PROPOSED MINOR RELAXATION OF MAXIMUM BUILDING HEIGHT AND PLOT RATIO RESTRICTIONS FOR PERMITTED COMPOSITE RESIDENTIAL DEVELOPMENT AT WU NGA LOK YEUNG, FANLING, NEW TERRITORIES

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MINOR RELAXATION OF PERMITTED BUILDING HEIGHT APPROVED UNDER TPB NO. A/FLN/30 TO FACILITATE ADOPTION OF MODULAR INTEGRATED CONSTRUCTION (TPB REF: A/FLN/32)

Comments/ Suggestions		**Applicant's Responses**
A.	**Comments received from Transport Department on 2.10.2024 (Contact Person: Mr Hoffman Chu (Tel.: 2399 6933):**	
1.	The Further Information only contains the result of the traffic impact assessment. The Applicant should provide some relevant information, such as assumptions for the assessment and calculation, for our reference.	Please refer to ***Attachment 2*** for the minor clarifications on the revised Traffic Review.

Date: 25 October 2024
File Ref: WNLYFN

Attachment 2

REVISED TRAFFIC REVIEW

Appendix 1 – Traffic Review

In order to evaluate the traffic impact due to the change of the number of flats from 1,240 to 2,300 under Current Planning Application (A/FLN/32), mean trip rates as stipulated in Transport Planning and Design Manual (TPDM) have been adopted to review the changes of traffic generation and attraction, which is detailed in below **Table 1**.

Table 1 Adopted Traffic Generation and Attraction Rates (in pcu/hr/flat)

No. of Flats	Average Flat Size	AM		PM	
		Gen	Att	Gen	Att
1,240 Approved Planning Application (A/FLN/30)	70m^2	0.0888 (1)	0.0515 (1)	0.0356 (1)	0.0480 (1)
2,300 Current Planning Application (A/FLN/32)	< 40m^2	0.0718 (2)	0.0425 (2)	0.0286 (2)	0.0370 (2)

Notes: (1) Based on mean trip rates for private development – high density / R(A) of average flat size of 70m^2 as stipulated in Volume 1 Chapter 3 Appendix Table 1 of Transport Planning and Design Manual (TPDM).

(2) Based on mean trip rates for private development – high density / R(A) of average flat size of 60m^2 as stipulated in Volume 1 Chapter 3 Appendix Table 1 of Transport Planning and Design Manual (TPDM). Also, there are no mean trip rates in TPDM for private development – high density / R(A) of average flat size of 40m^2. Hence mean trip rates for private development – high density / R(A) of average flat size of 60m^2 have been adopted as conservative approach.

Based on the number of flats and the adopted trip rates as shown in above **Table 1**, the changes of traffic generation and attraction under Approved Planning Application (A/FLN/30) and Current Planning Application (A/FLN/32) are summarized and compared in below **Table 2**.

Table 2 Comparison of Traffic Generation and Attraction under Approved Planning Application (A/FLN/30) and Current Planning Application (A/FLN/32)

No. of Flats	Average Flat Size	AM		PM	
		Gen	Att	Gen	Att
1,240 Approved Planning Application (A/FLN/30) [A]	70m^2	111	64	45	60
2,300 Current Planning Application (A/FLN/32) [B]	< 40m^2	166	98	66	86
Net Difference [B]-[A] :		**+55**	**+34**	**+21**	**+26**

Taking into consideration the completion year of the proposed development will be at year 2029 tentatively, year 2036 was adopted as design year for traffic assessment. The net difference of traffic flows in above **Table 2** was then distributed and superimposed onto the year 2036 traffic forecasts of the future road networks (under TPB No. A.FLN/30) in accordance with the trip distribution of BDTM (details see below and illustrated diagrammatically in **Figure Nos. TR-1** and **TR-2**) to derive the design year 2036 traffic forecasts.

Traffic Generation:

- 60% traffic (to HK/Kowloon/NENT) towards Fanling Highway EB/SB via junctions along Ma Sik Road EB (i.e. Junctions FJ28, FJ29 & FJ20) and Fanling Bypass Eastern Section EB/SB
- 10% traffic (to Fanling) towards Fan Leng Lau Road SB via Junction FJ38 & FJ28
- 30% traffic (to NWNT) towards Fanling Highway WB via junctions along Ma Sik Road WB (i.e. Junctions FJ28, FJ27, FJ55, FJ6 & FJ7)

Traffic Attraction:

- 60% traffic (from HK/Kowloon/NENT) from Fanling Highway WB/NB via Fanling Bypass Eastern Section WB/NB and junctions along Roads L3, L4 & L1 (i.e. Junctions FJ21, FJ25 & FJ26)
- 10% traffic (from Fanling) from Fan Leng Lau Road NB via Junction FJ38 & FJ28
- 30% traffic (from NWNT) from Fanling Highway EB via junctions along Ma Sik Road EB (i.e. Junctions FJ7, FJ6, FJ55, FJ27 & FJ28)

Operational performance of critical junctions and road links in the vicinity of the proposed development has been assessed based on the latest design year 2036 traffic forecasts and compared with that in the approved Planning Application - A/FLN/30 which is summarized in below **Tables 3** and **4** respectively and corresponding junction calculation sheets are enclosed.

Table 3 Comparison of Operational Performance of Critical junctions in Design Year 2036

Critical Junction	Design Year 2036 (With Proposed Development) Reserve Capacity (RC) / Design Flow to Capacity (DFC)			
	Approved Planning Application (A/FLN/30) (1)		Current Planning Application (A/FLN/32) (2)	
	AM Peak	PM Peak	AM Peak	PM Peak
Jockey Club Road / So Kwun Po Road / Ma Sik Road (FJ6)	+28%	+45%	+25%	+44%
So Kwun Po Interchange (FJ7)	0.72	0.70	0.73	0.70
Lung Yeuk Tau Roundabout (FJ20)	0.67	0.66	0.69	0.66
Fanling Bypass / FLN Road L3 (FJ21)	0.44	0.44	0.44	0.44
FLN Road L3 / FLN Road L4 (FJ25)	+32%	+42%	+32%	+42%
FLN Road L1 / FLN Road L4 (FJ26)	+45%	+49%	+43%	+48%
FLN Road L3/Ma Sik Road (FJ27)	+25%	+39%	+24%	+39%
FLN Road L1/Ma Sik Road/Fan Leng Lau Road (FJ28)	+20%	+22%	+15%	+19%
FLN Road L1/Ma Sik Road/Wo Tai Street (FJ29)	+52%	+73%	+51%	+71%
Ma Sik Road / Tin Ping Road (FJ55)	+33%	+32%	+32%	+31%

Notes: *(1) Results are based on final report of Approved Planning Application (TPB No. A/FLN/30).*

(2) Junction calculation sheets are attached.

