

Attachment II

**Replacement pages for the
revised traffic impact
assessment report**



Table 3.1 Identified Critical Junctions

Ref.	Junction	Type	Figure No.
J1	Cheung Tsing Highway / Tsing Yi Road West	Signalized	3.2
J2	Tsing Hung Road / Tsing Yi Road	Signalized	3.3
J3	Tsing Sheung Road / Tsing Yi Road Priority	Priory	3.4
J4	Sai Tso Wan Road / Tsing Yi Road / Tsing Yi Road West	Signalized	3.5
J5	Entrance of VEC / Sai Tso Wan Road	Signalized	3.6
J6	Tsing Tim Street / Sai Tso Wan Road	Priority	3.7
J7	Tsing Yi Road West / Tsing Chin Street*	Priority	3.8
J8	Tsing Yi Road West / Ching Hong Road	Signalized	3.9
J9	Tsing Yi Road West / Liu To Road	Signalized	3.10
J10	Tsing Yi Road West / Fung Shue Wo Road	Signalized	3.11
J11	Tsing Yi Heung Sze Wui Road / Cheung Wan Street	Signalized	3.12
J12	Tsing Yi Heung Sze Wui Road / Chung Mei Road	Signalized	3.13
J13	Tsing Yi Road / Tsing Keung Street	Priority	3.14
RA1	Tsing Yi Interchange	Roundabout	3.15
RA2	Tsing Yi Road West / Tsing Yi Hong Wan Road / Tsing Sha Highway	Roundabout	3.16
RA3	Hong Wan Road	Roundabout	3.17
RA4	Hong Wan Road / Tsing Ko Road	Roundabout	3.18
RA5	Tam Kon Shan Interchange	Roundabout	3.19
RA6	Tsing Yi Heung Sze Wui Road / Fung Shue Wo Road / Tsing King Road	Roundabout	3.20
RA7	Tsing Sheung Road / Tsing Yi Hong Wan Road	Roundabout	3.21
RA8	Ching Hong Road / Tsing Yi Road	Roundabout	3.22
RA9	Tam Kon Shan Road / Tsing Yi North Costal Road	Roundabout	3.23
RA10	Tsing Ko Road / Tsing Sheung Road	Roundabout	3.24

3.2.2 The survey was conducted during the morning, logistic peak and evening peak periods in 26 January 2024. The survey provides details of the traffic situation in the nearby area. Based on surveyed traffic flows, it was found that the AM, logistic and PM peak hour occurred from 08:00 to 09:00, 11:15 to 12:15 and 17:30 to 18:30 respectively. The results of the observed traffic flows are presented in **Figure 3.25**.



3.2.3 Based on the observed traffic flows in **Figure 3.25**, the junction capacity assessment is carried out for the critical junctions and the results of the assessment are summarized in **Table 3.2** below.

Table 3.2 Operational Performance of Identified Critical Junctions in 2024
Operational Performance of Critical Junctions in Observed Case in
Year 2029 (Without Proposed Plant)

Ref.	Junction	Method of Control	Year 2024 Observed Case		
			RC/RFC ⁽¹⁾		
			AM Peak	Logistic Peak	PM Peak
J1	Cheung Tsing Highway / Tsing Yi Road West	Signalized	72%	62%	107%
J2	Tsing Hung Road / Tsing Yi Road	Signalized	74%	88%	96%
J3	Tsing Sheung Road / Tsing Yi Road Priority	Priority	0.50	0.41	0.41
J4	Sai Tso Wan Road / Tsing Yi Road / Tsing Yi Road West	Signalized	46%	35%	115%
J5	Entrance of VEC / Sai Tso Wan Road	Signalized	121%	82%	106%
J6	Tsing Tim Street / Sai Tso Wan Road	Priority	0.34	0.27	0.21
J7	Tsing Yi Road West / Tsing Chin Street ⁽²⁾	Priority	N/A	N/A	N/A
J8	Tsing Yi Road West / Ching Hong Road	Signalized	60%	87%	103%
J9	Tsing Yi Road West / Liu To Road	Signalized	37%	60%	46%
J10	Tsing Yi Road West / Fung Shue Wo Road	Signalized	42%	82%	78%
J11	Tsing Yi Heung Sze Wui Road / Cheung Wan Street	Signalized	15%	16%	36%
J12	Tsing Yi Heung Sze Wui Road / Chung Mei Road	Signalized	45%	78%	70%
J13	Tsing Yi Road / Tsing Keung Street	Priority	0.17	0.25	0.13
RA1	Tsing Yi Interchange (North)	Roundabout	0.71	0.59	0.37
	Tsing Yi Interchange (South)	Roundabout	0.58	0.44	0.66
RA2	Tsing Yi Road West / Tsing Yi Hong Wan Road / Tsing Sha Highway	Roundabout	0.45	0.45	0.49
RA3	Hong Wan Road	Roundabout	0.45	0.37	0.40
RA4	Hong Wan Road / Tsing Ko Road	Roundabout	0.26	0.25	0.26
RA5	Tam Kon Shan Interchange	Roundabout	0.63	0.62	0.69
RA6	Tsing Yi Heung Sze Wui Road / Fung Shue Wo Road / Tsing King Road	Roundabout	0.38	0.32	0.38



