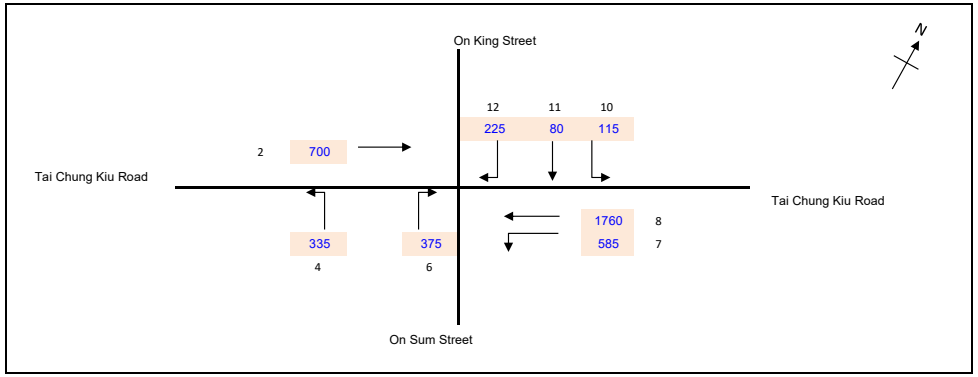
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	108	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	110			110	1.00	1809			1809	0.061			14	30	0.262	18
11	1	3.30	I	2				4170		555		555	0.00	4170			4170	0.133	0.133		30	30	0.574	46
1	3	4.00	II	1	15		N	2015	135			135	1.00	1832			1832	0.074	0.074		17	17	0.574	25
1,2	3	4.00	II	1	20			2155	115	35		150	0.77	2038			2038	0.074			17	17	0.573	28
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			10	17	0.358	17
5	4	3.50	IV	1			N	1965		175		175	0.00	1965			1965	0.089	0.089		20	20	0.574	32
5,6	4	3.50	IV	1	25			2105		160	25	185	0.14	2088			2088	0.089			20	20	0.571	34
7,9	5	4.50	V	1	25		N	2065	30		125	155	1.00	1948			1948	0.080	0.080		18	18	0.574	29
																		Stage 2 Pedestrian		22				

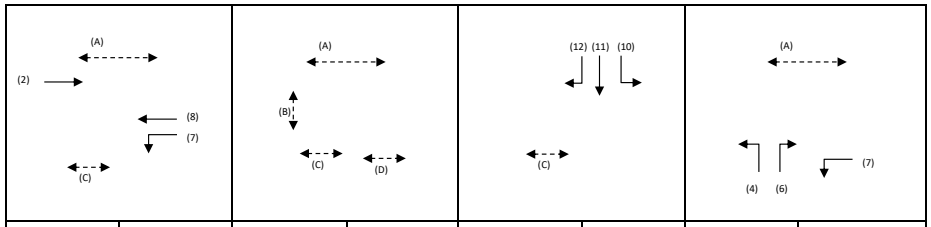
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2036 Design Case	J3_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.468	
Loss time	L =	43	sec
Total Flow	=	4175	pcu
Co = (1.5*L+5)/(1-Y)	=	130.6	sec
Cm = L/(1-Y)	=	80.8	sec
Yult	=	0.578	
R.C.ult = (Yult-Y)/Y*100%	=	23.4	%
Cp = 0.9*L/(0.9-Y)	=	89.6	sec
Ymax = 1-L/C	=	0.669	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	28.7	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

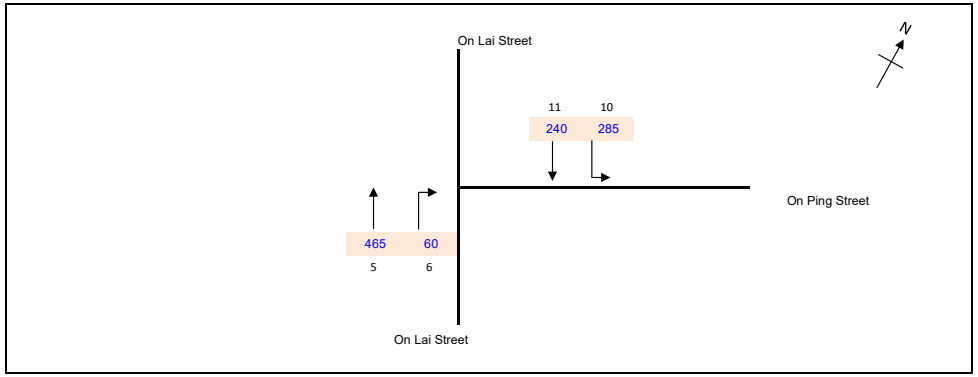
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	65	4	20	OK
B	15	7		13	12	3	10	OK
C	9	5		8	86	2	9	OK
D	11	5		9	16	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		223		223	0.00	1965			1965	0.113			21	52	0.282	29
2	1	3.50	I	2				4210		477		477	0.00	4210			4210	0.113			21	52	0.282	31
8	1	3.30	II	3				6255		1760		1760	0.00	6255			6255	0.281	0.281		52	52	0.699	76
7	1,4	5.00	III	1	20		N	2115	585			585	1.00	1967			1967	0.297			55	55	0.699	73
10	3	3.50	IV	1	15		N	1965	91			91	1.00	1786			1786	0.051			9	11	0.623	18
10,11	3	3.30	IV	1	20			2085	24	80		104	0.23	2050			2050	0.051			9	11	0.620	21
12	3	3.30	IV	2	25			4170			225	225	1.00	3934			3934	0.057	0.057		11	11	0.699	22
4	4	3.00	V	1	12.5		N	1915	221			221	1.00	1710			1710	0.129	0.129		24	24	0.699	39
4,6	4	3.00	V	1	20			2055	114		133	247	1.00	1912			1912	0.129			24	24	0.699	44
6	4	3.00	V	1	15			2055			242	242	1.00	1868			1868	0.129			24	24	0.699	43
																		Stage 2 Pedestrian		25				

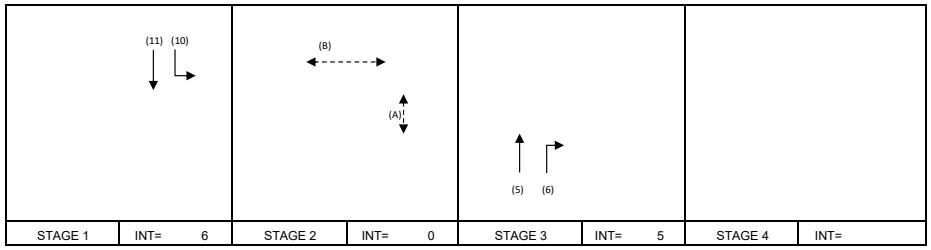
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2036 Design Case	J4_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.300
Loss time		L =	26 sec
Total Flow		=	1050 pcu
Co	= (1.5*L+5)/(1-Y)	=	62.9 sec
Cm	= L/(1-Y)	=	37.2 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	134.8 %
Cp	= 0.9*L/(0.9-Y)	=	39.0 sec
Ymax	= 1-L/C	=	0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	139.8 %



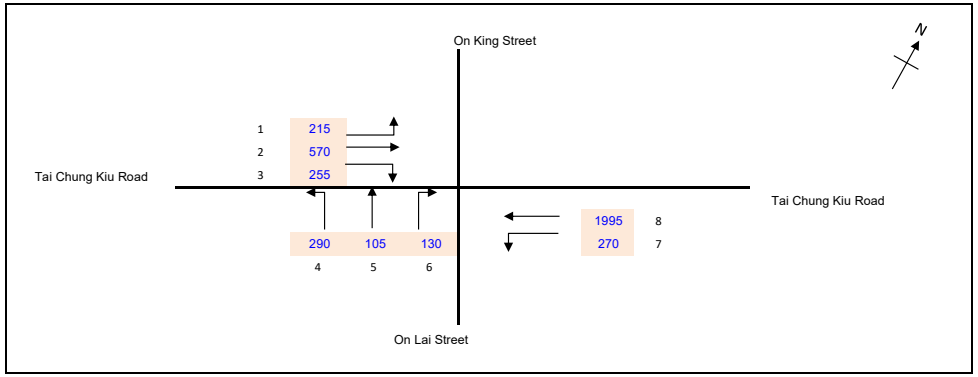
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	285	0		285	1.00	1726			1726	0.165	0.165		57	57	0.375	35
11	1	3.10	I	1				2065		240		240	0.00	2065			2065	0.116			40	57	0.264	29
5	3	2.80	II	1			N	1895		255		255	0.00	1895			1895	0.135	0.135		47	47	0.374	35
5,6	3	2.80	II	1	18			2035		210	60	270	0.22	1998			1998	0.135			47	47	0.375	37
																		Stage 2 Pedestrian		18				

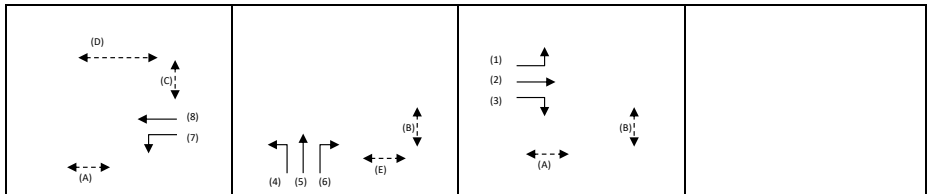
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Design Case	J5_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.724
Loss time		L =	20 sec
Total Flow		=	3830 pcu
Co	= (1.5*L+5)/(1-Y)	=	127.0 sec
Cm	= L/(1-Y)	=	72.6 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	3.5 %
Cp	= 0.9*L/(0.9-Y)	=	102.5 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	5.1 %



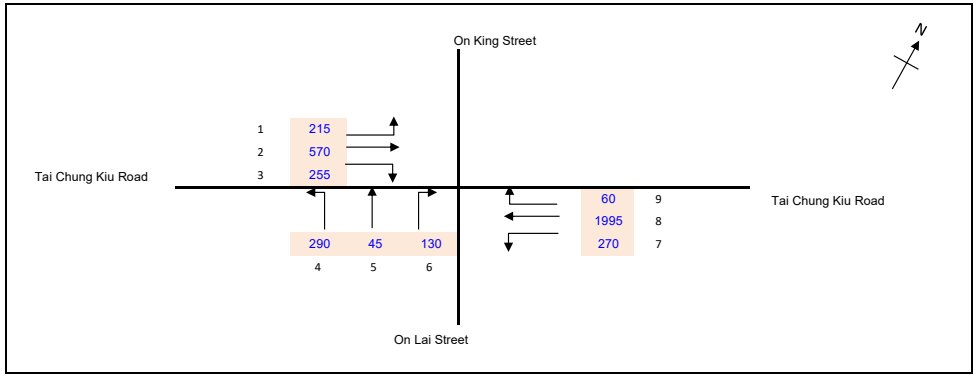
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	94	2	7	OK
B	7	5		6	55	3	10	OK
C	10	5		8	53	6	6	OK
D	6	5		5	49	6	10	OK
E	9	5		8	16	6	8	OK

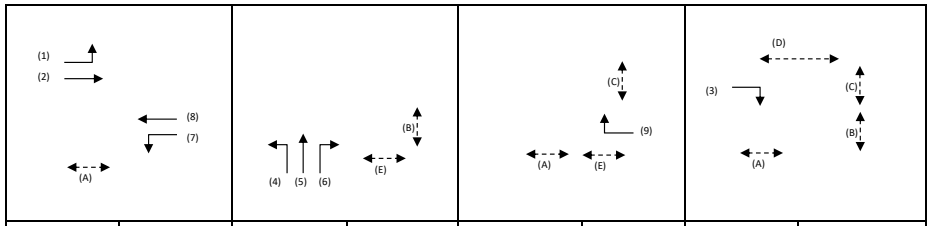
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	270	423		693	0.39	1857			1857	0.373	0.373		57	57	0.856	85
8	1	3.50	I	2				4210		1572		1572	0.00	4210			4210	0.373			57	57	0.856	96
4	2	3.50	II	1	10		N	1755	229			229	1.00	1526			1526	0.150	0.150		23	23	0.856	45
4,5,6	2	3.50	II	1	15			2105	61	105	130	296	0.65	1977			1977	0.150			23	23	0.854	53
1,2	3	3.50	III	1	10		N	1965	215	147		362	0.59	1804			1804	0.201	0.201		30	31	0.855	60
2	3	3.50	III	1				2105		423		423	0.00	2105			2105	0.201			31	31	0.856	70
3	3	3.50	III	1	15			2105			255	255	1.00	1914			1914	0.133			20	31	0.568	42

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Design Case (With Planned Improvement)	J5_AM_PI



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.659	
Loss time	L =	20	sec
Total Flow	=	3830	pcu
Co = (1.5*L+5)/(1-Y)	=	102.7	sec
Cm = L/(1-Y)	=	58.7	sec
Yult	=	0.750	
R.C.ult = (Yult-Y)/Y*100%	=	13.8	%
Cp = 0.9*L/(0.9-Y)	=	74.8	sec
Ymax = 1-L/C	=	0.846	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	15.5	%