Table 4 Comparison of Operational Performance of Critical Road Links in Design Year 2036

Critical Road Link	Direction	Capacity (pcu/hr)	Design Year 2036 (With Proposed Development) Volume to Capacity (V/C) Ratio							
			Approved Planning Application (A/FLN/30)				Current Planning Application (A/FLN/32)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
Fanling Bypass Eastern Section (Between FLN Road L3 and Sha Tau Kok Road) (FL25)	EB	3,000	1,215	0.41	1,155	0.39	1,215	0.41	1,155	0.39
	WB	3,000	1,190	0.40	1,380	0.46	1,210	0.40	1,395	0.47
Fanling North NDA FLN Road L4 (between FLN Road L3 and FLN Road L1) (FL28)	EB	1,250	770	0.62	700	0.52	790	0.63	715	0.57
	WB	1,250	645	0.52	475	0.38	645	0.52	475	0.38
So Kwun Po Road between San Wan Road and Jockey Club Road) (FL38)	NB	2,800	1,980	0.71	2,055	0.73	1,990	0.71	2,065	0.74
	SB	2,800	2,270	0.81	1,760	0.63	2,285	0.82	1,765	0.63
Fan Leng Lau Road near Ma Sik Road (FL39)	NB	2,800	590	0.21	560	0.20	595	0.21	565	0.20
	SB	2,800	330	0.12	340	0.12	335	0.12	340	0.12

Based on the results in above **Tables 3** and **4**, it is envisaged that the traffic impact on critical junctions and road links in the vicinity of the proposed development due to the increase of traffic generation and attraction induced by the change of the number of flats from 1,240 to 2,300 would be insignificant and could be absorbed by the adjacent road networks. Hence it is concluded that this planning application is technically justified and supported from traffic engineering point of view.

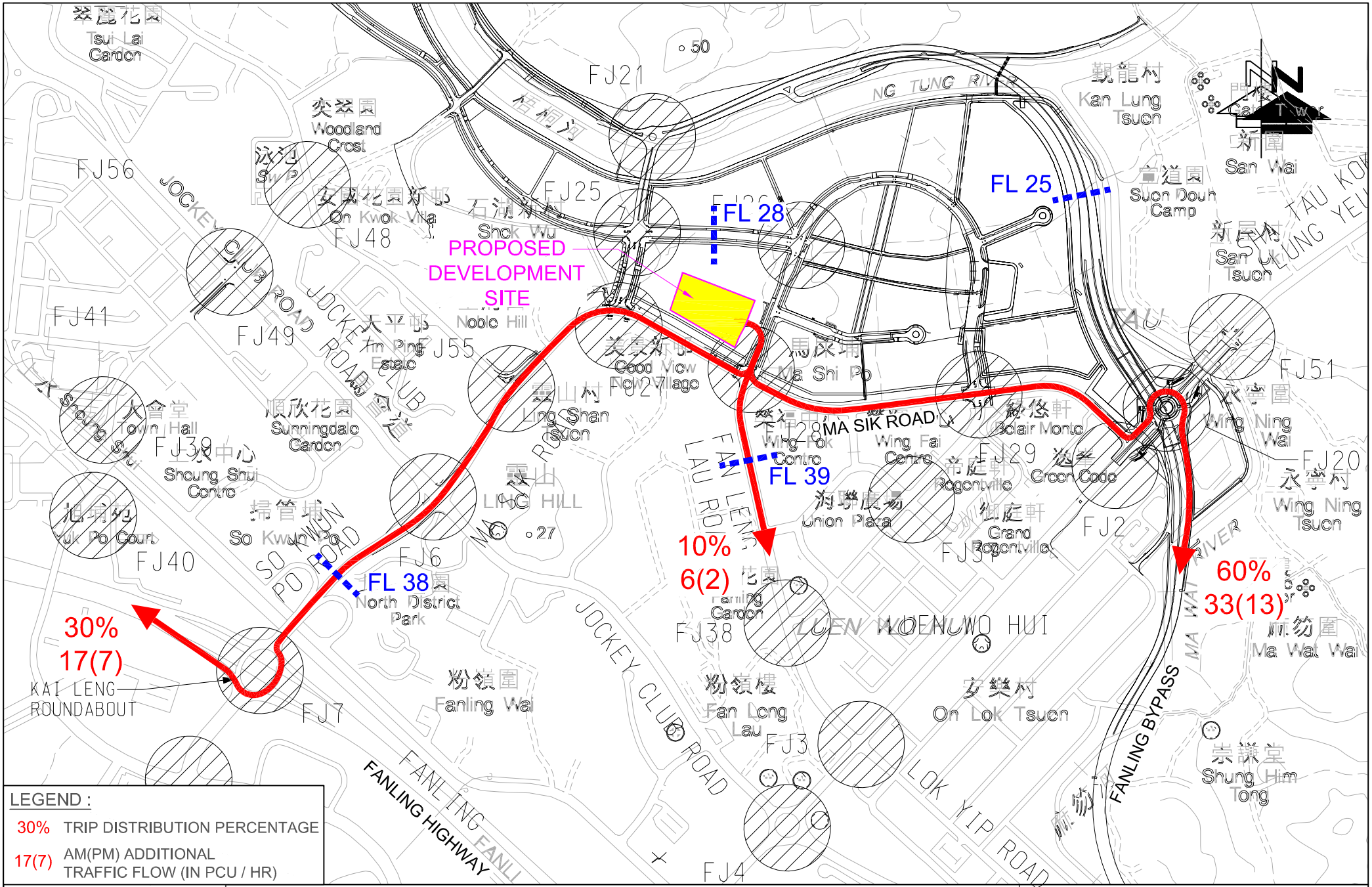

FIGURE NO.: TR-1	PROJECT TITLE:	Proposed Residential Composite Development at Wu Nga Lok Yeung, Fanling FSSTL 297 (Planning Application No. A / FLN / 32)
PROJECT NO.: 24044HK-WNLY	DRAWING TITLE:	ADDITIONAL TRAFFIC GENERATION & DISTRIBUTION OF PROPOSED DEVELOPMENT
SCALE: N.T.S @A4 / DATE: 14 OCT 2024		