RA7	Tsing Sheung Road / Tsing Yi Hong Wan Road	Roundabout	0.07	0.09	0.10
RA8	Ching Hong Road / Tsing Yi Road	Roundabout	0.43	0.43	0.43
RA9	Tam Kon Shan Road / Tsing Yi North Coastal Road	Roundabout	0.06	0.08	0.08
RA10	Tsing Ko Road / Tsing Sheung Road	Roundabout	0.27	0.25	0.19

Note: (1) RC = Reserve Capacity RFC = Ratio of Flow to Capacity for Priority Junction

3.2.4 The results in **Table 3.2** show that the junctions are now operating with ample capacities in peak hours.

3.3 Public Transport Services in the Vicinity of Proposed Plant

3.3.1 Limited road-based public transport services are currently operating in the vicinity of the proposed plant. Only one GMB route is operating close to the proposed plant (within 500m radius from the proposed plant) and the details of the GMB route are presented in **Table 3.3** below.

Table 3.3 Existing Road-based Public Transport Services in the Vicinity

Service	Route	Origin - Destination	Frequency (min)
GMB	88M	Kwai Fong Station – Sai Tso Wan Road (Hong Kong Unit Dockyard)	5 – 15



4. FUTURE TRAFFIC CONDITIONS

4.1 Design year

4.1.1 The original planning approval will expire on 2 Aug 2024, as another 5 year of temporary use is applied, year 2029 is adopted as the design year for this study to assess the impact of the development related traffic on the local road network.

4.2 Reference Traffic Flows

4.2.1 To estimate the 2029 reference traffic flows (without proposed plant) in the local road network, an appropriate growth factor has to be identified for the area in the first instance based on historical trend and planning data.

Historical Trend

4.2.2 Transport Department has traffic count stations in the vicinity of the proposed development. The traffic counts reported in the Annual Traffic Census (ATC) over a period of 6 years, between 2017 and 2022 are summarized in **Table 4.1**.

Table 4.1 Historical Traffic Data from Annual Traffic Census

ATC Stn No.	Road Name	Annual Average Daily Traffic						Annual Growth Rate
		2017	2018	2019	2020	2021	2022	
5038	Nam Wan Tunnel (from East Tsing Yi Viaduct to Cheung Tsing Highway)	50,940	54,280	55,040	37,850	41,090	41,060	-4.22%
5849	Tsing Yi Rd W (Tsing Nam St – Ching Hong Road)	15,410	15,640*	15,580*	15,430*	13,690	15,820	0.53%
6044	Tsing Yi Rd W (Ching Hong Road – Fung Shue Wo Road)	20,260	19,350	19,280*	19,100*	19,840*	21,050	0.77%
6643	Sai Tso Wan Rd (Tsing Yi Rd – Dockyard Front Gate)	5,020	10,030	8,390	8,960	9,410	11,200	17.41%
TOTAL		91,630	99,300	98,290	81,340	84,030	89,130	-0.55%

*AADT estimated by Growth Factor



5. TRAFFIC IMPACT ASSESSMENT

5.1 Operational Assessment

5.1.1 Based on the design traffic flows in **Figure 5.1**, a junction capacity assessment is carried out for the key junctions and the results of the assessment are summarized in **Tables 5.1** and **5.2** below.

Table 5.1 Operational Performance of Critical Junctions in Reference Case in Year 2029 (Without Proposed Plant)

Ref.	Junction	Method of Control	Year 2029 Reference Case (Without Proposed Plant)		
			RC/RFC ⁽¹⁾		
			AM Peak	Logistic Peak	PM Peak
J1	Cheung Tsing Highway / Tsing Yi Road West	Signalized	47%	49%	82%
J2	Tsing Hung Road / Tsing Yi Road	Signalized	66%	78%	87%
J3	Tsing Sheung Road / Tsing Yi Road Priority	Priority	0.54	0.45	0.44
J4	Sai Tso Wan Road / Tsing Yi Road / Tsing Yi Road West	Signalized	38%	29%	105%
J5	Entrance of VEC / Sai Tso Wan Road	Signalized	111%	73%	95%
J6	Tsing Tim Street / Sai Tso Wan Road	Priority	0.37	0.29	0.22
J7	Tsing Yi Road West / Tsing Chin Street*	Priority	N/A	N/A	N/A
J8	Tsing Yi Road West / Ching Hong Road	Signalized	39%	59%	81%
J9	Tsing Yi Road West / Liu To Road	Signalized	30%	53%	39%
J10	Tsing Yi Road West / Fung Shue Wo Road	Signalized	17%	44%	45%
J11	Tsing Yi Heung Sze Wui Road / Cheung Wan Street	Signalized	-3%	-4%	18%
J12	Tsing Yi Heung Sze Wui Road / Chung Mei Road	Signalized	26%	52%	51%
J13	Tsing Yi Road / Tsing Keung Street	Priority	0.18	0.26	0.14
J14	Tsing Yi Road / Planned New Road ⁽³⁾	Signalized	35%	38%	55%
RA1	Tsing Yi Interchange (North)	Roundabout	0.76	0.63	0.40
	Tsing Yi Interchange (South)	Roundabout	0.63	0.48	0.73
RA2	Tsing Yi Road West / Tsing Yi Hong Wan Road / Tsing Sha Highway	Roundabout	0.48	0.48	0.53
RA3	Hong Wan Road / Planned New Road ⁽³⁾	Roundabout	0.50	0.42	0.45