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

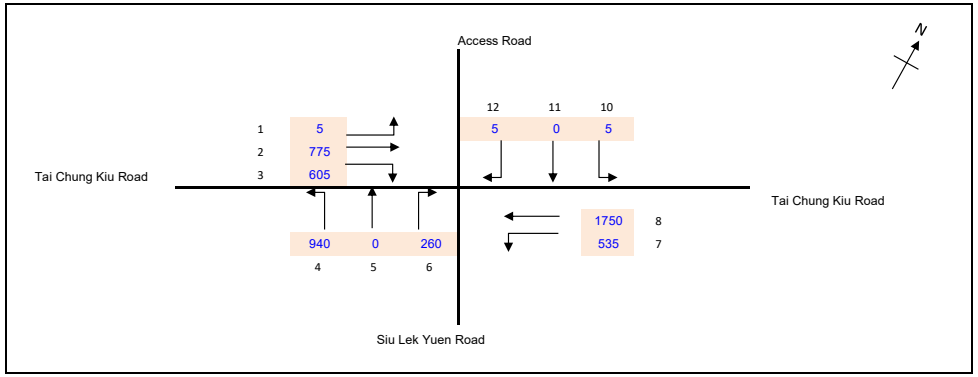
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	104	2	7	OK
B	7	5		6	33	3	10	OK
C	10	5		8	32	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	22	6	8	OK

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.
																				20				
1,2	1	3.80	I	1	15		N	1995	215	153		368	0.58	1885			1885	0.195			33	63	0.406	41
2	1	3.80	I	1				2135		417		417	0.00	2135			2135	0.195			33	63	0.406	47
3	4	3.80	V	1	20			2135			255	255	1.00	1986			1986	0.128	0.128		27	27	0.626	44
7,8	1	3.30	II	1	15		N	1945	270	432		702	0.38	1873			1873	0.375	0.375		62	63	0.778	79
8	1	3.30	II	2				4170		1564		1564	0.00	4170			4170	0.375			63	63	0.779	88
9	3	3.50	IV	1	15			2105			60	60	1.00	1914			1914	0.031	0.031		5	5	0.779	12
4	2	3.30	III	1	15		N	1945	220			220	1.00	1768			1768	0.125	0.125		21	21	0.779	40
4,5,6	2	3.30	III	1	20			2085	70	45	130	245	0.82	1965			1965	0.125			21	21	0.779	45

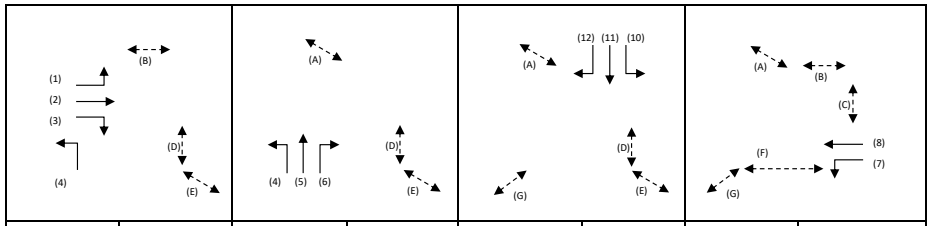
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2036 Design Case	J6_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.546
Loss time		L =	25 sec
Total Flow		=	4880 pcu
Co	= (1.5*L+5)/(1-Y)	=	93.6 sec
Cm	= L/(1-Y)	=	55.1 sec
Yult		=	0.713
R.C.ult	= (Yult-Y)/Y*100%	=	30.5 %
Cp	= 0.9*L/(0.9-Y)	=	63.5 sec
Ymax	= 1-L/C	=	0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	33.2 %



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

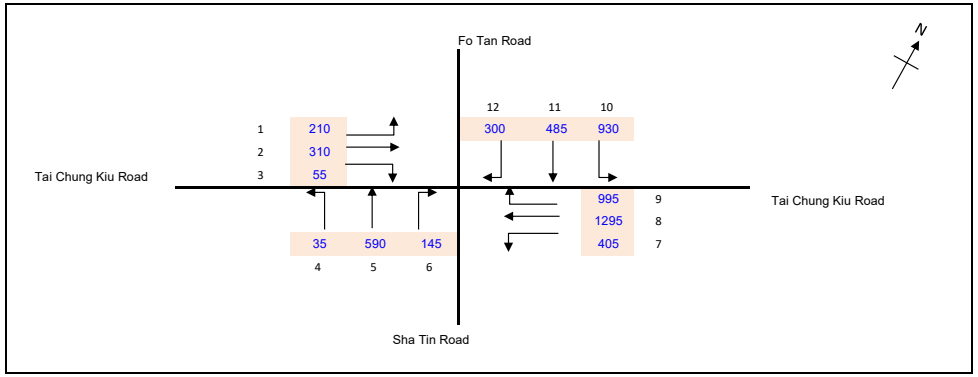
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	84	1	7	OK
B	5	5		5	87	2	13	OK
C	8	5		7	42	6	13	OK
D	9	5		8	59	2	12	OK
E	9	5		8	61	2	10	OK
F	9	5		8	44	6	11	OK
G	9	5		8	60	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	5			5	1.00	1754			1754	0.003			1	36	0.010	1
2	1	3.00	I	2				4110		775		775	0.00	4110			4110	0.189	0.189		36	36	0.676	61
3	1	3.00	I	2	22.5			4110			605	605	1.00	3853			3853	0.157			30	36	0.563	47
4	1,2	3.00	II	1	30		N	1915	452			452	1.00	1824			1824	0.248			48	56	0.574	56
4	1,2	3.00	II	1	35			2055	488			488	1.00	1971			1971	0.248			48	56	0.574	60
5,6	2	3.00	II	1	12.5			2055		0	132	132	1.00	1835			1835	0.072	0.072		14	14	0.676	26
6	2	3.00	II	1	10			2055			128	128	1.00	1787			1787	0.072			14	14	0.673	25
10,11,12	3	4.00	III	1	25		N	2015	5	0	0	5	1.00	1901			1901	0.003			1	5	0.068	1
12	3	4.00	III	1	15			2155			5	5	1.00	1959			1959	0.003			0	5	0.066	1
7	4	4.00	IV	1	20		N	2015	535			535	1.00	1874			1874	0.285	0.285		55	55	0.676	67
8	4	3.30	IV	3				6255		1750		1750	0.00	6255			6255	0.280			54	55	0.663	73
																	Stage 3 Provision of Min. g			5				

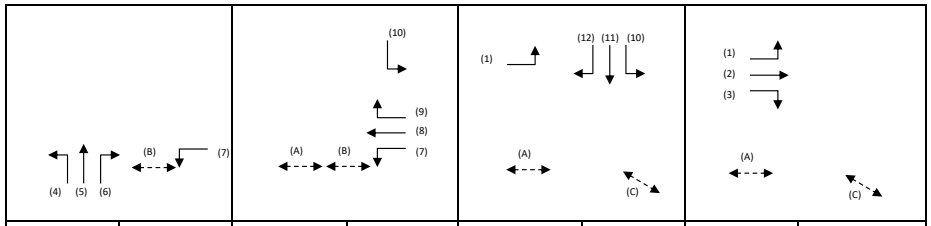
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Design Case	J7_AM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.662	
Loss time	L =	21	sec
Total Flow	=	5765	pcu
Co = (1.5*L+5)/(1-Y)	=	108.0	sec
Cm = L/(1-Y)	=	62.1	sec
Yult	=	0.743	
R.C.ult = (Yult-Y)/Y*100%	=	12.2	%
Cp = 0.9*L/(0.9-Y)	=	79.4	sec
Ymax = 1-L/C	=	0.838	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	14.0	%



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

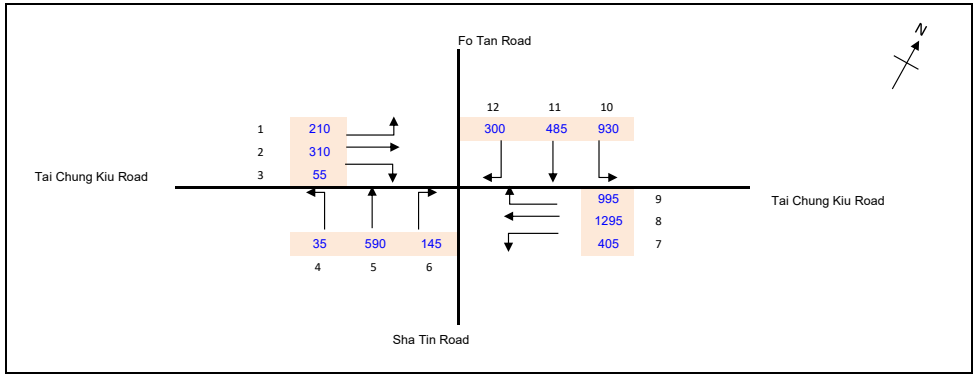
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	91	1	9	OK
B	5	5		5	66	8	8	OK
C	8	5		7	45	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	265		300	0.12	1918			1918	0.156	0.156		26	26	0.789	52
5,6	1	3.30	I	1	30			2085		325	0	325	0.00	2085			2085	0.156			26	26	0.787	56
6	1	3.30	I	1	25			2085			145	145	1.00	1967			1967	0.074			12	26	0.372	25
7	1,2	5.00	II	1	35		N	2115	405			405	1.00	2028		-900	1128	0.359			59	82	0.569	32
8	2	3.00	III	3				6165		1295		1295	0.00	6165			6165	0.210			35	43	0.631	62
9	2	3.00	III	2	17.5			4110			995	995	1.00	3786			3786	0.263	0.263		43	43	0.789	72
10	2,3	3.00	IV	1	12.5		N	1915	445			445	1.00	1710			1710	0.260			43	89	0.382	31
10	2,3	3.00	IV	1	15			2055	485			485	1.00	1868			1868	0.260			43	89	0.381	33
11	3	3.00	V	1				2055		404		404	0.00	2055			2055	0.196	0.196		32	32	0.789	66
11,12	3	3.00	V	1	20			2055		81	300	381	0.79	1940			1940	0.196			32	32	0.789	62
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			20	52	0.307	27
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		8	8	0.789	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			8	8	0.789	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			8	8	0.789	18

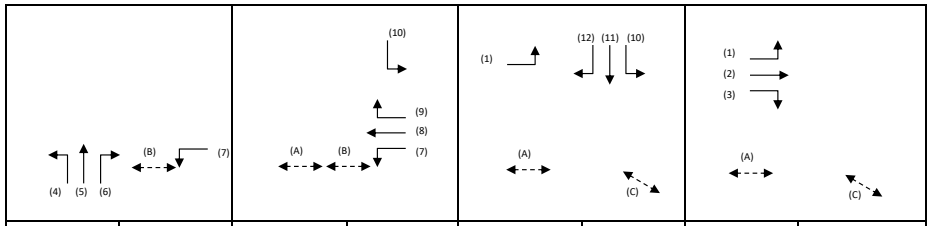
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Design Case (With Planned Improvement)	J7_AM_PI



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	130	sec
Sum(y)	Y =	0.622	
Loss time	L =	21	sec
Total Flow	=	5765	pcu
Co = (1.5*L+5)/(1-Y)	=	96.7	sec
Cm = L/(1-Y)	=	55.6	sec
Yult	=	0.743	
R.C.ult = (Yult-Y)/Y*100%	=	19.3	%
Cp = 0.9*L/(0.9-Y)	=	68.1	sec
Ymax = 1-L/C	=	0.838	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	21.2	%



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

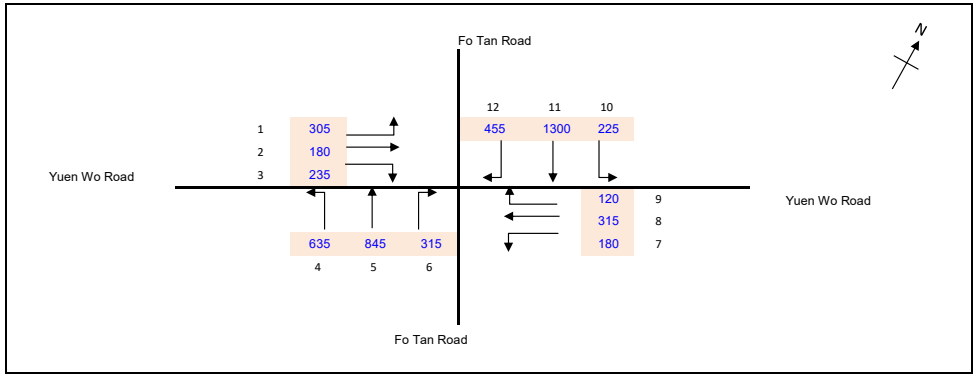
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	1	9	OK
B	5	5		5	70	8	8	OK
C	8	5		7	41	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	35	265		300	0.12	1918			1918	0.156	0.156		27	27	0.742	51
5,6	1	3.30	I	1	30			2085		325	0	325	0.00	2085			2085	0.156			27	27	0.740	56
6	1	3.30	I	1	25			2085			145	145	1.00	1967			1967	0.074			13	27	0.350	25
7	1,2	5.00	II	1	35		N	2115	405			405	1.00	2028		-900	1128	0.359			63	86	0.540	29
8	2	3.00	III	3				6165		1295		1295	0.00	6165			6165	0.210			37	46	0.593	60
9	2	3.00	III	2	17.5			4110			995	995	1.00	3786			3786	0.263	0.263		46	46	0.742	70
10	2,3	3.00	IV	1	12.5		N	1915	445			445	1.00	1710			1710	0.260			46	87	0.391	32
10	2,3	3.00	IV	1	15			2055	485			485	1.00	1868			1868	0.260			45	87	0.390	35
11	3	3.00	V	2				4110		485		485	0.00	4110			4110	0.118			21	27	0.558	41
12	3	3.00	V	1	20			2055			300	300	1.00	1912			1912	0.157	0.157		27	27	0.742	51
1	3,4	3.00	VI	1	12.5		N	1915	210			210	1.00	1710			1710	0.123			22	48	0.336	29
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		8	8	0.742	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			8	8	0.742	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			8	8	0.742	18