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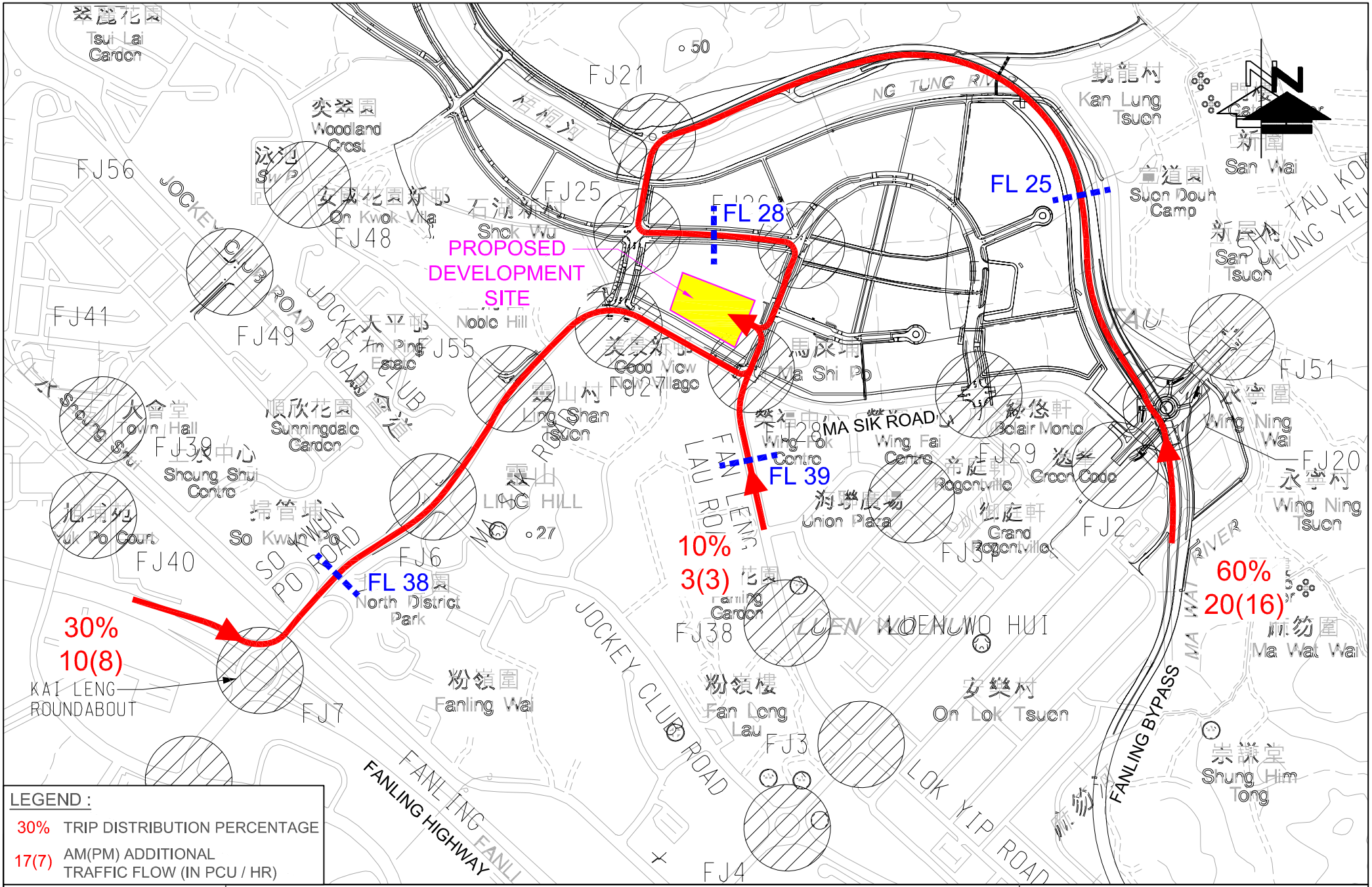

FIGURE NO.: TR-2	PROJECT TITLE:	Proposed Residential Composite Development at Wu Nga Lok Yeung, Fanling FSSTL 297 (Planning Application No. A / FLN / 32)
PROJECT NO.: 24044HK-WNLY	DRAWING TITLE:	ADDITIONAL TRAFFIC ATTRACTION & DISTRIBUTION OF PROPOSED DEVELOPMENT
SCALE: N.T.S @A4 / DATE: 14 OCT 2024		

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TRAFFIC SIGNALS CALCULATION Job No: 23044HK WNLY **CTA Consultants Ltd.**

Junction: **FJ 6 - Jockey Club Road / So Kwun Po Road**

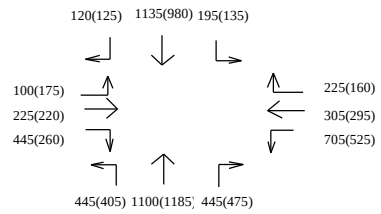
Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Jockey Club Road	NW		1	C	3.0	40	0	1	100%	100%	1915	3970	1845	1845	3835	3835	339	0.184	0.184	253	0.137	
Jockey Club Road	NW		1	C	3.0	45	0	0	100%	100%	2055	0	1990	1990	0	0	366	0.184		272	0.137	
Jockey Club Road	NW		1	C	3.4	0	0	0	0%	0%	2095	6285	2095	2095	6120	6150	181	0.087		155	0.074	0.074
Jockey Club Road	NW		1	C	3.4	0	20	0	30%	9%	2095	0	2050	2080	0	0	177	0.087		154	0.074	
Jockey Club Road	NW		1	C	3.4	0	25	0	100%	100%	2095	0	1975	1975	0	0	171	0.087		146	0.074	
Ma Sik Road	SW		2	D	3.3	0	20	0	45%	37%	2085	0	2015	2030	0	0	434	0.215	0.215	365	0.180	0.180
Ma Sik Road	SW		2	D	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	448	0.215		375	0.180	
Ma Sik Road	SW		2	D	3.3	20	0	0	0%	0%	2085	0	2085	2085	0	0	448	0.215		375	0.180	
Ma Sik Road	SW		2	D	3.3	15	0	1	100%	100%	1945	8200	1770	1770	7955	7970	120	0.068		125	0.071	
Jockey Club Road	SE		3	A	3.3	15	0	1	100%	100%	1945	6115	1770	1770	5935	5875	97	0.055		119	0.067	0.067
Jockey Club Road	SE		3	A	3.3	20	0	0	3%	41%	2085	0	2080	2020	0	0	114	0.055		136	0.067	
Jockey Club Road	SE		3	A	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	114	0.055		140	0.067	
Jockey Club Road	SE		3	A	3.3	0	25	0	100%	100%	2085	4170	1965	1965	3905	3905	224	0.114		131	0.067	
Jockey Club Road	SE		3	A	3.3	0	20	0	100%	100%	2085	0	1940	1940	0	0	221	0.114		129	0.067	
So Kwun Po Road	NE		5	A, B	5.0	50	0	1	100%	100%	2115	2115	2055	2055	2055	2055	445	0.217	0.217	405	0.197	
So Kwun Po Road	NE		4	B	3.5	0	0	0	0%	0%	2105	8420	2105	2105	8250	8250	394	0.187		424	0.201	0.201
So Kwun Po Road	NE		4	B	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	394	0.187		424	0.201	
So Kwun Po Road	NE		4	B	3.5	0	25	0	20%	19%	2105	0	2080	2080	0	0	390	0.187		419	0.201	
So Kwun Po Road	NE		4	B	3.5	0	20	0	100%	100%	2105	0	1960	1960	0	0	367	0.187		394	0.201	

6p	B	Min. Crossing Time = 5Gm + 10FGm =15s
7p	A, C, D	Min. Crossing Time = 6Gm + 11FGm =17s
8p	B	Min. Crossing Time = 13Gm + 14FGm =27s
9p	C, D	Min. Crossing Time = 7Gm + 7FGm =14s

Notes:

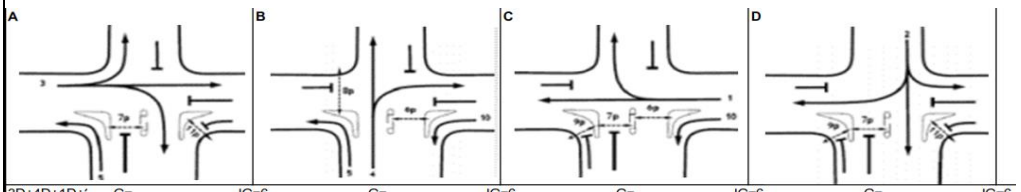
Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.616
L (sec)	17
C (sec)	120
y pract.	0.773
R.C. (%)	25%