RA4	Hong Wan Road / Tsing Ko Road	Roundabout	0.27	0.26	0.28
RA5	Tam Kon Shan Interchange	Roundabout	0.72	0.70	0.79
RA6	Tsing Yi Heung Sze Wui Road / Fung Shue Wo Road / Tsing King Road	Roundabout	0.47	0.40	0.46
RA7	Tsing Sheung Road / Tsing Yi Hong Wan Road	Roundabout	0.08	0.09	0.11
RA8	Ching Hong Road / Tsing Yi Road	Roundabout	0.46	0.46	0.46
RA9	Tam Kon Shan Road / Tsing Yi North Coastal Road	Roundabout	0.07	0.08	0.08
RA10	Tsing Ko Road / Tsing Sheung Road	Roundabout	0.28	0.27	0.20

- Note: (1) RC = Reserve Capacity RFC = Ratio of Flow to Capacity for Priority Junction
(2) Only ingress traffic is allowed on Tsing Chin Street. No traffic conflicts or delay is expected in this location. Therefore, no junction assessment is required.
(3) New Road between Tsing Yi Road / Hong Wan Road was considered



Table 5.2 Operational Performance of Critical Junctions in Design Case in Year 2029 (With Proposed Plant)

Ref.	Junction	Method of Control	Year 2029 Design Case (With Proposed Plant)		
			RC/RFC ⁽¹⁾		
			AM Peak	Logistic Peak	PM Peak
J1	Cheung Tsing Highway / Tsing Yi Road West	Signalized	40%	39%	75%
J2	Tsing Hung Road / Tsing Yi Road	Signalized	66%	78%	85%
J3	Tsing Sheung Road / Tsing Yi Road Priority	Priority	0.54	0.45	0.45
J4	Sai Tso Wan Road / Tsing Yi Road / Tsing Yi Road West	Signalized	33%	24%	89%
J5	Entrance of VEC / Sai Tso Wan Road	Signalized	99%	65%	83%
J6	Tsing Tim Street / Sai Tso Wan Road	Priority	0.38	0.30	0.23
J7	Tsing Yi Road West / Tsing Chin Street*	Priority	N/A	N/A	N/A
J8	Tsing Yi Road West / Ching Hong Road	Signalized	39%	59%	81%
J9	Tsing Yi Road West / Liu To Road	Signalized	30%	53%	39%
J10	Tsing Yi Road West / Fung Shue Wo Road	Signalized	17%	44%	45%
J11	Tsing Yi Heung Sze Wui Road / Cheung Wan Street	Signalized	-3%	-4%	18%
J12	Tsing Yi Heung Sze Wui Road / Chung Mei Road	Signalized	26%	52%	51%
J13	Tsing Yi Road / Tsing Keung Street	Priority	0.18	0.26	0.14
J14	Tsing Yi Road / Planned New Road ⁽³⁾	Signalized	35%	38%	53%
RA1	Tsing Yi Interchange (North)	Roundabout	0.76	0.63	0.40
	Tsing Yi Interchange (South)	Roundabout	0.63	0.48	0.73
RA2	Tsing Yi Road West / Tsing Yi Hong Wan Road / Tsing Sha Highway	Roundabout	0.48	0.48	0.53
RA3	Hong Wan Road / Planned New Road ⁽³⁾	Roundabout	0.50	0.42	0.45
RA4	Hong Wan Road / Tsing Ko Road	Roundabout	0.27	0.26	0.28
RA5	Tam Kon Shan Interchange	Roundabout	0.72	0.70	0.79
RA6	Tsing Yi Heung Sze Wui Road / Fung Shue Wo Road / Tsing King Road	Roundabout	0.47	0.40	0.46
RA7	Tsing Sheung Road / Tsing Yi Hong Wan Road	Roundabout	0.08	0.09	0.11
RA8	Ching Hong Road / Tsing Yi Road	Roundabout	0.46	0.46	0.46
RA9	Tam Kon Shan Road / Tsing Yi North Coastal Road	Roundabout	0.07	0.08	0.08
RA10	Tsing Ko Road / Tsing Sheung Road	Roundabout	0.28	0.27	0.20

Note: (1) RC = Reserve Capacity RFC = Ratio of Flow to Capacity for Priority Junction
(2) Only ingress traffic is allowed on Tsing Chin Street. No traffic conflicts or delay is expected in this location. Therefore, no junction assessment is required.
(3) New Road between Tsing Yi Road / Hong Wan Road was considered

5.1.2 Based on the assessment presented in **Tables 5.1** and **5.2**, all junctions will be operating with ample capacities during design year except J11.

5.1.3 J11 will **over** its capacity due to the increase of left turn traffic by Animal Welfare Centre (A/TY/131) from Tsing Yi Heung Sze Wui Road southbound to Cheung Wan Street. However, due to the committed restriction listed in **Tables 5.3** and **5.4** below, our asphalt trucks cannot pass through RA6 in peak hour which is connected to J11 at the north. Thus will not asphalt trucks will move to the Tsing Yi Heung Sze Wui Road southbound of J11 and will not worsen the case.

5.2 Traffic Management Plan

5.2.1 In previous application, in order to avoid traffic impact induced by the proposed plant to Tsing Yi Town Centre, restrictions were given to the asphalt trucks of the plant. They are not allowed to pass through critical junctions during the peak hour periods (Except emergency and exceptional cases which would be considered by various Government Departments) and are summarized in **Table 5.3**.