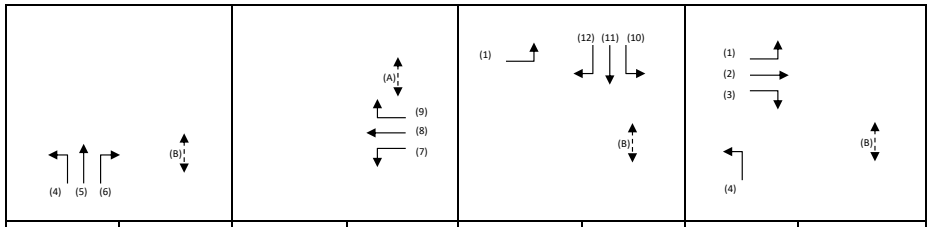
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2036 Design Case	J8_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.550
Loss time		L =	23 sec
Total Flow		=	5110 pcu
Co	= (1.5*L+5)/(1-Y)	=	87.8 sec
Cm	= L/(1-Y)	=	51.1 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	32.3 %
Cp	= 0.9*L/(0.9-Y)	=	59.1 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	34.7 %



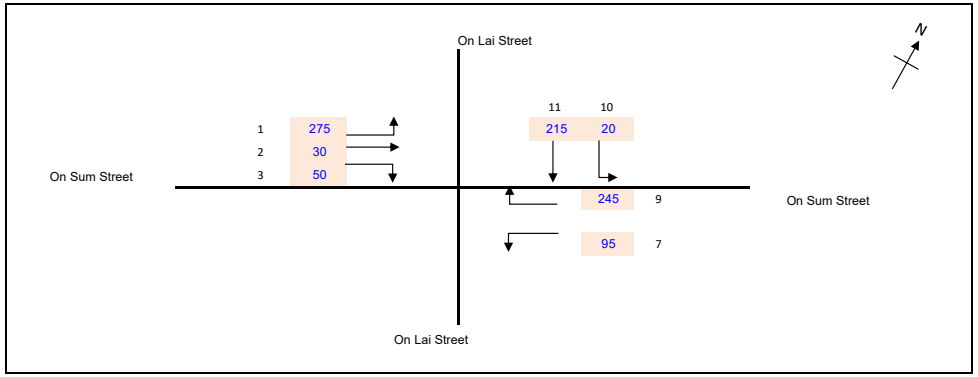
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	13	8	7	OK
B	9	5		8	93	2	11	OK

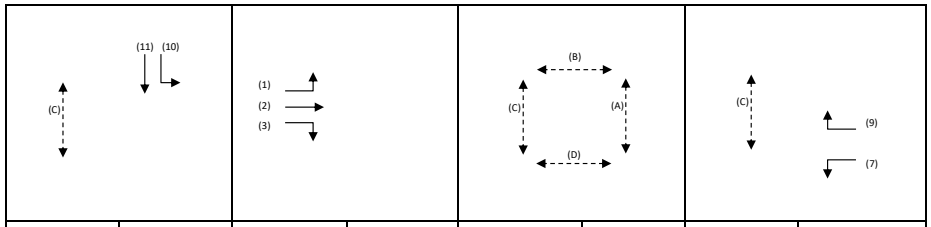
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	635			635	1.00	1741			1741	0.365			71	58	0.814	76
5	1	3.00	I	3				6165		845		845	0.00	6165			6165	0.137	0.164		27	32	0.560	46
6	1	3.00	I	1	22.5			2055			315	315	1.00	1927			1927	0.164			32	32	0.668	52
7	2	3.00	II	1	15		N	1915	180			180	1.00	1741			1741	0.103	0.103		20	20	0.668	33
8	2	3.00	II	1				2055		158		158	0.00	2055			2055	0.077			15	20	0.495	29
8,9	2	3.00	II	1	27.5			2055		158	0	158	0.00	2055			2055	0.077			15	20	0.495	29
9	2	3.00	II	1	22.5			2055			120	120	1.00	1927			1927	0.062			12	20	0.403	22
10	3	3.30	III	1	15		N	1945	225			225	1.00	1768			1768	0.127			25	42	0.397	33
10,11	3	3.30	III	1	20			2085	0	446		446	0.00	2085			2085	0.214	0.214		42	42	0.668	66
11	3	3.30	III	1				2085		446		446	0.00	2085			2085	0.214			42	42	0.668	66
11,12	3	3.30	III	1	27.5			2085		408	37	444	0.08	2076			2076	0.214			42	42	0.668	65
12	3	3.30	III	1	22.5			2085			418	418	1.00	1955			1955	0.214			42	42	0.668	62
1	3,4	3.30	IV	1	15		N	1945	305			305	1.00	1768			1768	0.172			34	67	0.334	32
2	4	3.30	IV	1				2085		144		144	0.00	2085			2085	0.069	0.069		13	13	0.668	28
2,3	4	3.30	IV	1	25			2085		36	101	137	0.74	1997			1997	0.069			13	13	0.664	27
3	4	3.30	IV	1	20			2085			134	134	1.00	1940			1940	0.069			13	13	0.668	26

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2036 Design Case	J9_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.354
Loss time		L =	34 sec
Total Flow		=	930 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.7 sec
Cm	= L/(1-Y)	=	52.7 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	82.1 %
Cp	= 0.9*L/(0.9-Y)	=	56.1 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	58.1 %

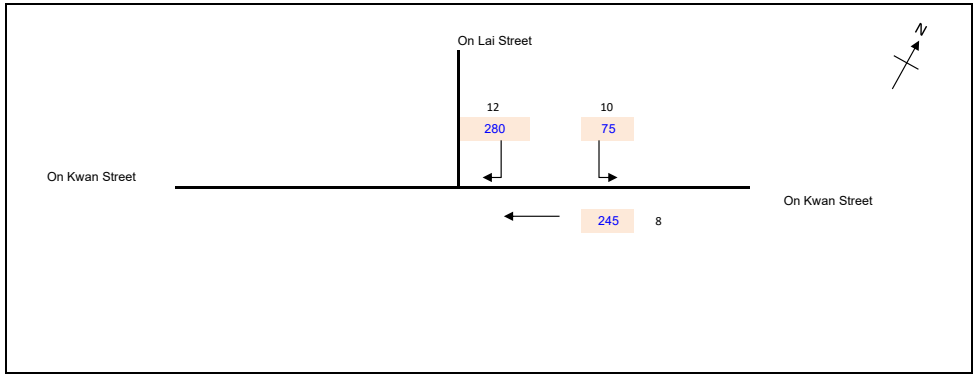


STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

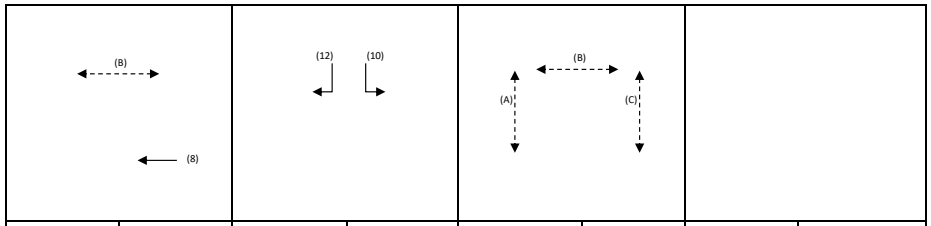
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	53	2	11	OK
D	8	5		7	6	6	11	OK

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.
																				11				
10,11	1	3.50	I	1	15		N	1965	20	54		74	0.27	1913			1913	0.038	0.038		6	6	0.569	10
11	1	3.50	I	2				4210		162		162	0.00	4210			4210	0.038			6	6	0.568	11
1,2	2	5.00	II	1	15		N	2115	275	0		275	1.00	1923			1923	0.143	0.143		23	23	0.569	31
2,3	2	5.00	II	1	20			2255		30	50	80	0.63	2154			2154	0.037			6	23	0.148	9
7,9	4	5.00	III	1	20		N	2115	95		245	340	1.00	1967			1967	0.173	0.173		27	27	0.569	36
																		Stage 3 Pedestrian		23				

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2036 Design Case	J10_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	85 sec
Sum(y)		Y =	0.262
Loss time		L =	34 sec
Total Flow		=	600 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.8 sec
Cm	= L/(1-Y)	=	46.0 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	146.5 %
Cp	= 0.9*L/(0.9-Y)	=	47.9 sec
Ymax	= 1-L/C	=	0.600
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	106.4 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

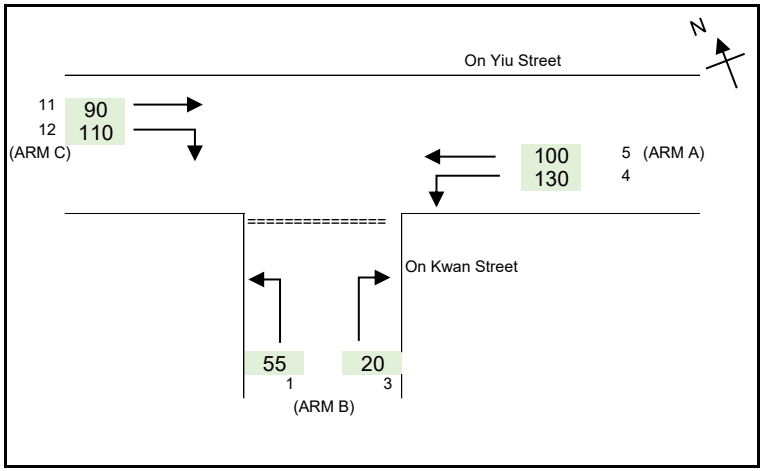
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	39	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		245		245	0.00	2065			2065	0.119	0.119		23	23	0.436	25
10	2	3.50	II	1	15		N	1965	75			75	1.00	1786			1786	0.042			8	28	0.128	7
12	2	3.50	II	1	20			2105			280	280	1.00	1958			1958	0.143	0.143		28	28	0.436	27
																		Stage 3 Pedestrian		24				

Mott MacDonald Restricted

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2036 Design Case	J11_AM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	130	(pcu/hr)
q a-c	=	100	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	90	(pcu/hr)
q c-b	=	110	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	20	(pcu/hr)
q b-c	=	55	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	437
Q b-c	=	627
Q c-b	=	748
Q b-ac	=	561.9

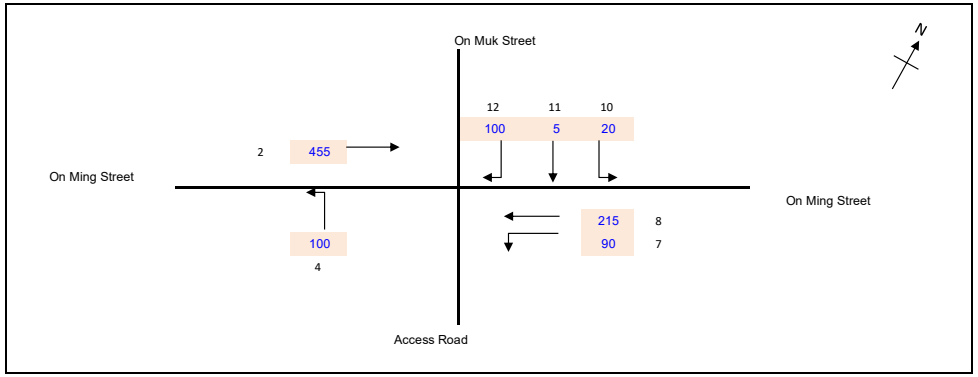
TOTAL FLOW = 505 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

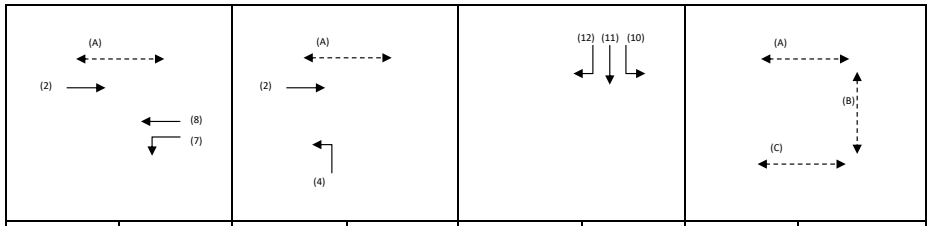
DFC b-a	=	0.0458
DFC b-c	=	0.0877
DFC c-b	=	0.1471
DFC b-ac	=	0.1335

CRITICAL DFC = 0.15

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2036 Design Case	J12_AM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.162
Loss time		L =	40 sec
Total Flow		=	985 pcu
Co	= (1.5*L+5)/(1-Y)	=	77.5 sec
Cm	= L/(1-Y)	=	47.7 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	271.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	254.5 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	82	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	6	OK