P.M. Check Phase	
εy	0.522
L (sec)	20
C (sec)	120
y pract.	0.750
R.C. (%)	44%

Stage / Phase Diagrams



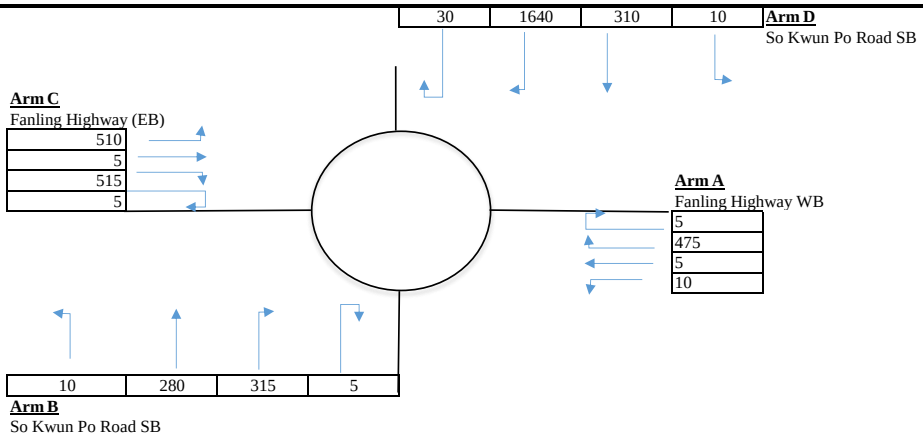
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 7 - So Kwun Po Interchange (Kai Leng Roundabout)**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **AM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	7.3	7.3	5	7.3
E	=	Entry width (m)	7.3	11	8	12.2
L	=	Effective length of flare (m)	25	20	25	25
R	=	Entry radius	55	25	60	35
D	=	Inscribed circle diameter (m)	85	85	85	85
A	=	Entry angle (degree)	15	15	15	15
Q	=	Entry flow (pcu/hr)	495	610	1035	1990
Qc	=	Circulating flow across entry (pcu/hr)	2505	2160	1110	850

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharepness of flare = 1.6*(E-V)/L	0.00	0.30	0.19	0.31
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.08	1.06	1.08	1.07
X_2	=	V+((E-V)/(1+2*S))	7.30	9.62	7.17	10.31
M	=	Exp((D-60)/10)	12.18	12.18	12.18	12.18
F	=	303*X_2	2211.90	2916.11	2171.79	3124.33
Td	=	1+(0.5/(1+M))	1.04	1.04	1.04	1.04
Fc	=	0.21*Td*(1+0.2*X_2)	0.54	0.64	0.53	0.67
Qe	=	Capacity = K*(F-Fc*Qc)	940.98	1634.25	1717.02	2743.66
DFC	=	Entry Flow/Capacity = Q/Qe	0.53	0.37	0.60	0.73

DFC of Critical Approach **=** **0.73**

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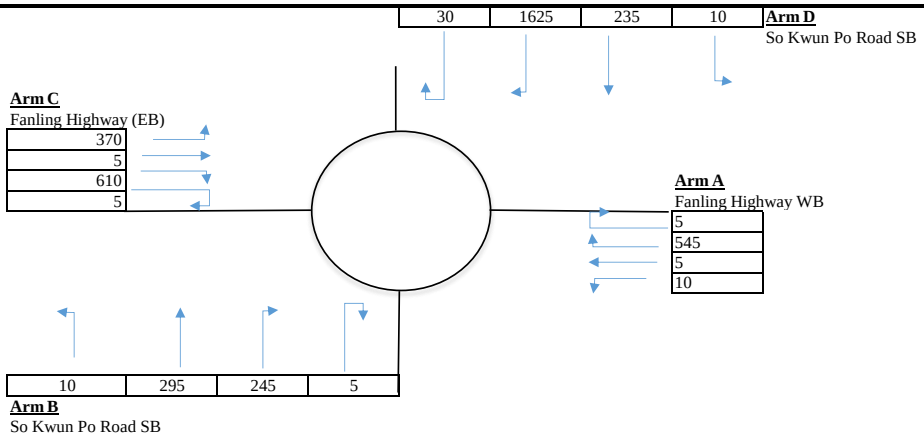
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 7 - So Kwun Po Interchange (Kai Leng Roundabout)**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **PM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	7.3	7.3	5	7.3
E	=	Entry width (m)	7.3	11	8	12.2
L	=	Effective length of flare (m)	25	20	25	25
R	=	Entry radius	55	25	60	35
D	=	Inscribed circle diameter (m)	85	85	85	85
A	=	Entry angle (degree)	15	15	15	15
Q	=	Entry flow (pcu/hr)	565	555	990	1900
Qc	=	Circulating flow across entry (pcu/hr)	2510	2215	1125	875

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharepness of flare = 1.6*(E-V)/L	0.00	0.30	0.19	0.31
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.08	1.06	1.08	1.07
X_2	=	V+((E-V)/(1+2*S))	7.30	9.62	7.17	10.31
M	=	Exp((D-60)/10)	12.18	12.18	12.18	12.18
F	=	303*X_2	2211.90	2916.11	2171.79	3124.33
Td	=	1+(0.5/(1+M))	1.04	1.04	1.04	1.04
Fc	=	0.21*Td*(1+0.2*X_2)	0.54	0.64	0.53	0.67
Qe	=	Capacity = K*(F-Fc*Qc)	938.08	1597.02	1708.39	2725.75
DFC	=	Entry Flow/Capacity = Q/Qe	0.60	0.35	0.58	0.70

DFC of Critical Approach = 0.70

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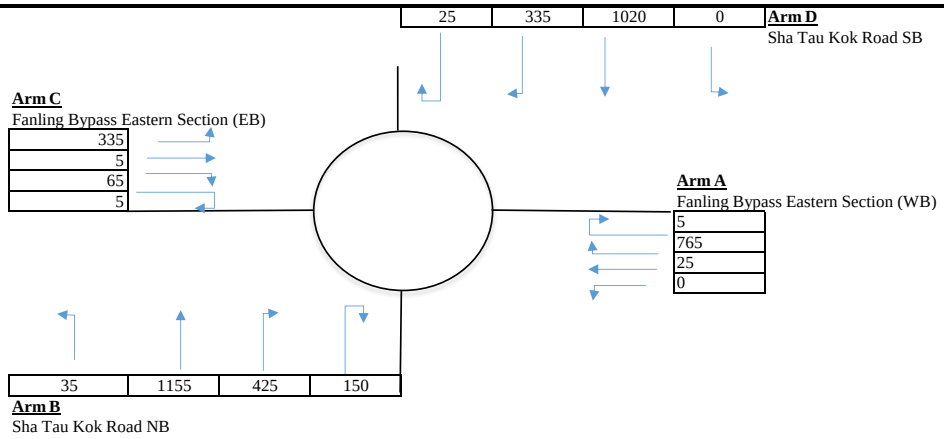
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 20 - Lung Yeuk Tau Roundabout**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **AM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	4.5	7.3	5	7.3
E	=	Entry width (m)	8	11.8	7	10
L	=	Effective length of flare (m)	25	35	10	15
R	=	Entry radius	10	50	20	20
D	=	Inscribed circle diameter (m)	75	75	75	75
A	=	Entry angle (degree)	25	10	25	20
Q	=	Entry flow (pcu/hr)	795	1765	410	1380
Qc	=	Circulating flow across entry (pcu/hr)	1600	1160	2525	655