Table 5.3 Restriction at Other Critical Junctions

Ref.	<u>No trucks</u> should be allowed to pass through the following junctions	Restricted Hours		
		AM Peak 07:45 – 9:15	Logistic Peak 11:45 – 12:45	PM Peak 16:30 – 17:30
J8	Tsing Yi Road West / Ching Hong Road	X	X	X
RA1	Tsing Yi Interchange	X	○	X
RA2	Tsing Yi Road West / Tsing Yi Hong Wan Road / Tsing Sha Highway	X	X	○
RA5	Tam Kon Shan Interchange	X	○	○
RA6	Tsing Yi Heung Sze Wui Road / Fung Shue Wo Road / Tsing King Road (Together with Junction Cheung Wan Street / Tsing Yi Heung Sze Wui Road)	X	X	X

X: Not allowed to pass through

○: Allow to pass through

6. SUMMARY AND CONCLUSION

6.1 Summary

- 6.1.1 The captioned Planning Approval (Approved Planning Application no.: A/TY/135) was granted in 2019 and will expire on 2 Aug 2024. The Applicant would like to submit a renewal planning application for another 5 years.
- 6.1.2 We, CTA Consultants Limited (CTA), is commissioned as the traffic consultant to undertake a Traffic Impact Assessment (TIA) study for assessing the traffic impact, and to propose any measures if necessary.
- 6.1.3 To appraise the existing traffic conditions, a traffic count survey was conducted in the surrounding road network of the proposed plant. Moreover, current operational performance of the critical junctions was assessed with the observed traffic flows. The operational assessment results revealed that all critical junctions are at present operating with reasonable capacity in peak hours.
- 6.1.4 In order to assess the impact of the development related traffic on the local road network, the 5th year after the approval of planning application of the proposed plant (i.e. year 2029) has been adopted as the design year for this study.
- 6.1.5 To reveal the traffic impact of various proposed developments in the vicinity, traffic generations by the developments in the vicinity have also been taken into consideration.
- 6.1.6 All the assessed junctions will be operating with ample spare capacity in design year except J11, but our trucks will not pass through this junction in peak hour due to the committed restriction in previous planning application and therefore would not worsen the case.
- 6.1.7 As the traffic trips of both committed planning and proposed development do not produce significant impact on the surrounding road network. Therefore, the application is supported from the traffic points of view.