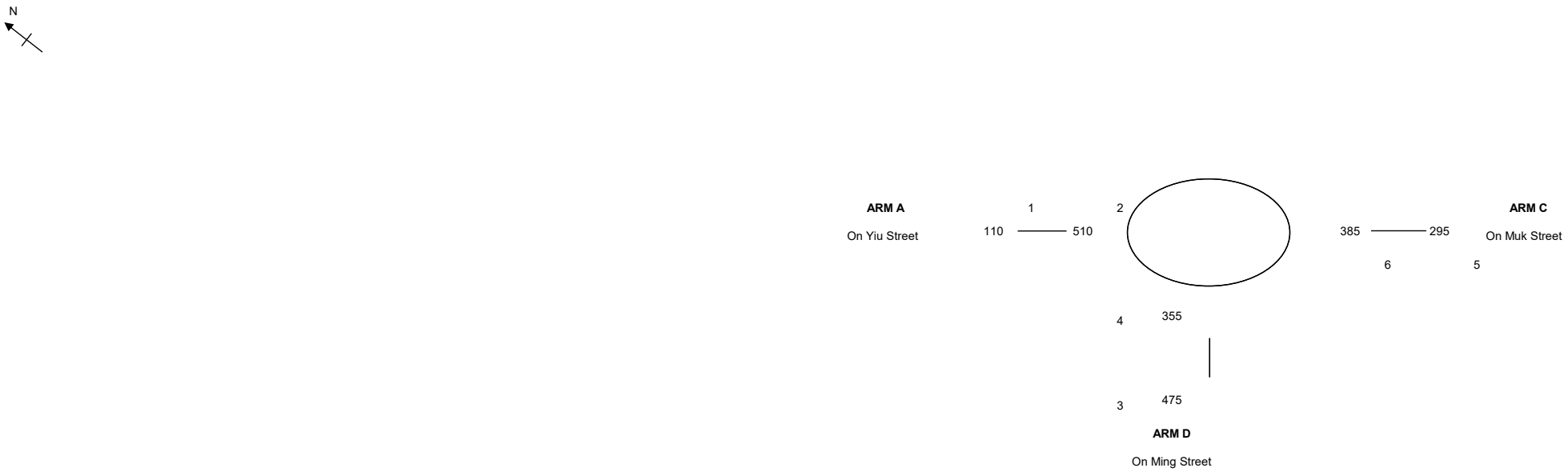
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
2	1,2	4.00	I	1			N	2015		220		220	0.00	2015			2015	0.109			47	47	0.254	23
2	1,2	4.00	I	1				2155		235		235	0.00	2155			2155	0.109			47	47	0.254	25
7,8	1	3.50	II	1	20		N	1965	90	54		144	0.63	1877			1877	0.077	0.077		33	33	0.253	18
8	1	3.50	II	1				2105		161		161	0.00	2105			2105	0.077			33	33	0.254	21
4	2	3.50	III	1	20		N	1965	100			100	1.00	1828			1828	0.055	0.055		24	24	0.254	14
10,11,12	3	5.00	IV	1	30		N	2115	20	5	36	61	0.92	2022			2022	0.030			13	13	0.254	10
12	3	5.00	IV	1	25			2255			64	64	1.00	2127			2127	0.030	0.030		13	13	0.253	10
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

	Project No. -	
J13 - On Ming Street / On Muk Street / On Yiu Street	2036 Design Case	J13_AM



ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	110	475	295
Qc	=	Circulating flow across entry (pcu/h)	510	355	385
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2277	1983	2310
DFC	=	Design flow/Capacity = Q/Qe	0.05	0.24	0.13

Total In Sum = **880** **PCU**

DFC of Critical Approach = **0.24**

ROUNDABOUT CALCULATION

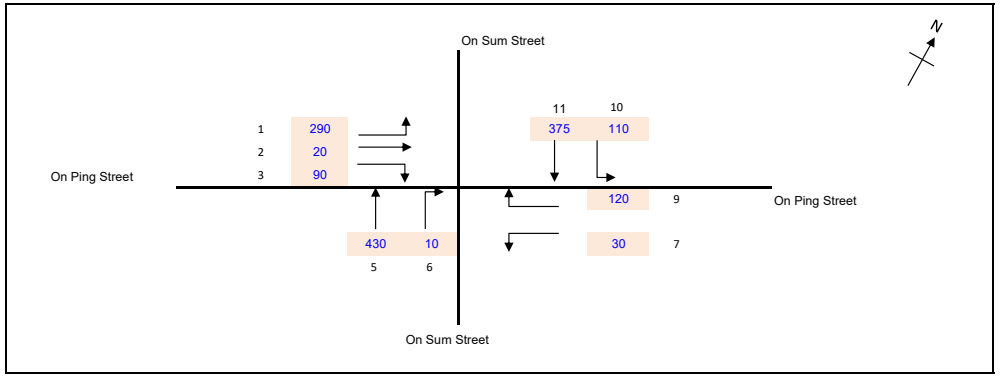
	Project No. -	
J1 - Shek Mun Interchange	2036 Design Case	J1_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	7.30	7.30	6.00
E	=	Entry width (m)	12.00	13.00	10.00
L	=	Effective length of flare (m)	12.00	5.00	12.00
R	=	Entry radius (m)	100.00	100.00	30.00
D	=	Inscribed circle diameter (m)	140.00	140.00	100.00
A	=	Entry angle (degree)	45.00	10.00	10.00
Q	=	Entry flow (pcu/h)	505	1385	225
Qc	=	Circulating flow across entry (pcu/h)	260	720	1045
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.63	1.82	0.53
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.11	1.09
X2	=	V + ((E-V)/(1+2S))	9.39	8.53	7.94
M	=	EXP((D-60)/10)	2980.96	2980.96	54.60
F	=	303*X2	2844	2583	2404
Td	=	1+(0.5/(1+M))	1.00	1.00	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.60	0.57	0.55
Qe	=	K(F-Fc*Qc)	2652	2410	1989
DFC	=	Design flow/Capacity = Q/Qe	0.19	0.57	0.11

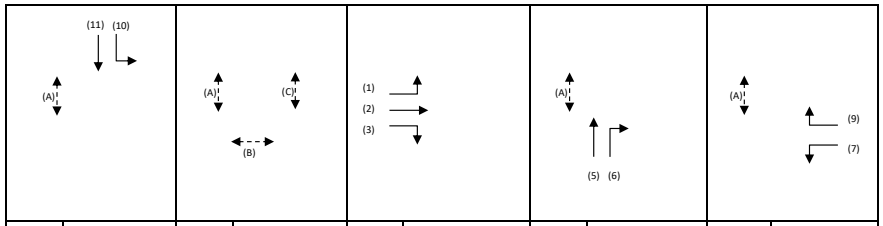
Total In Sum = 2115 PCU

DFC of Critical Approach = 0.57

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J2 - On Sum Street / On Ping Street	2036 Design Case	J2_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	5
Cycle time		C =	125 sec
Sum(y)		Y =	0.356
Loss time		L =	45 sec
Total Flow		=	1475 pcu
Co	= (1.5*L+5)/(1-Y)	=	112.5 sec
Cm	= L/(1-Y)	=	69.9 sec
Yult		=	0.563
R.C.ult	= (Yult-Y)/Y*100%	=	58.1 %
Cp	= 0.9*L/(0.9-Y)	=	74.4 sec
Ymax	= 1-L/C	=	0.640
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	61.9 %



STAGE 1	INT= 7	STAGE 2	INT= 5	STAGE 3	INT= 5	STAGE 4	INT= 6	STAGE 5	INT= 5

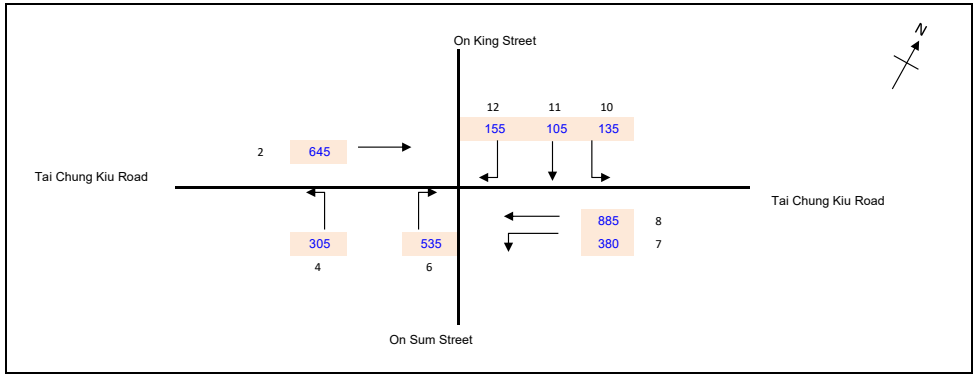
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	10	5		8	102	4	10	OK
B	10	5		8	9	5	8	OK
C	8	5		7	7	5	5	OK

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 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.
																				23				
10	1	3.30	I	1	20		N	1945	110			110	1.00	1809			1809	0.061			14	20	0.376	19
11	1	3.30	I	2				4170		375		375	0.00	4170			4170	0.090	0.090		20	20	0.556	33
1	3	4.00	II	1	15		N	2015	147			147	1.00	1832			1832	0.080	0.080		18	18	0.556	26
1,2	3	4.00	II	1	20			2155	143	20		163	0.88	2022			2022	0.080			18	18	0.556	29
3	3	4.00	II	1	15			2155			90	90	1.00	1959			1959	0.046			10	18	0.317	16
5	4	3.50	IV	1			N	1965		213		213	0.00	1965			1965	0.108	0.108		24	24	0.556	36
5,6	4	3.50	IV	1	25			2105		217	10	227	0.04	2099			2099	0.108			24	24	0.555	38
7,9	5	4.50	V	1	25		N	2065	30		120	150	1.00	1948			1948	0.077	0.077		17	17	0.556	27
																		Stage 2 Pedestrian		22				

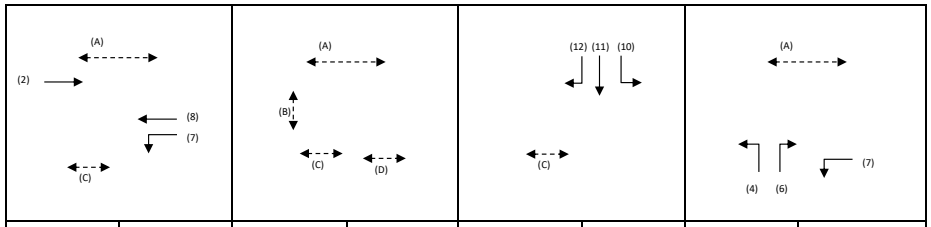
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J3 - Tai Chung Kiu Road / On Sum Street	2036 Design Case	J3_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.357	
Loss time	L =	42	sec
Total Flow	=	3145	pcu
Co = (1.5*L+5)/(1-Y)	=	105.8	sec
Cm = L/(1-Y)	=	65.3	sec
Yult	=	0.585	
R.C.ult = (Yult-Y)/Y*100%	=	63.9	%
Cp = 0.9*L/(0.9-Y)	=	69.6	sec
Ymax = 1-L/C	=	0.664	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	67.4	%



STAGE 1	INT= 9	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT= 8

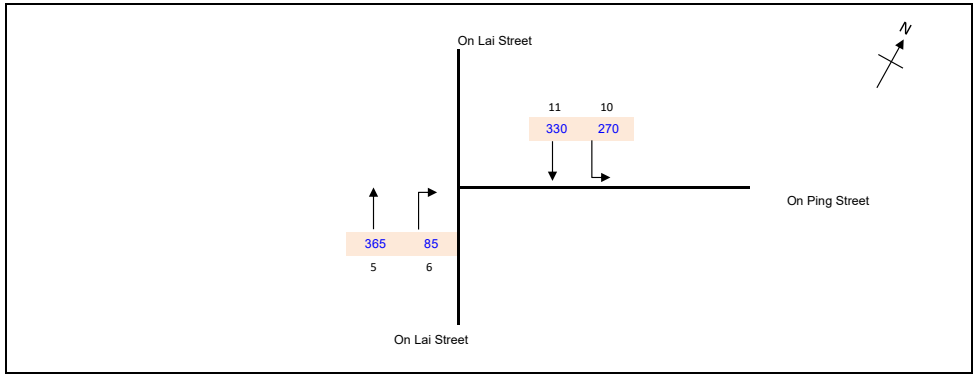
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	15	7		13	54	4	20	OK
B	15	7		13	11	3	10	OK
C	9	5		8	69	2	9	OK
D	11	5		9	5	1	9	OK

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.
																				18				
2	1	3.50	I	1			N	1965		205		205	0.00	1965			1965	0.104			24	33	0.397	32
2	1	3.50	I	2				4210		440		440	0.00	4210			4210	0.104			24	33	0.397	34
8	1	3.30	II	3				6255		885		885	0.00	6255			6255	0.141	0.141		33	33	0.538	45
7	1,4	5.00	III	1	20		N	2115	380			380	1.00	1967			1967	0.193			45	45	0.538	51
10	3	3.50	IV	1	15		N	1965	112			112	1.00	1786			1786	0.062	0.062		15	15	0.537	21
10,11	3	3.30	IV	1	20			2085	24	105		129	0.18	2057			2057	0.062			15	15	0.538	24
12	3	3.30	IV	2	25			4170			155	155	1.00	3934			3934	0.039			9	15	0.339	14
4	4	3.00	V	1	12.5		N	1915	262			262	1.00	1710			1710	0.153	0.153		36	36	0.538	39
4,6	4	3.00	V	1	20			2055	43		249	293	1.00	1912			1912	0.153			36	36	0.538	44
6	4	3.00	V	1	15			2055			286	286	1.00	1868			1868	0.153			36	36	0.538	43
																		Stage 2 Pedestrian		24				

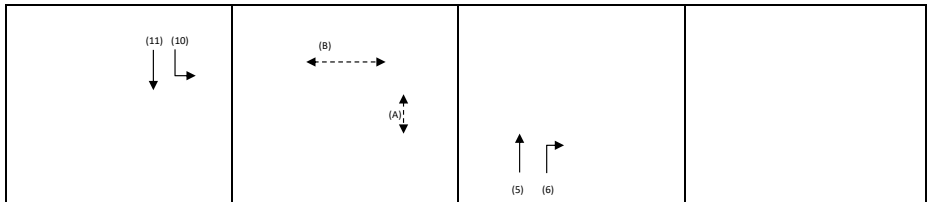
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J4 - On Lai Street / On Ping Street	2036 Design Case	J4_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	125 sec
Sum(y)		Y =	0.275
Loss time		L =	26 sec
Total Flow		=	1050 pcu
Co	= (1.5*L+5)/(1-Y)	=	60.7 sec
Cm	= L/(1-Y)	=	35.8 sec
Yult		=	0.705
R.C.ult	= (Yult-Y)/Y*100%	=	156.6 %
Cp	= 0.9*L/(0.9-Y)	=	37.4 sec
Ymax	= 1-L/C	=	0.792
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	159.5 %