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharepness of flare = 1.6*(E-V)/L	0.22	0.21	0.32	0.29
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.97	1.10	1.02	1.03
X_2	=	V+((E-V)/(1+2*S))	6.92	10.49	6.22	9.01
M	=	Exp((D-60)/10)	4.48	4.48	4.48	4.48
F	=	303*X_2	2095.89	3177.94	1884.51	2731.00
Td	=	1+(0.5/(1+M))	1.09	1.09	1.09	1.09
Fc	=	0.21*Td*(1+0.2*X_2)	0.55	0.71	0.51	0.64
Qe	=	Capacity = K*(F-Fc*Qc)	1183.46	2587.01	596.33	2390.50
DFC	=	Entry Flow/Capacity = Q/Qe	0.67	0.68	0.69	0.58

DFC of Critical Approach **=** **0.69**

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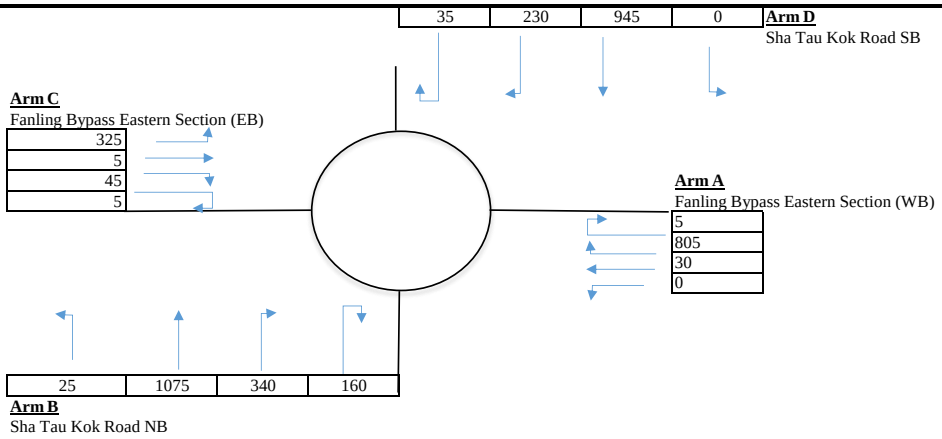
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 20 - Lung Yeuk Tau Roundabout**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **PM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	4.5	7.3	5	7.3
E	=	Entry width (m)	8	11.8	7	10
L	=	Effective length of flare (m)	25	35	10	15
R	=	Entry radius	10	50	20	20
D	=	Inscribed circle diameter (m)	75	75	75	75
A	=	Entry angle (degree)	25	10	25	20
Q	=	Entry flow (pcu/hr)	840	1600	380	1210
Qc	=	Circulating flow across entry (pcu/hr)	1420	1110	2420	560

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharepness of flare = 1.6*(E-V)/L	0.22	0.21	0.32	0.29
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.97	1.10	1.02	1.03
X_2	=	V+((E-V)/(1+2*S))	6.92	10.49	6.22	9.01
M	=	Exp((D-60)/10)	4.48	4.48	4.48	4.48
F	=	303*X_2	2095.89	3177.94	1884.51	2731.00
Td	=	1+(0.5/(1+M))	1.09	1.09	1.09	1.09
Fc	=	0.21*Td*(1+0.2*X_2)	0.55	0.71	0.51	0.64
Qe	=	Capacity = K*(F-Fc*Qc)	1278.67	2626.01	651.25	2453.63
DFC	=	Entry Flow/Capacity = Q/Qe	0.66	0.61	0.58	0.49

DFC of Critical Approach **=** **0.66**

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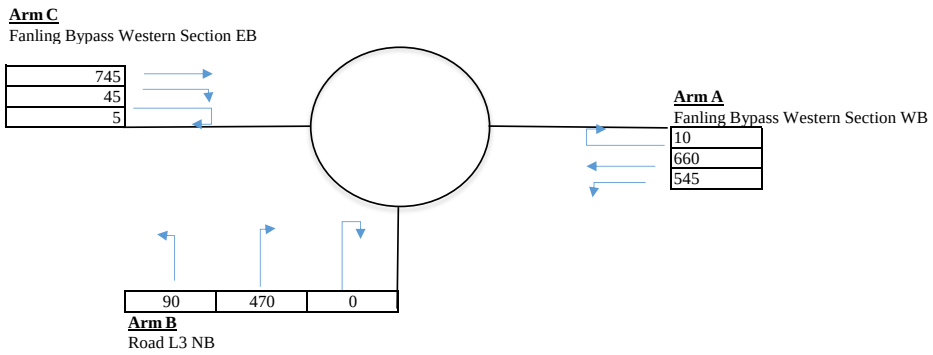
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 21 - Fanling Bypass / FLN Road L3**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **AM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C
V	=	Approach half width (m)	7.3	7.3	5
E	=	Entry width (m)	11	10	7
L	=	Effective length of flare (m)	20	10	25
R	=	Entry radius	60	25	50
D	=	Inscribed circle diameter (m)	40	40	40
A	=	Entry angle (degree)	8	20	15
Q	=	Entry flow (pcu/hr)	1215	560	795
Qc	=	Circulating flow across entry (pcu/hr)	50	675	480

Output Parameters			Arm A	Arm B	Arm C
S	=	Sharepness of flare = 1.6*(E-V)/L	0.30	0.43	0.13
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.11	1.04	1.08
X_2	=	V+((E-V)/(1+2*S))	9.62	8.75	6.59
M	=	Exp((D-60)/10)	0.14	0.14	0.14
F	=	303*X_2	2916.11	2650.79	1997.48
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td*(1+0.2*X_2)	0.88	0.83	0.70
Qe	=	Capacity = K*(F-Fc*Qc)	3184.73	2182.31	1796.04
DFC	=	Entry Flow/Capacity = Q/Qe	0.38	0.26	0.44

DFC of Critical Approach **=** **0.44**

CTA Consultants Ltd.

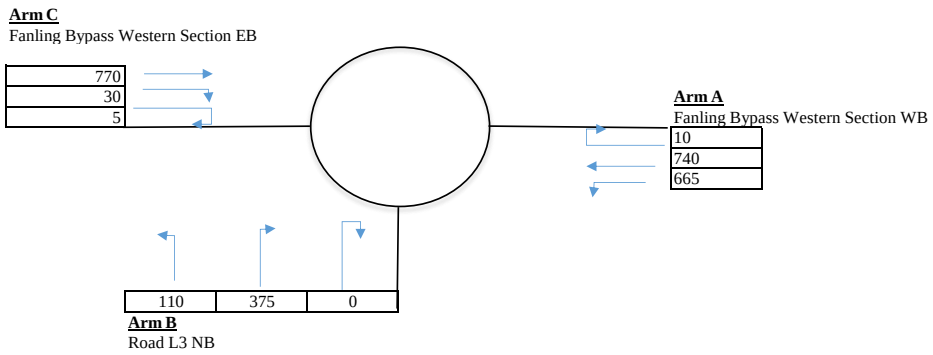
Roundabout Junction Calculation

Job No: **23044HK WNLY**

Roundabout Junction : **FJ 21 - Fanling Bypass / FLN Road L3**

Design Year : **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Scenario : **PM Peak Hour**



Input Parameters			Arm A	Arm B	Arm C
V	=	Approach half width (m)	7.3	7.3	5
E	=	Entry width (m)	11	10	7
L	=	Effective length of flare (m)	20	10	25
R	=	Entry radius	60	25	50
D	=	Inscribed circle diameter (m)	40	40	40
A	=	Entry angle (degree)	8	20	15
Q	=	Entry flow (pcu/hr)	1415	485	805
Qc	=	Circulating flow across entry (pcu/hr)	35	755	385

Output Parameters			Arm A	Arm B	Arm C
S	=	Sharepness of flare = 1.6*(E-V)/L	0.30	0.43	0.13
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.11	1.04	1.08
X_2	=	V+((E-V)/(1+2*S))	9.62	8.75	6.59
M	=	Exp((D-60)/10)	0.14	0.14	0.14
F	=	303*X_2	2916.11	2650.79	1997.48
Td	=	1+(0.5/(1+M))	1.44	1.44	1.44
Fc	=	0.21*Td*(1+0.2*X_2)	0.88	0.83	0.70
Qe	=	Capacity = K*(F-Fc*Qc)	3199.45	2112.81	1868.08
DFC	=	Entry Flow/Capacity = Q/Qe	0.44	0.23	0.43

DFC of Critical Approach **=** **0.44**

CTA Consultants Ltd.