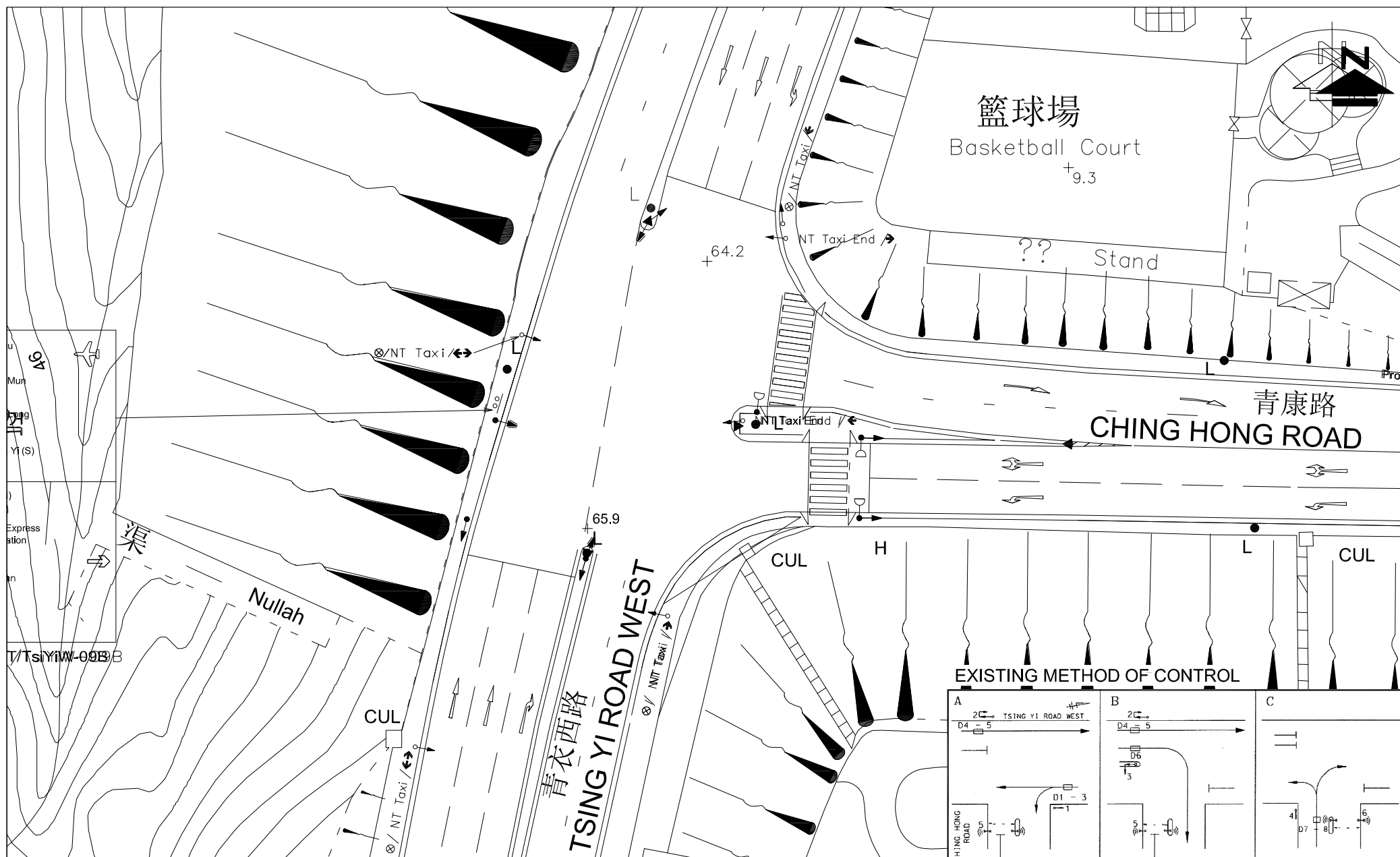


FIGURE NO.: 3.9		PROJECT TITLE: Planning Approval Renewal - Asphalt Plant at Sai Tso Wan Road A/TY/135, TYTL108 RP
PROJECT NO.: 23125HK		DRAWING TITLE: EXISTING JUNCTION LAYOUT OF TSING YI ROAD WEST / CHING HONG ROAD (J8)
SCALE: 1 : 500 (IN A4 SIZE)	DATE: 18 JUN 2024	

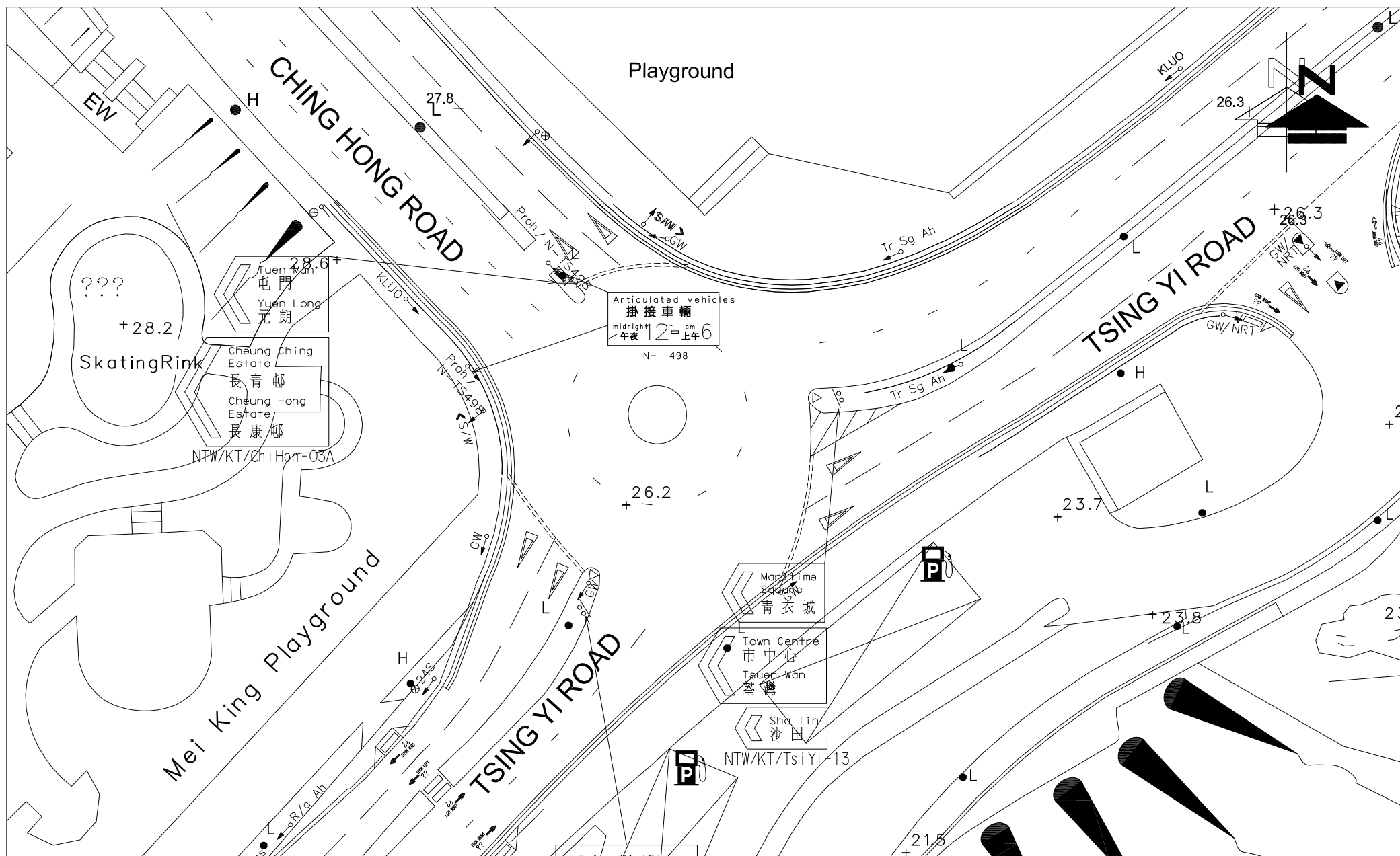
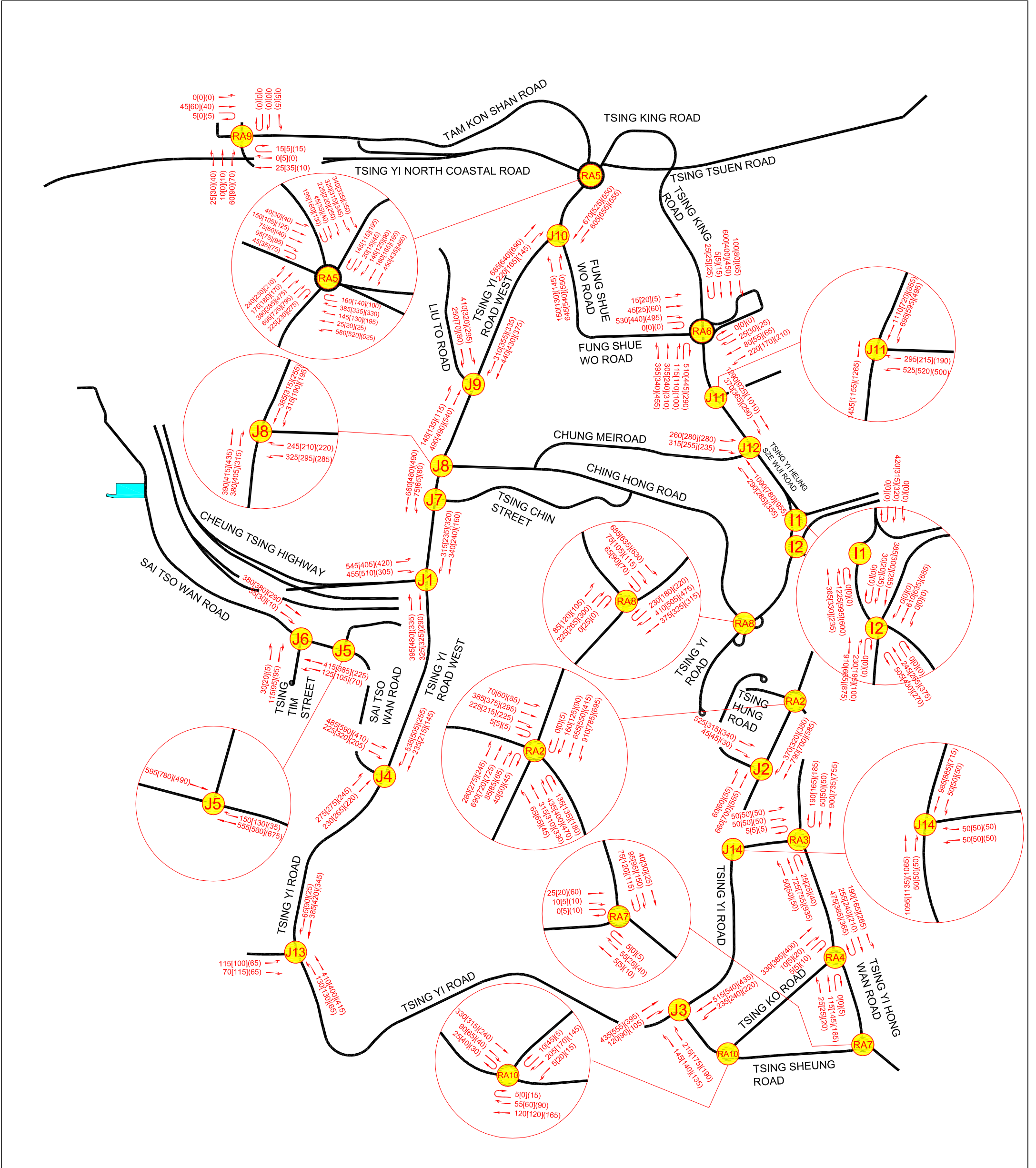