STAGE 1	INT= 6	STAGE 2	INT= 0	STAGE 3	INT= 5	STAGE 4	INT=

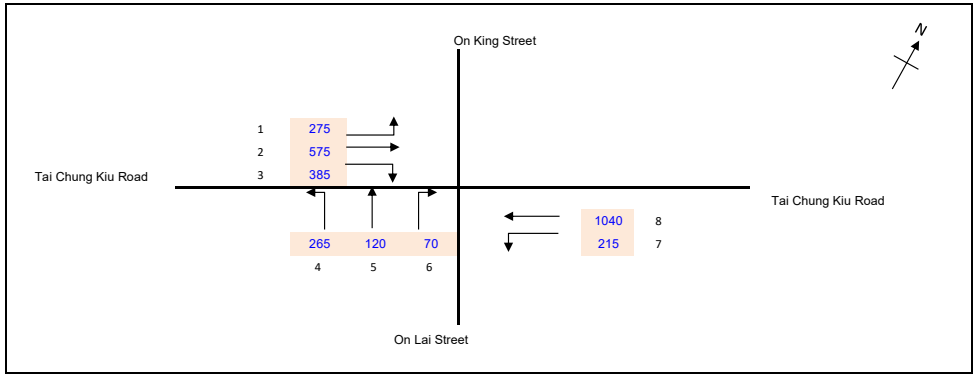
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	11	5		9	5	4	9	OK
B	10	5		8	9	1	8	OK

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.
																				8				
10,11	1	3.10	I	1	13		N	1925	270	3		273	0.99	1728			1728	0.158	0.158		57	57	0.346	31
11	1	3.10	I	1				2065		327		327	0.00	2065			2065	0.158			57	57	0.347	37
5	3	2.80	II	1			N	1895		221		221	0.00	1895			1895	0.116	0.116		42	42	0.347	31
5,6	3	2.80	II	1	18			2035		145	85	230	0.37	1974			1974	0.116			42	42	0.347	32
																		Stage 2 Pedestrian		18				

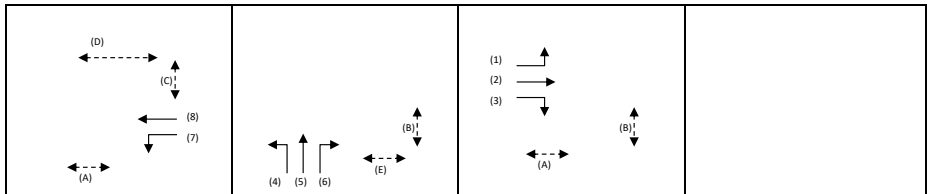
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Design Case	J5_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	130 sec
Sum(y)		Y =	0.557
Loss time		L =	20 sec
Total Flow		=	2945 pcu
Co	= (1.5*L+5)/(1-Y)	=	78.9 sec
Cm	= L/(1-Y)	=	45.1 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	34.7 %
Cp	= 0.9*L/(0.9-Y)	=	52.4 sec
Ymax	= 1-L/C	=	0.831
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	34.3 %



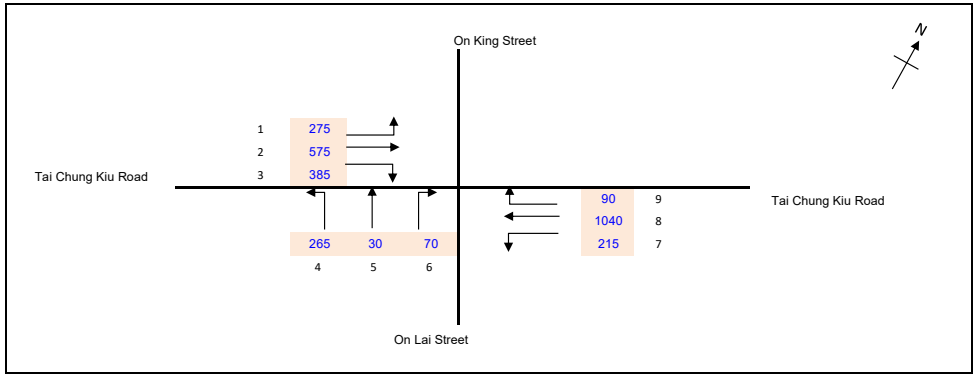
STAGE 1	INT= 8	STAGE 2	INT= 7	STAGE 3	INT= 8	STAGE 4	INT=

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	91	2	7	OK
B	7	5		6	71	3	10	OK
C	10	5		8	37	6	6	OK
D	6	5		5	33	6	10	OK
E	9	5		8	19	6	8	OK

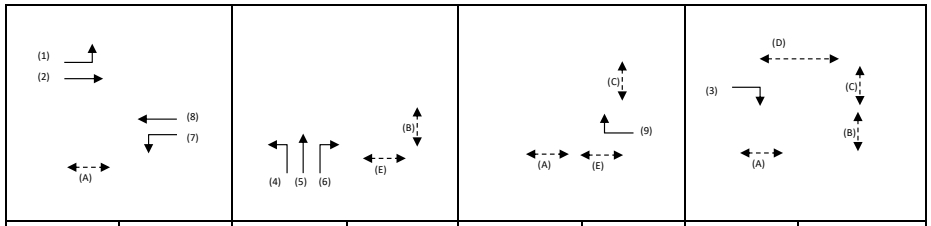
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				20				
7,8	1	3.50	I	1	10		N	1965	215	162		377	0.57	1810			1810	0.208	0.208		41	41	0.658	56
8	1	3.50	I	2				4210		878		878	0.00	4210			4210	0.208			41	41	0.658	65
4	2	3.50	II	1	10		N	1755	197			197	1.00	1526			1526	0.129	0.129		26	26	0.658	38
4,5,6	2	3.50	II	1	15			2105	68	120	70	258	0.53	1998			1998	0.129			26	26	0.658	45
1,2	3	3.50	III	1	10		N	1965	275	114		389	0.71	1777			1777	0.219	0.219		43	43	0.658	56
2	3	3.50	III	1				2105		461		461	0.00	2105			2105	0.219			43	43	0.658	67
3	3	3.50	III	1	15			2105			385	385	1.00	1914			1914	0.201			40	43	0.604	56

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

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J5 - Tai Chung Kiu Road / On Lai Street / On King Street	2036 Design Case (With Planned Improvement)	J5_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.551
Loss time		L =	20 sec
Total Flow		=	2945 pcu
Co	= (1.5*L+5)/(1-Y)	=	78.0 sec
Cm	= L/(1-Y)	=	44.6 sec
Yult		=	0.750
R.C.ult	= (Yult-Y)/Y*100%	=	36.0 %
Cp	= 0.9*L/(0.9-Y)	=	51.6 sec
Ymax	= 1-L/C	=	0.846
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	38.1 %



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

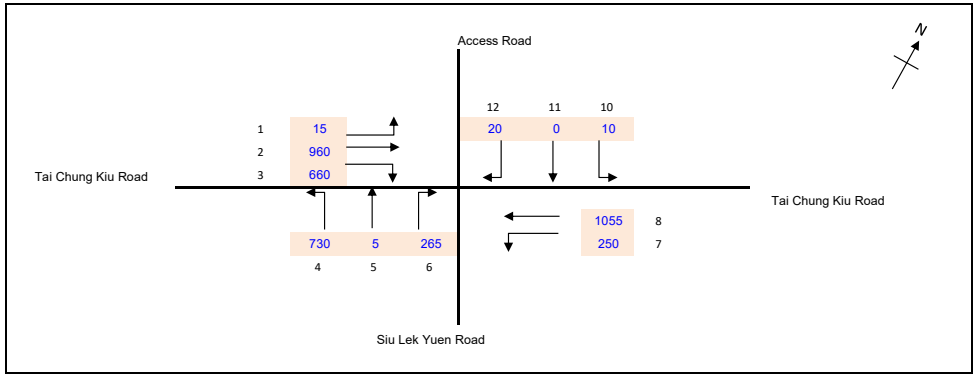
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	110	2	7	OK
B	7	5		6	54	3	10	OK
C	10	5		8	57	6	6	OK
D	9	5		8	11	6	10	OK
E	9	5		8	25	6	8	OK

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.
																				20				
1,2	1	3.80	I	1	15		N	1995	275	121		396	0.69	1866			1866	0.212	0.212		42	42	0.652	58
2	1	3.80	I	1				2135		454		454	0.00	2135			2135	0.212			42	42	0.651	66
3	4	3.80	V	1	20			2135			385	385	1.00	1986			1986	0.194	0.194		48	48	0.524	53
7,8	1	3.30	II	1	15		N	1945	215	170		385	0.56	1842			1842	0.209			42	42	0.641	56
8	1	3.30	II	2				4170		870		870	0.00	4170			4170	0.209			42	42	0.640	64
9	3	3.50	IV	1	15			2105			90	90	1.00	1914			1914	0.047	0.047		9	9	0.652	18
4	2	3.30	III	1	15		N	1945	173			173	1.00	1768			1768	0.098	0.098		20	20	0.651	32
4,5,6	2	3.30	III	1	20			2085	92	30	70	192	0.84	1961			1961	0.098			20	20	0.652	35

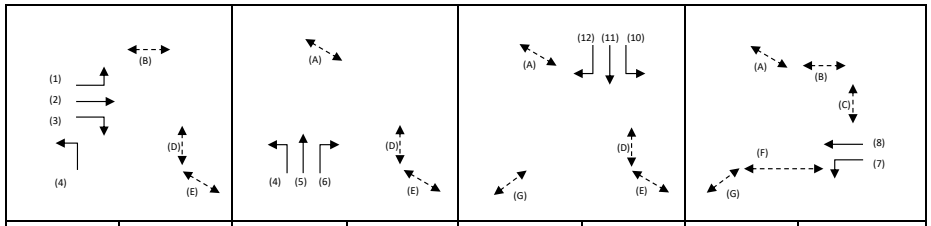
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J6 - Tai Chung Kiu Road / Siu Lek Yuen Road	2036 Design Case	J6_PM



No. of stages per cycle	N =		
No. of stage using for calculation	N =	4	
Cycle time	C =	125	sec
Sum(y)	Y =	0.477	
Loss time	L =	25	sec
Total Flow	=	3970	pcu
Co = (1.5*L+5)/(1-Y)	=	81.2	sec
Cm = L/(1-Y)	=	47.8	sec
Yult	=	0.713	
R.C.ult = (Yult-Y)/Y*100%	=	49.5	%
Cp = 0.9*L/(0.9-Y)	=	53.1	sec
Ymax = 1-L/C	=	0.800	
R.C.(C) = (0.9*Ymax-Y)/Y*100%	=	51.1	%



STAGE 1	INT= 6	STAGE 2	INT= 5	STAGE 3	INT= 7	STAGE 4	INT= 6

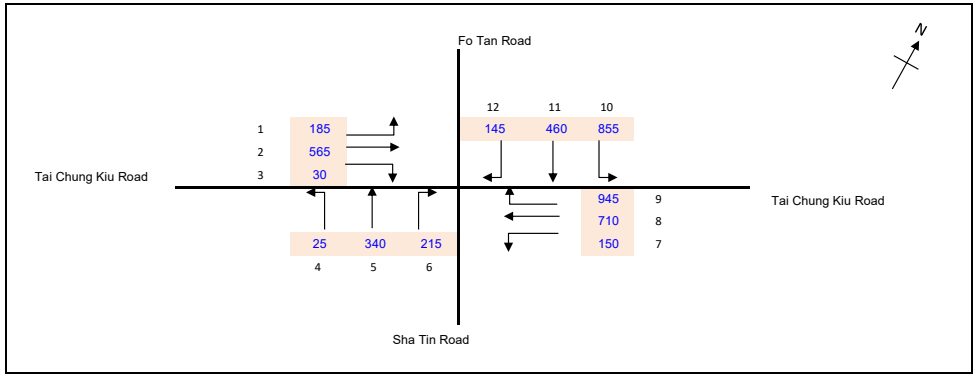
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	66	1	7	OK
B	5	5		5	80	2	13	OK
C	8	5		7	22	6	13	OK
D	9	5		8	74	2	12	OK
E	9	5		8	76	2	10	OK
F	9	5		8	24	6	11	OK
G	9	5		8	40	2	11	OK

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.
																				20				
1	1	3.50	I	1	12.5		N	1965	15			15	1.00	1754			1754	0.009			2	49	0.022	2
2	1	3.00	I	2				4110		960		960	0.00	4110			4110	0.234	0.234		49	49	0.596	61
3	1	3.00	I	2	22.5			4110			660	660	1.00	3853			3853	0.171			36	49	0.437	42
4	1,2	3.00	II	1	30		N	1915	351			351	1.00	1824			1824	0.192			40	71	0.341	32
4	1,2	3.00	II	1	35			2055	379			379	1.00	1971			1971	0.192			40	71	0.340	34
5,6	2	3.00	II	1	12.5			2055		5	132	137	0.96	1842			1842	0.074	0.074		16	16	0.595	25
6	2	3.00	II	1	10			2055			133	133	1.00	1787			1787	0.074			16	16	0.596	24
10,11,12	3	4.00	III	1	25		N	2015	10	0	5	15	1.00	1901			1901	0.008			2	5	0.197	3
12	3	4.00	III	1	15			2155			15	15	1.00	1959			1959	0.008			2	5	0.191	3
7	4	4.00	IV	1	20		N	2015	250			250	1.00	1874			1874	0.133			28	35	0.471	37
8	4	3.30	IV	3				6255		1055		1055	0.00	6255			6255	0.169	0.169		35	35	0.596	53
																	Stage 3 Provision of Min. g			5				