TRAFFIC SIGNALS CALCULATION Job No: 23044HK WNLY **CTA Consultants Ltd.**

Junction: **FJ 25 - FLN Road L3 / FLN Road L4**

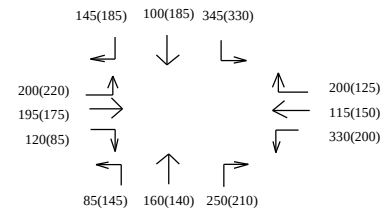
Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
FLN Road L3	S		1	B, C	3.5	0	15	0	100%	100%	2105	2105	1915	1915	1915	1915	145	0.076	0.076	185	0.097	0.097
FLN Road L3	S		1	C	3.5	0	0	0	0%	0%	2105	2105	2105	2105	2105	2105	100	0.048		185	0.088	
FLN Road L3	S		1	C	3.5	12	0	1	100%	100%	1965	1965	1745	1745	1745	1745	345	0.198		330	0.189	
FLN Road L4	E		2	C, D	3.3	15	0	1	100%	100%	1945	1945	1770	1770	1770	1770	200	0.113		220	0.124	
FLN Road L4	E		2	D	3.5	0	0	0	0%	0%	2105	4210	2105	2105	4055	4075	164	0.078	0.078	134	0.064	0.064
FLN Road L4	E		2	D	3.5	0	15	0	79%	68%	2105	0	1950	1970	0	0	152	0.078		126	0.064	
FLN Road L3	N		3	A	3.3	10	0	1	100%	100%	1945	1945	1690	1690	1690	1690	85	0.050		145	0.086	
FLN Road L3	N		3	A	3.3	0	20	0	25%	23%	2085	4170	2045	2050	3940	3945	213	0.104	0.104	182	0.089	0.089
FLN Road L3	N		3	A	3.3	0	15	0	100%	100%	2085	0	1895	1895	0	0	197	0.104		168	0.089	
FLN Road L4	W		4	B	3.5	0	20	0	63%	45%	2105	2105	2010	2035	2010	2035	315	0.157	0.157	275	0.135	0.135
FLN Road L4	W		8	A, B	3.5	15	0	1	100%	100%	1965	1965	1785	1785	1785	1785	330	0.185		200	0.112	

5p	E	Min. Crossing Time = 12Gm + 11FGm =23s
7p	E	Min. Crossing Time = 12Gm + 10FGm =22s
9p	E	Min. Crossing Time = 12Gm + 11FGm =23s
11p	E	Min. Crossing Time = 13Gm + 12FGm =25s

Notes:

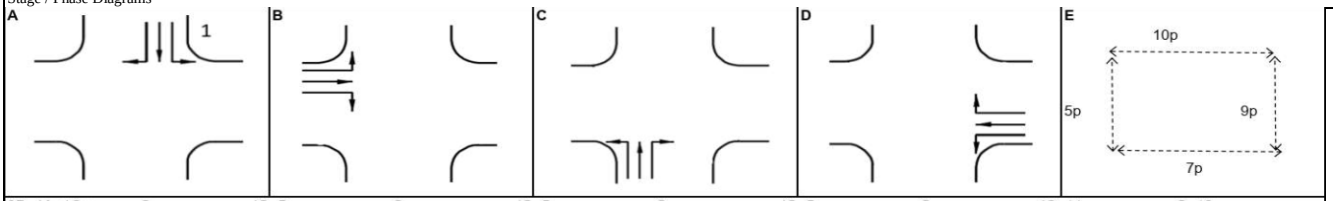
Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.414
L (sec)	47
C (sec)	120
y pract.	0.548
R.C. (%)	32%

P.M. Check Phase	
εy	0.384
L (sec)	47
C (sec)	120
y pract.	0.548
R.C. (%)	42%

Stage / Phase Diagrams



3B+4A+1C+	G=	IG=5	G=	IG=5	G=	IG=5	G=	IG=11	G=12		
3B+4A+1C+2B+7p	G=	IG=5	G=	IG=5	G=	IG=5	G=	IG=11	G=12		

TRAFFIC SIGNALS CALCULATION Job No: 24044HK (WNLY) **CTA Consultants Ltd.**

Junction: **FJ 26 - FLN Road L1 /FLN Road L4**

Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
FLN Road L4	E		1	A	3.5	10	0	1	100%	100%	1965	4070	1710	1710	3625	3625	342	0.200	0.200	368	0.215	0.215
FLN Road L4	E		1	A	3.5	15	15	0	)% / 60	5% / 55	2105	0	1915	1915	0	0	383	0.200		412	0.215	
FLN Road L1	N		2	B	3.5	10	0	1	69%	59%	1965	4070	1780	1805	3885	3910	131	0.073	0.073	111	0.061	0.061
FLN Road L1	N		2	B	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	154	0.073		129	0.061	
FLN Road L1	S		3	C	3.5	0	15	1	63%	61%	1965	4070	1850	1855	3810	3815	260	0.140	0.140	228	0.123	0.123
FLN Road L1	S		3	C	3.5	0	20	0	100%	100%	2105	0	1960	1960	0	0	275	0.140		242	0.123	

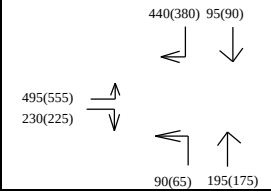
4p D Min. Crossing Time = 8Gm + 7FGm =15s

5p D Min. Crossing Time = 8Gm + 7FGm =15s

6p D Min. Crossing Time = 8Gm + 7FGm =15s

Notes:

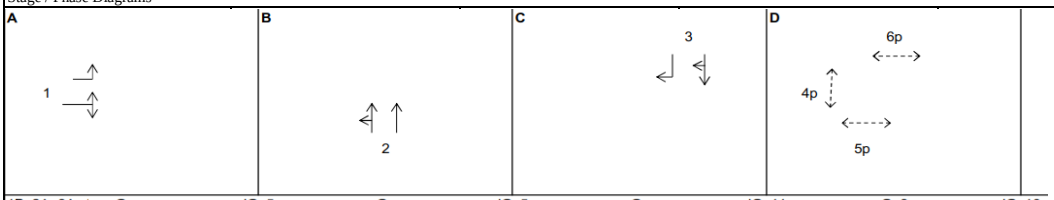
Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.414
L (sec)	36
C (sec)	105
y pract.	0.591
R.C. (%)	43%