FIGURE NO.: 3.22	PROJECT TITLE: Planning Approval Renewal - Asphalt Plant at Sai Tso Wan Road A/TY/135, TYTL108 RP	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23125HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF CHING HONG ROAD / TSING YI ROAD (RA8)	
SCALE: 1 : 500 (IN A4 SIZE)	DATE: 18 JUN 2024	



LEGEND : SUBJECT SITE 530(500)[455] AM [LOGISTIC](PM) TRAFFIC FLOW (IN PCU / HR)			
FIGURE NO.: 4.3		PROJECT TITLE: Planning Approval Renewal - Asphalt Plant at Sai Tso Wan Road A/TY/135, TYTL108 RP	
PROJECT NO.: 23125HK		DRAWING TITLE: 2029 REFERENCE TRAFFIC FLOW	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 13750 @ A3	DATE: 20 JUN 2024		

TRAFFIC SIGNALS CALCULATION

Job No: 23125HK

CTA Consultants Ltd.

Junction: (J5) Sai Tso Wan Road Near VEC																								
Description: 2024 Observed Traffic Flow																								
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)		AM Peak			PM Peak				
						Left	Right		AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y		
Sai Tso Wan Road	EB	→	3	A	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	565	0.280	0.280	465	0.231			
Sai Tso Wan Road	WB	←	1	A,B	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	530	0.263		640	0.318	0.318		
Sai Tso Wan Road	WB	↖	2	B,C	4.0	0.0	10	0	100%	100%	2155	2155	1875	1875	1875	1875	145	0.077	0.077	35	0.019			
Pedestrian Crossing																								
↑ ↓ 4P C Green time = 13Gm + 5 FGm = 18s																								
Notes: (None)									Traffic Flow (pcu / hr) AM (PM) Peak								A,BC AB,C				A,BC AB,C			
									565(465) → ↖ 145(35) ← 530(640)								AM Peak Check Phase Ey 0.358 0.263 L (sec) 11 25 C (sec) 91 91 y pract. 0.791 0.653 R.C. (%) 121% 148%				PM Peak Check Phase Ey 0.249 0.318 L (sec) 11 25 C (sec) 91 91 y pract. 0.791 0.653 R.C. (%) 217% 106%			
Stage / Phase Diagrams																								
A VEHICLE EXAMINATION COMPLEX 3 1 5 SAI TSO WAN ROAD B 2 1 5 D1 C 4 4 4 2 5 D1																								
I/G = 6					I/G = 7																			
I/G = 3					I/G = 7					I/G = 5 + Ped 18s														

Junction: (J9) Tsing Yi Road West / Liu To Road																									
Description: 2024 Observed Traffic Flow																									
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient	Nearside O/I	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak				
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y		
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%	0%	1735	3610	1735	1735	3610	3610	202	0.116		171	0.098			
	S	↘	2	A,B	3.3	0.0	0	5	0	0%	0%	1875	0	1875	1875	0	0	218	0.116		184	0.098			
	S	↙	3	B	3.3	0.0	22	5	0	100%	100%	1875	1875	1755	1755	1755	1755	295	0.168	0.168	320	0.182	0.182		
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	51%	38%	1935	4100	1795	1830	3960	3995	274	0.153	0.153	286	0.156	0.156		
	N	↑	1	A	4.1	0.0	0	0	0	0%	0%	2165	0	2165	2165	0	0	331	0.153		339	0.156			
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%	100%	1935	1935	1685	1685	1685	1685	390	0.231		280	0.166			
	E	↘	4	C	4.1	0.0	18	0	0	100%	100%	2165	2165	2000	2000	2000	2000	240	0.120	0.120	75	0.038	0.038		
Pedestrian crossing		↕	6P	A,D																					
		↕	7P	C,D																					
		↔	8P	D																					
AM: Green time = 49GM + 9FG = 58s, PM: Green time = 46GM + 9FG = 55s AM: Green time = 51GM + 13FG = 64s, PM: Green time = 28GM + 13FG = 41s Green time = 10GM + 8FG = 18s																									
Pedestrian Crossing																									
												A,BC,D			A,B,C,D			A,BC,D			A,B,C,D				
Notes:												Traffic Flow (pcu / hr) Weekday AM Peak						AM Peak Check Phase				PM Peak Check Phase			
												390(280) ↗ 240(75) ↘ 140(110) ↗ 295(320) ↗ 420(355) ↘ 465(515) ↗						ey 0.384 0.441 L (sec) 39 43 C (sec) 130 130 y pract. 0.630 0.602 R.C. (%) 64% 37%				ey 0.323 0.376 L (sec) 39 43 C (sec) 110 110 y pract. 0.581 0.548 R.C. (%) 80% 46%			
Stage / Phase Diagrams																									
I/G = 5					I/G = 7					I/G = 5					I/G = 11 + Ped 18										

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																											
Description: 2024 Observed Traffic Flow																											
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient	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)		AM Peak			PM Peak						
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y				
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	616	0.313		555	0.283	0.283				
	N	↑	2	A,B	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	659	0.313		595	0.283					
Cheung Wan Street	W	↵	3	C	3.5	18.0	20	0	0	33% / 67%	55% / 45%	2105	0	1955	1950	0	0	374	0.191	0.191	287	0.147	0.147				
	W	↵	3	C	3.5	15.0	0	0	1	100%	100%	1965	4070	1785	1785	3740	3735	341	0.191		263	0.147					
Tsing Yi Heung Sze Wui Road	S	↘	1	A,D	3.5	10.0	0	0	1	100%	100%	1965	6175	1710	1710	5920	5920	575	0.336	0.336	440	0.257					
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	518	0.246		398	0.189					
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	518	0.246		398	0.189					
Pedestrian crossing		↔	4P	B						AM: Green time = 12GM + 11FG = 23s, PM: Green time = 12GM + 11FG = 23s																	
		↑	5P	D						AM: Green time = 6GM + 8FG = 14s, PM: Green time = 10GM + 8FG = 18s																	
		↓	6P	B,C						AM: Green time = 45GM + 10FG = 55s, AM: Green time = 41GM + 10FG = 51s																	
												AB,C,D				AD,B,C				AB,C,D				AD,B,C			
Notes:												Traffic Flow (pcu / hr)				Weekday AM Peak 1035(795) 575(440) 250(130) 465(420) 1275(1150)				AM Peak Check Phase				PM Peak Check Phase			
																				Ey	0.505	0.528	Ey	0.430	0.405		
																				L (sec)	31	37	L (sec)	35	37		
																				C (sec)	114	114	C (sec)	100	100		
																				y pract.	0.655	0.608	y pract.	0.585	0.567		
																				R.C. (%)	30%	15%	R.C. (%)	36%	40%		
Stage / Phase Diagrams																											
I/G = 2						I/G = 8 + Ped 23						I/G = 3						I/G = 5									
												I/G = 5						I/G = 12 + Ped 18									