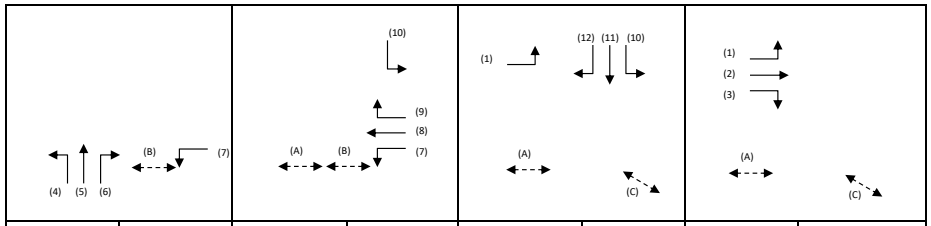
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Design Case	J7_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.579
Loss time		L =	21 sec
Total Flow		=	4620 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.7 sec
Cm	= L/(1-Y)	=	49.9 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	28.3 %
Cp	= 0.9*L/(0.9-Y)	=	58.9 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	30.4 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

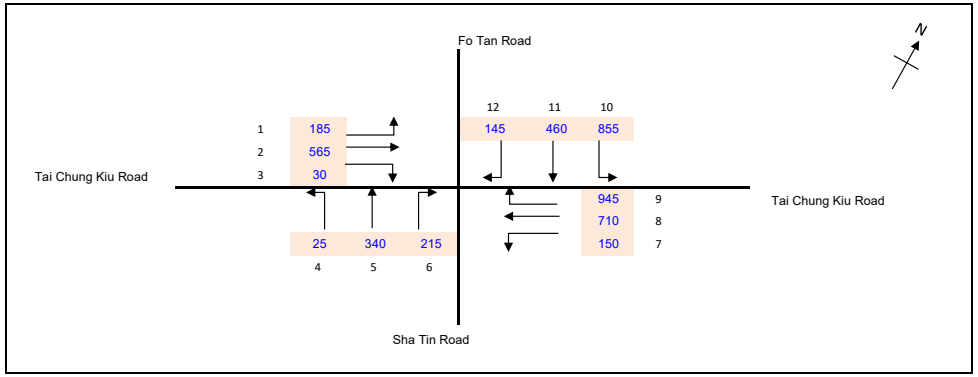
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	92	1	9	OK
B	5	5		5	69	8	8	OK
C	8	5		7	42	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		25	25	0.690	45
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			25	25	0.690	49
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			25	25	0.690	46
7	1,2	5.00	II	1	35		N	2115	150			150	1.00	2028		-900	1128	0.133			25	85	0.203	11
8	2	3.00	III	3				6165		710		710	0.00	6165			6165	0.115			22	47	0.319	33
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		47	47	0.690	65
10	2,3	3.00	IV	1	12.5		N	1915	408			408	1.00	1710			1710	0.239			45	88	0.352	28
10	2,3	3.00	IV	1	15			2055	447			447	1.00	1868			1868	0.239			45	88	0.353	31
11	3	3.00	V	1				2055		308		308	0.00	2055			2055	0.150	0.150		28	28	0.690	52
11,12	3	3.00	V	1	20			2055		152	145	297	0.49	1982			1982	0.150			28	28	0.690	50
1	3,4	3.00	VI	1	12.5		N	1915	185			185	1.00	1710			1710	0.108			20	49	0.288	25
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.690	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.690	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.690	18

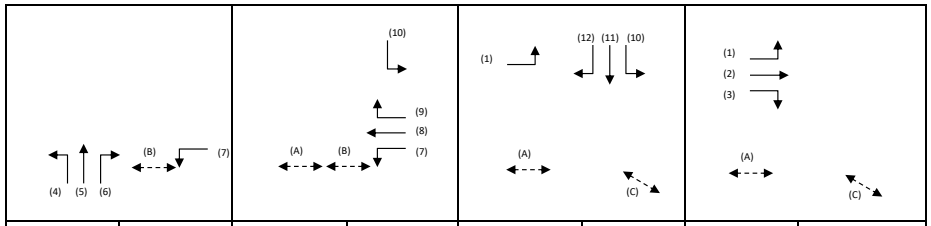
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J7 - Tai Chung Kiu Road / Fo Tan Road / Sha Tin Road	2036 Design Case (With Planned Improvement)	J7_PM_PI



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.541
Loss time		L =	21 sec
Total Flow		=	4620 pcu
Co	= (1.5*L+5)/(1-Y)	=	79.5 sec
Cm	= L/(1-Y)	=	45.7 sec
Yult		=	0.743
R.C.ult	= (Yult-Y)/Y*100%	=	37.3 %
Cp	= 0.9*L/(0.9-Y)	=	52.6 sec
Ymax	= 1-L/C	=	0.838
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	39.5 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 7	STAGE 4	INT= 5

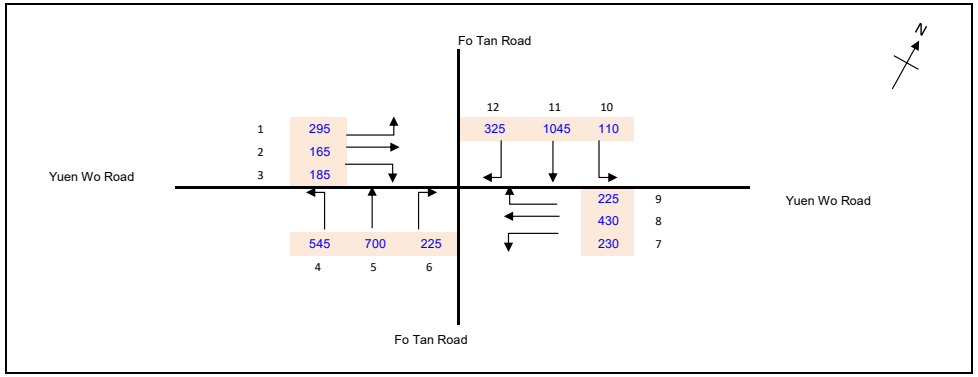
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	90	1	9	OK
B	5	5		5	74	8	8	OK
C	8	5		7	37	2	5	OK

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 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.
																				21				
4,5	1	3.30	I	1	12.5		N	1945	25	231		256	0.10	1922			1922	0.133	0.133		27	27	0.645	44
5,6	1	3.30	I	1	30			2085		278	0	278	0.00	2085			2085	0.133			27	27	0.645	48
6	1	3.30	I	1	25			2085			262	262	1.00	1967			1967	0.133			27	27	0.645	45
7	1,2	5.00	II	1	35		N	2115	150			150	1.00	2028		-900	1128	0.133			27	90	0.192	10
8	2	3.00	III	3				6165		710		710	0.00	6165			6165	0.115			23	50	0.298	31
9	2	3.00	III	2	17.5			4110			945	945	1.00	3786			3786	0.250	0.250		50	50	0.645	63
10	2,3	3.00	IV	1	12.5		N	1915	408			408	1.00	1710			1710	0.239			48	86	0.361	30
10	2,3	3.00	IV	1	15			2055	447			447	1.00	1868			1868	0.239			48	86	0.362	33
11	3	3.00	V	2				4110		460		460	0.00	4110			4110	0.112	0.112		23	23	0.645	41
12	3	3.00	V	1	20			2055			145	145	1.00	1912			1912	0.076			15	23	0.437	26
1	3,4	3.00	VI	1	12.5		N	1915	185			185	1.00	1710			1710	0.108			22	44	0.321	27
2	4	3.00	VII	2				4110		190		190	0.00	4110			4110	0.046	0.046		9	9	0.645	19
2,3	4	3.00	VII	1	30			2055		95	0	95	0.00	2055			2055	0.046			9	9	0.645	19
3	4	3.00	VII	1	25			2055			90	90	1.00	1939			1939	0.046			9	9	0.645	18

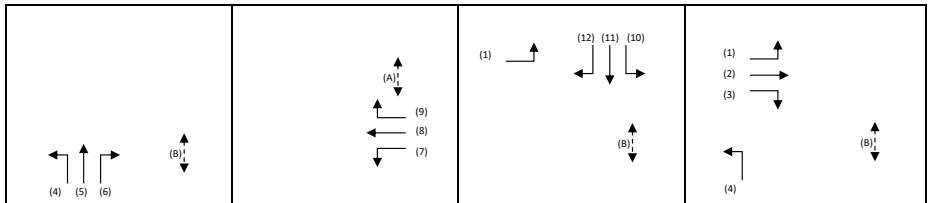
NOTE : 'O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J8 - Fo Tan Road / Yuen Wo Road	2036 Design Case	J8_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	130 sec
Sum(y)		Y =	0.474
Loss time		L =	23 sec
Total Flow		=	4480 pcu
Co	= (1.5*L+5)/(1-Y)	=	75.1 sec
Cm	= L/(1-Y)	=	43.7 sec
Yult		=	0.728
R.C.ult	= (Yult-Y)/Y*100%	=	53.4 %
Cp	= 0.9*L/(0.9-Y)	=	48.6 sec
Ymax	= 1-L/C	=	0.823
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	56.2 %



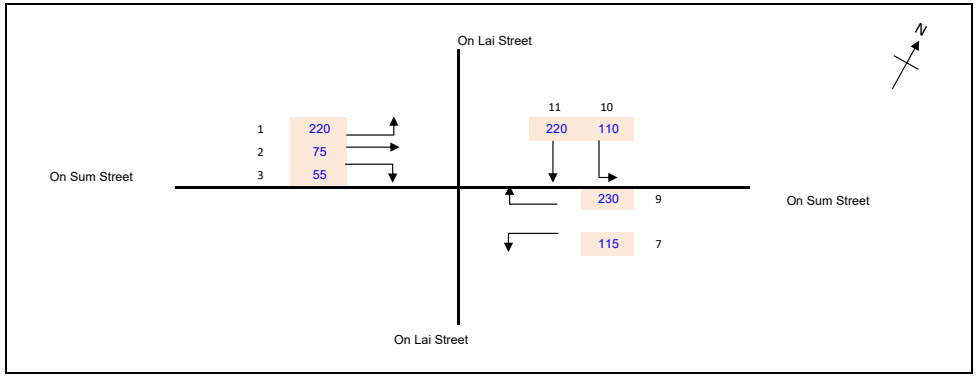
STAGE 1	INT= 7	STAGE 2	INT= 8	STAGE 3	INT= 6	STAGE 4	INT= 6

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	13	6		11	23	8	7	OK
B	9	5		8	83	2	11	OK

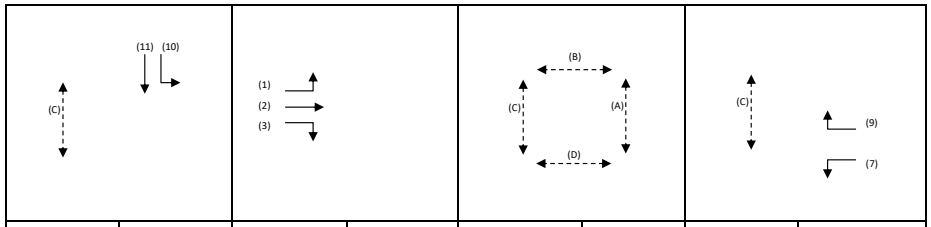
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				23				
4	1,4	3.00	I	1	15		N	1915	545			545	1.00	1741			1741	0.313			71	52	0.775	70
5	1	3.00	I	3				6165		700		700	0.00	6165			6165	0.114	0.117		26	26	0.560	40
6	1	3.00	I	1	22.5			2055			225	225	1.00	1927			1927	0.117			26	26	0.576	39
7	2	3.00	II	1	15		N	1915	230			230	1.00	1741			1741	0.132	0.132		30	30	0.576	38
8	2	3.00	II	1				2055		223		223	0.00	2055			2055	0.109			24	30	0.473	37
8,9	2	3.00	II	1	27.5			2055		207	15	222	0.07	2047			2047	0.109			24	30	0.473	37
9	2	3.00	II	1	22.5			2055			210	210	1.00	1927			1927	0.109			25	30	0.475	35
10	3	3.30	III	1	15		N	1945	110			110	1.00	1768			1768	0.062			14	38	0.215	17
10,11	3	3.30	III	1	20			2085	0	348		348	0.00	2085			2085	0.167	0.167		38	38	0.576	54
11	3	3.30	III	1				2085		348		348	0.00	2085			2085	0.167			38	38	0.576	54
11,12	3	3.30	III	1	27.5			2085		348	0	348	0.00	2085			2085	0.167			38	38	0.576	54
12	3	3.30	III	1	22.5			2085			325	325	1.00	1955			1955	0.166			38	38	0.573	50
1	3,4	3.30	IV	1	15		N	1945	295			295	1.00	1768			1768	0.167			38	63	0.345	33
2	4	3.30	IV	1				2085		120		120	0.00	2085			2085	0.058	0.058		13	13	0.569	23
2,3	4	3.30	IV	1	25			2085		45	72	117	0.62	2011			2011	0.058			13	13	0.575	23
3	4	3.30	IV	1	20			2085			113	113	1.00	1940			1940	0.058			13	13	0.576	22