P.M. Check Phase	
εy	0.400
L (sec)	36
C (sec)	105
y pract.	0.591
R.C. (%)	48%

Stage / Phase Diagrams



1B+2A+3A+4	G=	IG=5	G=	IG=5	G=	IG=11	G=8	IG=10			
1A+2A+3A+4p	G=	IG=5	G=	IG=5	G=	IG=11	G=8	IG=10			

TRAFFIC SIGNALS CALCULATION Job No: 24044HK (WNLY) **CTA Consultants Ltd.**

Junction: **FJ 27 - FLN Road L3 / Ma Sik Road**

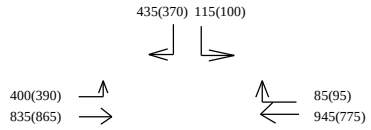
Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ma Sik Road	E		2	B	3.3	10	0	1	100%	100%	1945	1945	1690	1690	1690	1690	400	0.237	0.237	390	0.231	0.231
Ma Sik Road	E		2	B	3.3	0	0	0	0%	0%	2085	4030	2085	2085	4030	4030	432	0.207		448	0.215	
Ma Sik Road	E		2	B	3.3	0	0	1	0%	0%	1945	0	1945	1945	0	0	403	0.207		417	0.215	
Ma Sik Road	W		3	C	3.7	0	20	0	17%	22%	2120	0	2095	2085	0	0	512	0.244	0.244	431	0.207	0.207
Ma Sik Road	W		3	C	3.7	0	0	0	0%	0%	2120	4240	2120	2120	4215	4205	518	0.244		439	0.207	
FLN Road L3	S		1	A	3.7	15	20	1	3% / 57	4% / 56	1980	4100	1825	1825	3750	3750	268	0.147	0.147	229	0.125	0.125
FLN Road L3	S		1	A	3.7	0	15	0	100%	100%	2120	0	1925	1925	0	0	282	0.147		241	0.125	

4p	B,C	Min. Crossing Time = 8Gm + 5FGm =13s
5p	A	Min. Crossing Time = 5Gm + 6FGm =11s
6p	A,C	Min. Crossing Time = 5Gm + 7FGm =12s
7p	B	Min. Crossing Time = 5Gm + 8FGm =13s
8p	A,B	Min. Crossing Time = 5Gm + 7FGm =12s
9p	C	Min. Crossing Time = 5Gm + 8FGm =13s

Notes:

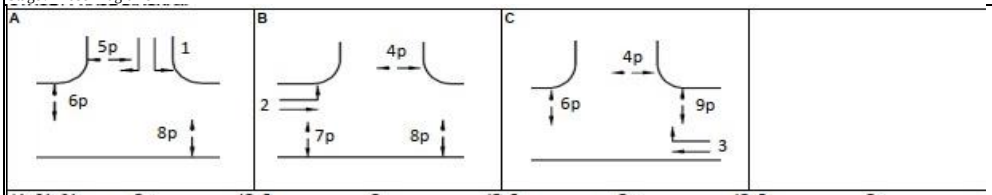
Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.628
L (sec)	12
C (sec)	90
y pract.	0.780
R.C. (%)	24%

P.M. Check Phase	
εy	0.563
L (sec)	12
C (sec)	90
y pract.	0.780
R.C. (%)	39%

Stage / Phase Diagrams



1A+2A+3A	G=	IG=5	G=	IG=5	G=	IG=5	G=	
1A+2A+3B	G=	IG=5	G=	IG=5	G=	IG=5	G=	

TRAFFIC SIGNALS CALCULATION Job No: 23044HK WNLY **CTA Consultants Ltd.**

Junction: **FJ 28 - FLN Road L1 / Ma Sik Road / Fan Leng Lau Road**

Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ma Sik Road	E		1	C	3.3	10	0	1	100%	100%	1940	1940	1685	1685	1685	1685	225	0.134	0.134	270	0.160	0.160
Ma Sik Road	E		1	C	3.3	0	0	0	0%	0%	2080	6240	2080	2080	6120	6105	246	0.118		238	0.115	
Ma Sik Road	E		1	C	3.3	0	0	0	0%	0%	2080	0	2080	2080	0	0	246	0.118		238	0.115	
Ma Sik Road	E		1	C	3.3	0	20	0	82%	92%	2080	0	1960	1945	0	0	232	0.118		223	0.115	
Ma Sik Road	W		3	A	3.5	15	0	0	5%	6%	2105	4210	2095	2095	4130	4115	195	0.093	0.093	181	0.086	0.086
Ma Sik Road	W		3	A	3.5	0	20	0	47%	54%	2105	0	2035	2020	0	0	190	0.093		174	0.086	
Fan Leng Lau Road	N		2	D	3.5	15	0	1	100%	100%	1965	4070	1785	1785	3745	3745	229	0.128	0.128	200	0.112	0.112
Fan Leng Lau Road	N		2	D	3.5	20	0	0	100%	100%	2105	0	1960	1960	0	0	251	0.128		220	0.112	
Fan Leng Lau Road	N		2	D	3.5	0	15	0	9%	7%	2105	2105	2085	2090	2085	2090	115	0.055		145	0.069	
FLN Road L1	S		4	B	3.7	0	15	0	100%	100%	2120	0	1925	1925	0	0	231	0.120	0.120	192	0.100	0.100
FLN Road L1	S		4	B	3.7	15	20	0	1% / 14	2% / 7%	2120	4240	2035	2045	3960	3970	244	0.120		203	0.099	

5p E Min. Crossing Time = 13Gm + 10FGm =23s

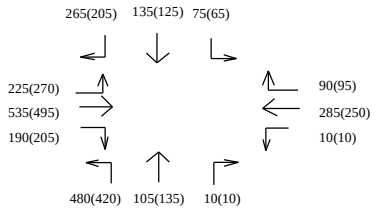
6p E Min. Crossing Time = 16Gm + 13FGm =29s

7p E Min. Crossing Time = 12Gm + 10FGm =22s

8p E Min. Crossing Time = 10Gm + 9FGm =19s

Notes:

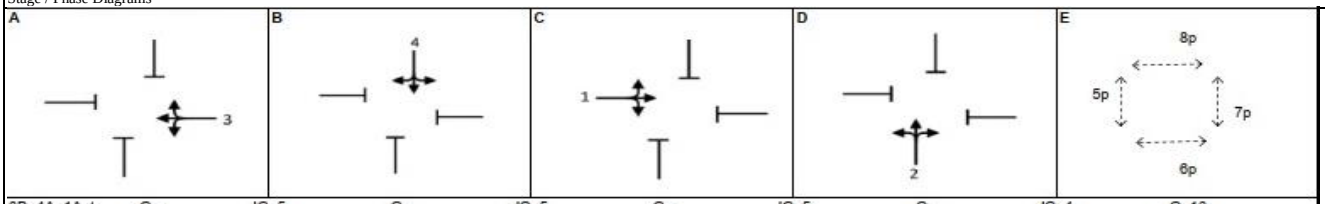
Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.475
L (sec)	47
C (sec)	120
y pract.	0.548
R.C. (%)	15%