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J9 - On Lai Street / On Sum Street	2036 Design Case	J9_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	90 sec
Sum(y)		Y =	0.351
Loss time		L =	34 sec
Total Flow		=	1025 pcu
Co	= (1.5*L+5)/(1-Y)	=	86.3 sec
Cm	= L/(1-Y)	=	52.4 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	83.6 %
Cp	= 0.9*L/(0.9-Y)	=	55.8 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	59.4 %



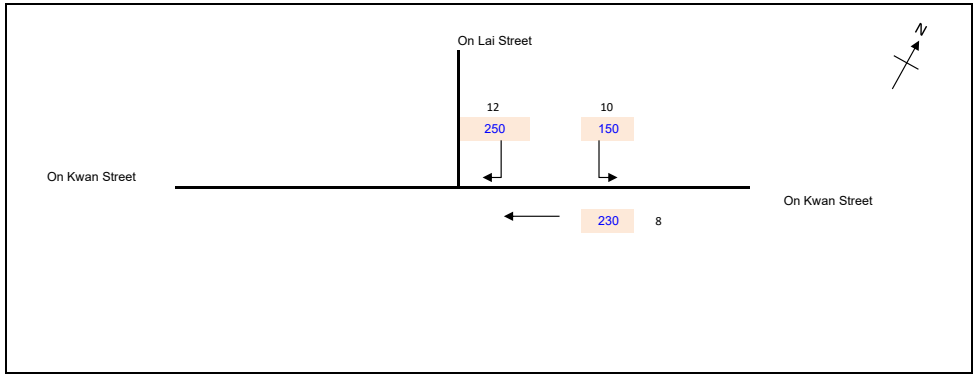
STAGE 1	INT= 5	STAGE 2	INT= 5	STAGE 3	INT=	STAGE 4	INT= 5

Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	6	6	OK
B	8	5		7	8	5	7	OK
C	8	5		7	58	2	11	OK
D	8	5		7	6	6	11	OK

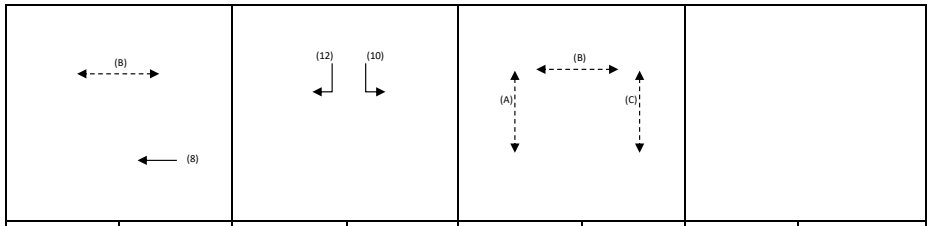
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradien %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				11				
10,11	1	3.50	I	1	15		N	1965	110	0		110	1.00	1786			1786	0.062	0.062		10	10	0.565	15
11	1	3.50	I	2				4210		220		220	0.00	4210			4210	0.052			8	10	0.479	15
1,2	2	5.00	II	1	15		N	2115	220	0		220	1.00	1923			1923	0.114	0.114		18	18	0.565	26
2,3	2	5.00	II	1	20			2255		75	55	130	0.42	2186			2186	0.059			9	18	0.294	16
7,9	4	5.00	III	1	20		N	2115	115		230	345	1.00	1967			1967	0.175	0.175		28	28	0.565	36
																		Stage 3 Pedestrian		23				

Mott MacDonald Restricted

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J10 - On Lai Street / On Kwan Street	2036 Design Case	J10_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	3
Cycle time		C =	90 sec
Sum(y)		Y =	0.239
Loss time		L =	34 sec
Total Flow		=	630 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.6 sec
Cm	= L/(1-Y)	=	44.7 sec
Yult		=	0.645
R.C.ult	= (Yult-Y)/Y*100%	=	169.8 %
Cp	= 0.9*L/(0.9-Y)	=	46.3 sec
Ymax	= 1-L/C	=	0.622
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	134.3 %



STAGE 1	INT= 7	STAGE 2	INT= 6	STAGE 3	INT= 0	STAGE 4	INT=

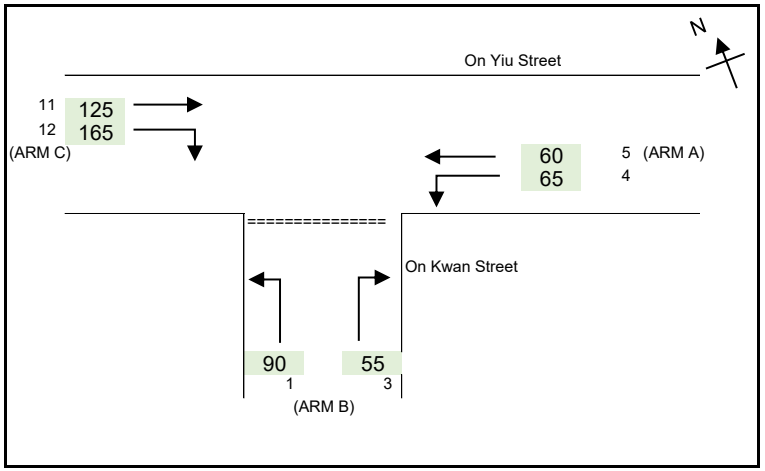
Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
A	8	5		7	7	5	12	OK
B	8	5		7	42	3	12	OK
C	8	5		7	6	6	7	OK

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.
																				10				
8	1	4.50	I	1			N	2065		230		230	0.00	2065			2065	0.111	0.111		26	26	0.384	24
10	2	3.50	II	1	15		N	1965	150			150	1.00	1786			1786	0.084			20	30	0.253	15
12	2	3.50	II	1	20			2105			250	250	1.00	1958			1958	0.128	0.128		30	30	0.384	25
																		Stage 3 Pedestrian		24				

Mott MacDonald Restricted

PRIORITY JUNCTION CALCULATION

		Project No. : -
J11 - On Yiu Street / On Kwan Street	2036 Design Case	J11_PM



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)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	5.00	(metres)
W cr	=	0	(metres)
q a-b	=	65	(pcu/hr)
q a-c	=	60	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	5.00	(metres)
Vr c-b	=	100	(metres)
q c-a	=	125	(pcu/hr)
q c-b	=	165	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.00	(metres)
W b-c	=	3.00	(metres)
Vl b-a	=	55	(metres)
Vr b-a	=	70	(metres)
Vr b-c	=	70	(metres)
q b-a	=	55	(pcu/hr)
q b-c	=	90	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.846
E	=	0.897
F	=	1.107
Y	=	0.828

THE CAPACITY OF MOVEMENT :

Q b-a	=	428
Q b-c	=	645
Q c-b	=	783
Q b-ac	=	541

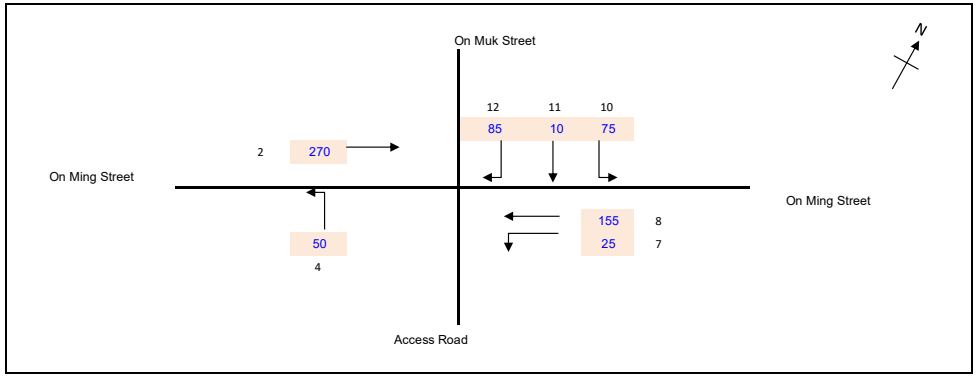
TOTAL FLOW = 560 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

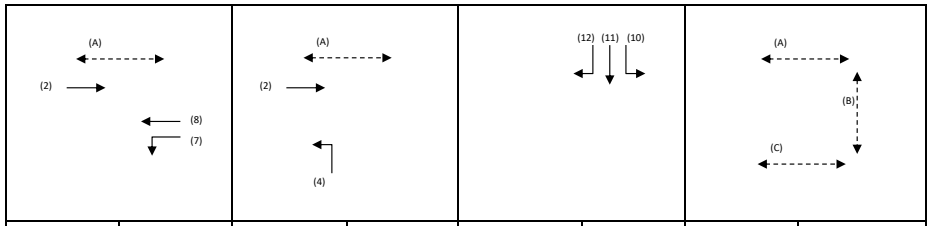
DFC b-a	=	0.1285
DFC b-c	=	0.1395
DFC c-b	=	0.2107
DFC b-ac	=	0.2680

CRITICAL DFC = 0.27

MOTT MACDONALD	TRAFFIC SIGNAL CALCULATION	
		PROJECT NO: -
J12 - On Ming Street / On Muk Street	2036 Design Case	J12_PM



No. of stages per cycle		N =	
No. of stage using for calculation		N =	4
Cycle time		C =	110 sec
Sum(y)		Y =	0.114
Loss time		L =	40 sec
Total Flow		=	670 pcu
Co	= (1.5*L+5)/(1-Y)	=	73.4 sec
Cm	= L/(1-Y)	=	45.1 sec
Yult		=	0.600
R.C.ult	= (Yult-Y)/Y*100%	=	426.1 %
Cp	= 0.9*L/(0.9-Y)	=	45.8 sec
Ymax	= 1-L/C	=	0.636
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	402.2 %



STAGE 1	INT= 5	STAGE 2	INT= 6	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
A	8	5		7	69	3	11	OK
B	8	5		7	11	7	10	OK
C	7	6		5	5	7	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 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.
																				12				
2	1,2	4.00	I	1			N	2015		130		130	0.00	2015			2015	0.065			40	40	0.178	15
2	1,2	4.00	I	1				2155		140		140	0.00	2155			2155	0.065			40	40	0.179	16
7,8	1	3.50	II	1	20		N	1965	25	61		86	0.29	1923			1923	0.045	0.045		27	27	0.179	12
8	1	3.50	II	1				2105		94		94	0.00	2105			2105	0.045			27	27	0.179	13
4	2	3.50	III	1	20		N	1965	50			50	1.00	1828			1828	0.027	0.027		17	17	0.179	8
10,11,12	3	5.00	IV	1	30		N	2115	75	10	0	85	0.88	2026			2026	0.042			26	26	0.179	12
12	3	5.00	IV	1	25			2255			85	85	1.00	2127			2127	0.040	0.042		25	26	0.171	12
																		Stage 4 Pedestrian		28				

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

Mott MacDonald Restricted

ROUNDABOUT CALCULATION

Project No. -

J13 - On Ming Street / On Muk Street / On Yiu Street | 2036 Design Case | J13_PM

ARM			A	C	D
INPUT PARAMETERS:					
V	=	Approach half width (m)	6.70	4.60	7.30
E	=	Entry width (m)	12.00	15.00	13.00
L	=	Effective length of flare (m)	12.00	12.00	5.00
R	=	Entry radius (m)	22.00	25.00	32.00
D	=	Inscribed circle diameter (m)	40.00	40.00	40.00
A	=	Entry angle (degree)	30.00	30.00	30.00
Q	=	Entry flow (pcu/h)	180	345	75
Qc	=	Circulating flow across entry (pcu/h)	400	250	450
OUTPUT PARAMETERS:					
S	=	Sharpness of flare = 1.6(E-V)/L	0.71	1.39	1.82
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	1.01	1.02
X2	=	V + ((E-V)/(1+2S))	8.90	7.36	8.53
M	=	EXP((D-60)/10)	0.14	0.14	0.14
F	=	303*X2	2696	2229	2583
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td(1+0.2*X2)	0.84	0.75	0.82
Qe	=	K(F-Fc*Qc)	2370	2062	2256
DFC	=	Design flow/Capacity = Q/Qe	0.08	0.17	0.03

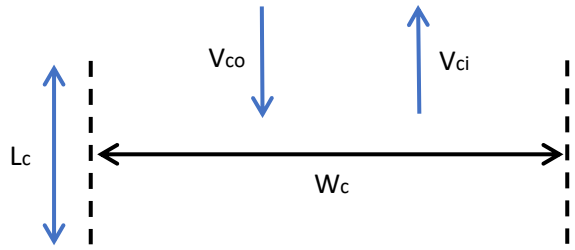
Total In Sum = **600** **PCU**

DFC of Critical Approach = **0.17**

Appendix E – Pedestrian Crossing Calculation Sheets

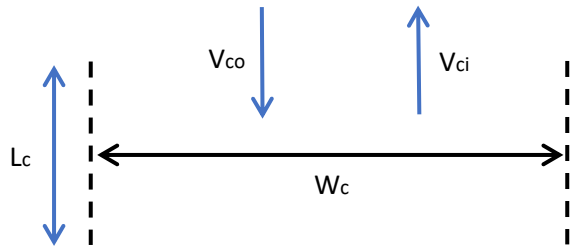
Project	CE19/2023 - Task Order 4	**Division/department**	
Calculated by	TC	**Date**	22/6/2026
Checked by	IC	**Date**	
Calculations for	2025 Base Case	**Job/file number**	# / #
		Sheet number	1 of 3

J3- Crossing C1 (On Sum Street) (AM)



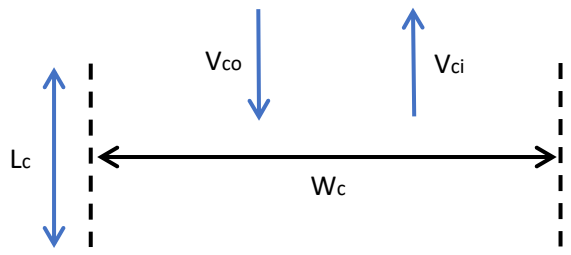
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	2.1666667	27.692308	60
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		15.6	
Crossing Time	twc=Lc/1.3716		9.4779819	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.3422605	
Average Pedestrian Space	Mc=TSc/Twc		45.579323	
		LOS	A	

J3- Crossing C2 (On Sum Street) (AM)



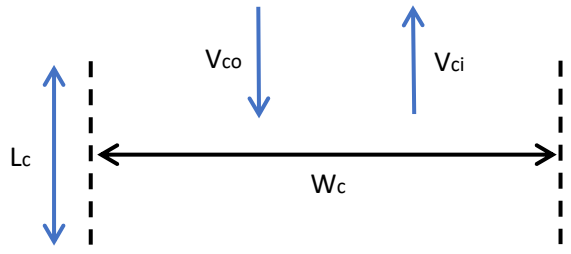
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	2.1666667	27.692308	60
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.4779819	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.3422605	
Average Pedestrian Space	Mc=TSc/Twc		244.41912	
		LOS	A	

J3- Crossing C3 (Tai Chung Kiu Road) (AM)



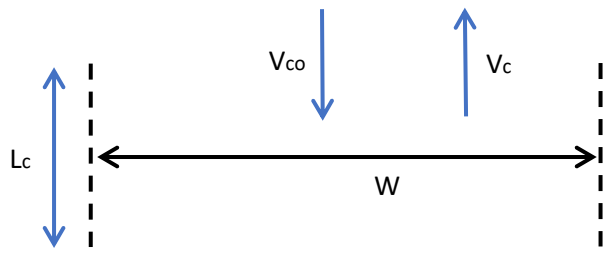
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	13	27.692308	360
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.091864	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		3.2699038	
Average Pedestrian Space	Mc=TSc/Twc		16.775723	
		LOS	A	

J3- Crossing C1 (On Sum Street) (PM)



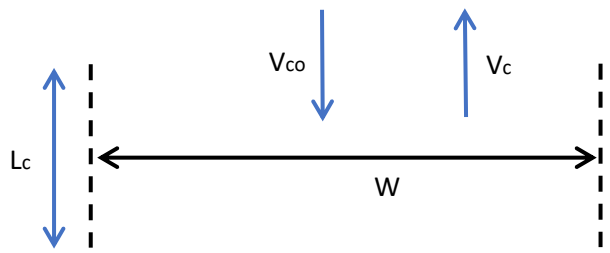
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	1.2638889	27.692308	35
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		15.6	
Crossing Time	twc=Lc/1.3716		9.4779819	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.1996519	
Average Pedestrian Space	Mc=TSc/Twc		78.135982	
		LOS	A	

J3- Crossing C2 (On Sum Street) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	1.263889	27.69231	35
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.199652	
Average Pedestrian Space	Mc=TSc/Twc		419.0042	
		LOS	A	

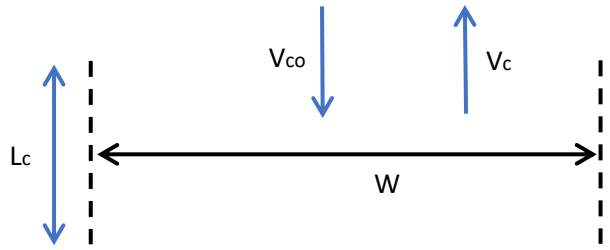
J3- Crossing C3 (Tai Chung Kiu Road) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	5.597222	27.69231	155
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.09186	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		1.407875	
Average Pedestrian Space	Mc=TSc/Twc		38.96297	
		LOS	A	

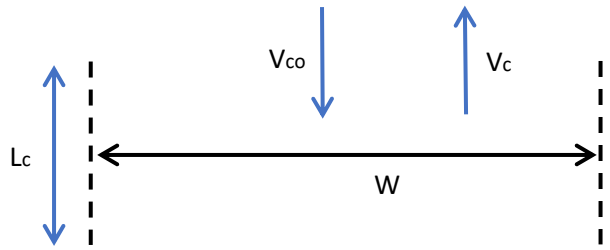
Project	CE19/2023 - Task Order 4	**Division/department**	
Calculated by	TC	**Date**	22/6/2026
Checked by	IC	**Date**	
Calculations for	2036 Reference Case	**Job/file number**	# / #
		Sheet number	2 of 3

J3- Crossing C1 (On Sum Street) (AM)



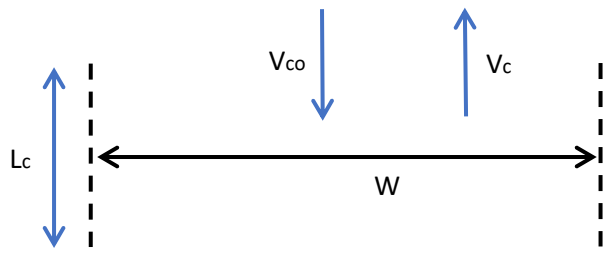
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	2.166667	27.69231	60
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		15.6	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.34226	
Average Pedestrian Space	Mc=TSc/Twc		45.57932	
		LOS	A	

J3- Crossing C2 (On Sum Street) (AM)



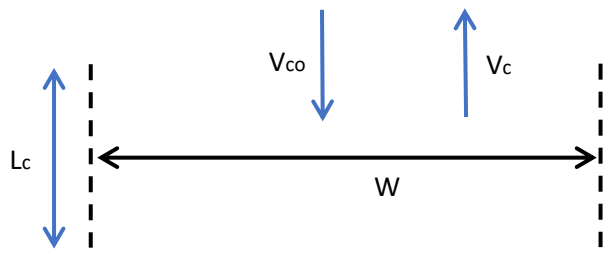
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	2.166667	27.69231	60
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.34226	
Average Pedestrian Space	Mc=TSc/Twc		244.4191	
		LOS	A	

J3- Crossing C3 (Tai Chung Kiu Road) (AM)



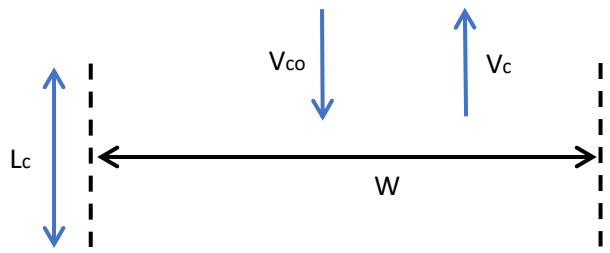
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	13.90278	27.69231	385
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.09186	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		3.49698	
Average Pedestrian Space	Mc=TSc/Twc		15.68639	
		LOS	A	

J3- Crossing C1 (On Sum Street) (PM)



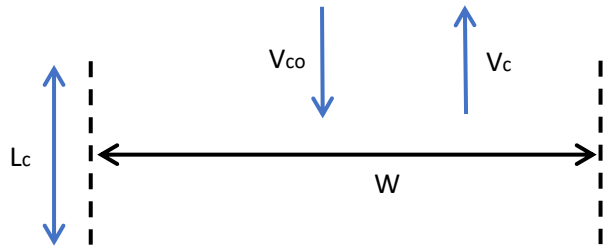
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	1.263889	27.69231	35
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		15.6	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.199652	
Average Pedestrian Space	Mc=TSc/Twc		78.13598	
		LOS	A	

J3- Crossing C2 (On Sum Street) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	1.263889	27.69231	35
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		0.199652	
Average Pedestrian Space	Mc=TSc/Twc		419.0042	
		LOS	A	

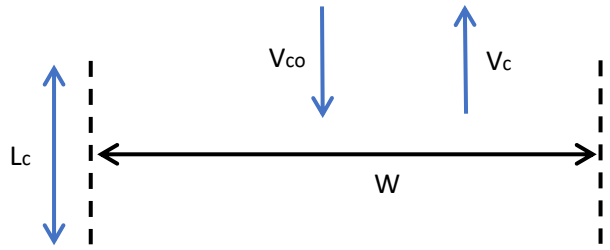
J3- Crossing C3 (Tai Chung Kiu Road) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	6.138889	27.69231	170
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.09186	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		1.544121	
Average Pedestrian Space	Mc=TSc/Twc		35.52506	
		LOS	A	

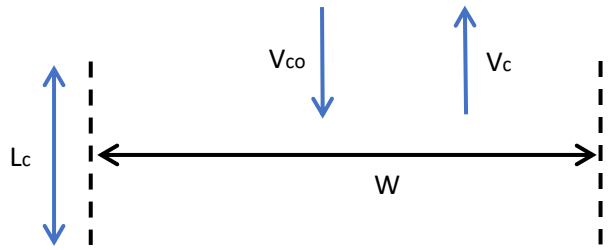
Project	CE19/2023 - Task Order 4	**Division/department**	
Calculated by	TC	**Date**	22/6/2026
Checked by	IC	**Date**	
Calculations for	2036 Design Case	**Job/file number**	# / #
		Sheet number	3 of 3

J3- Crossing C1 (On Sum Street) (AM)



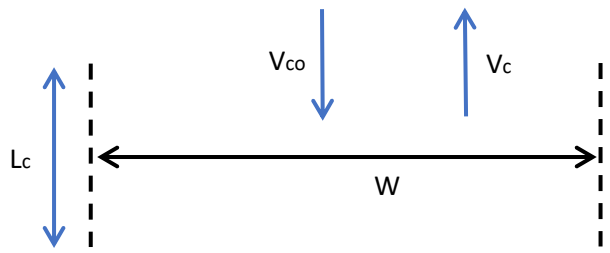
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	35.38889	27.69231	980
	Vco=			
	C=	130		
	Gc=	24	rc=	106
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		12.48	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		5.590254	
Average Pedestrian Space	Mc=TSc/Twc		2.232457	
		LOS	C	

J3- Crossing C2 (On Sum Street) (AM)



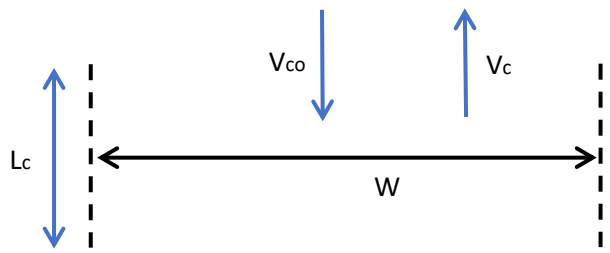
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	34.30556	27.69231	950
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		5.419124	
Average Pedestrian Space	Mc=TSc/Twc		15.437	
		LOS	A	

J3- Crossing C3 (Tai Chung Kiu Road) (AM)



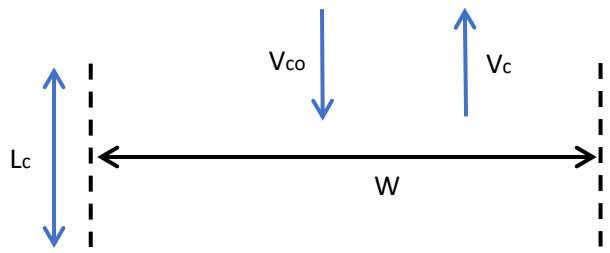
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	28.52778	27.69231	790
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.09186	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		7.175622	
Average Pedestrian Space	Mc=TSc/Twc		7.644633	
		LOS	A	

J3- Crossing C1 (On Sum Street) (PM)



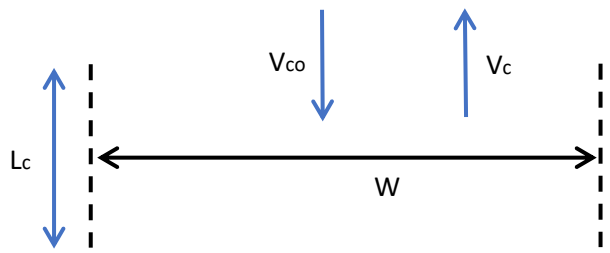
		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	33.22222	27.69231	920
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	13	Wc	2.4
Crosswalk Area	Ac=	31.2		
Crosswalk Time-Space	Tsc=Ac x gc / 60		15.6	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		5.247994	
Average Pedestrian Space	Mc=TSc/Twc		2.972565	
		LOS	C	

J3- Crossing C2 (On Sum Street) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	33.22222	27.69231	920
	Vco=			
	C=	130		
	Gc=	99	rc=	31
	Lc=	13	Wc	3.9
Crosswalk Area	Ac=	50.7		
Crosswalk Time-Space	Tsc=Ac x gc / 60		83.655	
Crossing Time	twc=Lc/1.3716		9.477982	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		5.247994	
Average Pedestrian Space	Mc=TSc/Twc		15.94038	
		LOS	A	

J3- Crossing C3 (Tai Chung Kiu Road) (PM)



		Ped/cyc	Cyc/hr	Ped/hr
	Vci=	38.09722	27.69231	1055
	Vco=			
	C=	130		
	Gc=	30	rc=	100
	Lc=	20.7	Wc	5.3
Crosswalk Area	Ac=	109.71		
Crosswalk Time-Space	Tsc=Ac x gc / 60		54.855	
Crossing Time	twc=Lc/1.3716		15.09186	
Crosswalk Occupancy Time	Twc=(Vci+Vco)(twc/60)		9.582635	
Average Pedestrian Space	Mc=TSc/Twc		5.724417	
		LOS	A	

[redacted]