P.M. Check Phase	
εy	0.458
L (sec)	47
C (sec)	120
y pract.	0.548
R.C. (%)	19%

Stage / Phase Diagrams



3B+4A+1A+	G=	IG=5	G=	IG=5	G=	IG=5	G=	IG=4	G=16
3A+4B+1A+2B+8p	G=	IG=5	G=	IG=5	G=	IG=5	G=	IG=4	G=16

TRAFFIC SIGNALS CALCULATION Job No: 23044HK WNLY **CTA Consultants Ltd.**

Junction: **FJ 29 - FLN Road L1 / Ma Sik Road / Wo Tai Street**

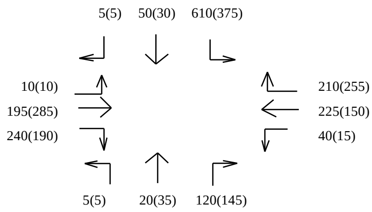
Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ma Sik Road	E		2	B	3.5	12	0	1	5%	4%	1965	4070	1955	1955	3915	3945	205	0.105	0.122	240	0.123	0.123
Ma Sik Road	E		2	B	3.5	0	20	0	100%	78%	2105	0	1960	1990	0	0	240	0.122		245	0.123	
Ma Sik Road	W		4	D	3.5	15	0	1	17%	9%	1965	4070	2080	2070	4005	3995	235	0.113	0.125	165	0.080	0.132
Ma Sik Road	W		4	D	3.5	0	20	0	87%	100%	2105	0	1925	1925	0	0	240	0.125		255	0.132	
Wo Tai Street	N		3	C	4.0	15	0	1	20%	13%	2015	2015	1975	1990	1975	1990	25	0.013		40	0.020	
Wo Tai Street	N		3	C	4.0	0	20	0	100%	100%	2155	2155	2005	2005	2005	2005	120	0.060		145	0.072	0.072
FLN Road L1	S		4	D	3.5	12	0	1	100%	100%	1965	4070	1745	1745	3685	3685	315	0.180	0.180	194	0.111	0.111
FLN Road L1	S		4	D	3.5	15	25	0	¦4% / 1¦	¦4% / 2¦	2105	0	1940	1940	0	0	350	0.180		216	0.111	

5p	B, C, D	Min. Crossing Time = 5Gm + 8FGm =13s
6p	A	Min. Crossing Time = 5Gm + 8FGm =13s
7p	A, C, D	Min. Crossing Time = 5Gm + 8FGm =13s
8p	B	Min. Crossing Time = 5Gm + 8FGm =13s
9p	A, B, D	Min. Crossing Time = 5Gm + 8FGm =13s
10p	C	Min. Crossing Time = 5Gm + 8FGm =13s
11p	A, B, C	Min. Crossing Time = 5Gm + 8FGm =13s
12p	D	Min. Crossing Time = 5Gm + 8FGm =13s

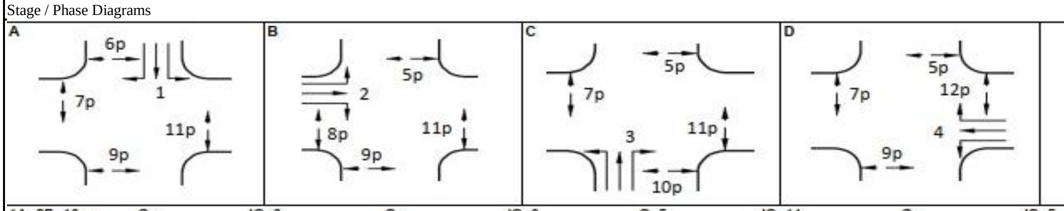
Notes:

Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase		P.M. Check Phase	
εy	0.428	εy	0.439
L (sec)	32	L (sec)	18
C (sec)	113	C (sec)	108
y pract.	0.645	y pract.	0.750
R.C. (%)	51%	R.C. (%)	71%

Stage / Phase Diagrams



1A+2B+10p+	G=	IG=6	G=	IG=8	G=5	IG=11	G=	IG=5
1B+2B+3B+4B	G=	IG=6	G=	IG=5	G=	IG=6	G=	IG=5

TRAFFIC SIGNALS CALCULATION Job No: 23044HK WNLY **CTA Consultants Ltd.**

Junction: **FJ 55 - Ma Sik Road / Tin Ping Road**

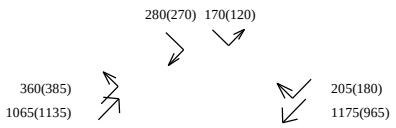
Description: **2036 Design Traffic Flows (30% WB + 60%EB + 10% SB)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Nearside 0/1	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	Total Revised Saturation Flow (pcu/hr) A.M.	Total Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Ma Sik Road	NE		1	A, B	3.7	10	0	1	55%	55%	1980	4100	1830	1830	3950	3950	660	0.361	0.361	704	0.385	0.385
Ma Sik Road	NE		1	A, B	3.7	0	0	0	0%	0%	2120	0	2120	2120	0	0	765	0.361		816	0.385	
Tin Ping Road	SE		2	D	3.7	0	20	0	100%	100%	2120	2120	1970	1970	1970	1970	280	0.142	0.142	270	0.137	0.137
Ma Sik Road	SW		3	B, C	3.7	0	0	1	0%	0%	1980	0	1980	1980	0	0	567	0.287		466	0.235	
Ma Sik Road	SW		3	B, C	3.7	0	0	0	0%	0%	2120	4100	2120	2120	4100	4100	608	0.287		499	0.235	
Ma Sik Road	SW		10	C	3.5	0	15	0	100%	100%	2105	2105	1915	1915	1915	1915	205	0.107	0.107	180	0.094	0.094

4p	A	Min. Crossing Time = 5Gm + 7FGm =12s
5p	C, D	Min. Crossing Time = 5Gm + 7FGm =12s
6p	A, D	Min. Crossing Time = 5Gm + 7FGm =12s
7p	C, D	Min. Crossing Time = 5Gm + 8FGm =13s
8p	D	Min. Crossing Time = 5Gm + 7FGm =12s
9p	A, B, C	Min. Crossing Time = 5Gm + 7FGm =12s

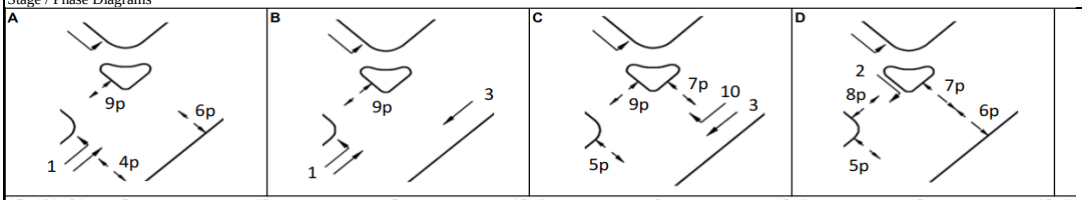
Notes:

Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase		P.M. Check Phase	
εy	0.610	εy	0.616
L (sec)	12	L (sec)	12
C (sec)	116	C (sec)	116
y pract.	0.807	y pract.	0.807
R.C. (%)	32%	R.C. (%)	31%

Stage / Phase Diagrams



1B+10A+2A	G=	IG=	G=	IG=5	G=	IG=5	G=	IG=5
1A+10A+2A	G=	IG=	G=	IG=5	G=	IG=5	G=	IG=5