Junction: (J5) Sai Tso Wan Road Near VEC																						
Description: 2024 Observed Traffic Flow																						
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)		Logistic Peak					
						Left	Right		Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Sai Tso Wan Road	EB	→	3	A	4.0	0.0	0	1	0%		2015	2015	2015		2015		740	0.367	0.367			
Sai Tso Wan Road	WB	←	1	A,B	4.0	0.0	0	1	0%		2015	2015	2015		2015		550	0.273				
Sai Tso Wan Road	WB	↖	2	B,C	4.0	0.0	10	0	100%		2155	2155	1875		1875		125	0.067	0.067			
Pedestrian Crossing		↕	4P	C	Green time = 13Gm + 5 FGm = 18s																	
Notes: (None)											Traffic Flow (pcu / hr) AM (PM) Peak						A,BC			AB,C		
											740 →						Logistic Peak Check Phase					
											↖ 125						εy			0.434 0.273		
											← 550						L (sec)			11 25		
																	C (sec)			91 91		
																	y pract.			0.791 0.653		
																	R.C. (%)			82% 139%		
Stage / Phase Diagrams																						
A VEHICLE EXAMINATION COMPLEX B C																						
I/G = 6				I/G = 7																		
I/G = 3				I/G = 7				I/G = 5 + Ped 18s														

Junction: J9 - Tsing Yi Road West / Liu To Road																								
Description: 2024 Observed Traffic Flow																								
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Gradient (%) uphill	Nearside O/I	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		Logistic Peak						
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%		1735	3610	1735		3610		197	0.114					
	S	↓	2	A,B	3.3	0.0	0	5	0	0%		1875	0	1875		0		213	0.114					
	S	↙	3	B	3.3	0.0	22	5	0	100%		1875	1875	1755		1755		340	0.194	0.194				
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	48%		1935	4100	1805		3970		271	0.150	0.150				
	N	↑	1	A	4.1	0.0	0	0	0	0%		2165	0	2165		0		324	0.150					
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%		1935	1935	1685		1685		305	0.181					
	E	↘	4	C	4.1	0.0	18	0	0	100%		2165	2165	2000		2000		65	0.033	0.033				
Pedestrian crossing	↕	↕	6P	A,D		Green time = 46GM + 9FG = 55s																		
			7P	C,D		Green time = 31GM + 13FG = 44s																		
			8P	D		Green time = 10GM + 8FG = 18s																		
Pedestrian Crossing																								
																		A,BC,D			A,B,C,D			
Notes:												Traffic Flow (pcu / hr)				Weekday AM Peak				Logistic Peak Check Phase				
												305				↗ ↘				by				
												65				↙ ↘				L (sec)				
																↗ ↘				C (sec)				
												130				↗ ↘				y pract.				
												465				↗ ↘				R.C. (%)				
																				90%				60%
Stage / Phase Diagrams																								
I/G = 5					I/G = 7					I/G = 5					I/G = 11 + Ped 18									

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																							
Description: 2024 Observed Traffic Flow																							
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		uphill Gradient (%)	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)		Logistic Peak					
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%		1965	4070	1965		4070		478	0.243				
	N	↑	2	A,B	3.5	0.0	0	0	0	0%		2105	0	2105		0		512	0.243				
Cheung Wan Street	W	↙	3	C	3.5	18.0	20	0	0	47% / 53%		2105	0	1950		0		332	0.170	0.170			
	W	↘	3	C	3.5	15.0	0	0	1	100%		1965	4070	1785		3735		303	0.170				
Tsing Yi Heung Sze Wui Road	S	↘	1	A,D	3.0	10.0	0	0	1	100%		1915	6025	1665		5775		480	0.288	0.288			
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		333	0.162				
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		333	0.162				
Pedestrian crossing		↔	4P	B						Green time = 12GM + 11FG = 23s													
		↑	5P	D						Green time = 8GM + 8FG = 16s													
		↓	6P	B,C						Green time = 42GM + 10FG = 52s													
AB,C,D AD,B,C																							
Notes:												Traffic Flow (pcu / hr) Weekday AM Peak				Logistic Peak Check Phase							
												665 480				Ey 0.413 0.458							
												990				L (sec) 33 37							
												↑ ↓ ↘ ↙				C (sec) 90 90							
																y pract. 0.570 0.530							
																R.C. (%) 38% 16%							
Stage / Phase Diagrams																							
I/G = 2						I/G = 5						I/G = 12 + Ped 16											

Priority Junction Calculation

Junction :	<u>(J13) Tsing Yi Road / Tsing Keung Street</u>	Job No.:	<u>23125HK</u>
Scenario :	<u>2024 Observed Traffic Flow</u>		

Arm C Tsing Yi Road

365	<400>	(315)
60	<85>	(25)

Arm A Tsing Yi Road

390	<380>	(380)
125	<125>	(60)

110	65
<95>	<110>
(60)	(60)

Arm B Tsing Keung Street

AM	[Logistic]	(PM)
[Logistic]		
(PM)		

The predictive equations of capacity of movement are:

$$Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))$$

$$Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))$$

$$Q-CB = F(745 - 0.364Y(q-AC + q-AB))$$

The geometric parameters represented by D, E, F are:

$$D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))$$

$$E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))$$

$$F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))$$

where

Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input	Calculated
W	15	D 0.910
W-CR	0	E 0.968
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	F 0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	Y 0.483

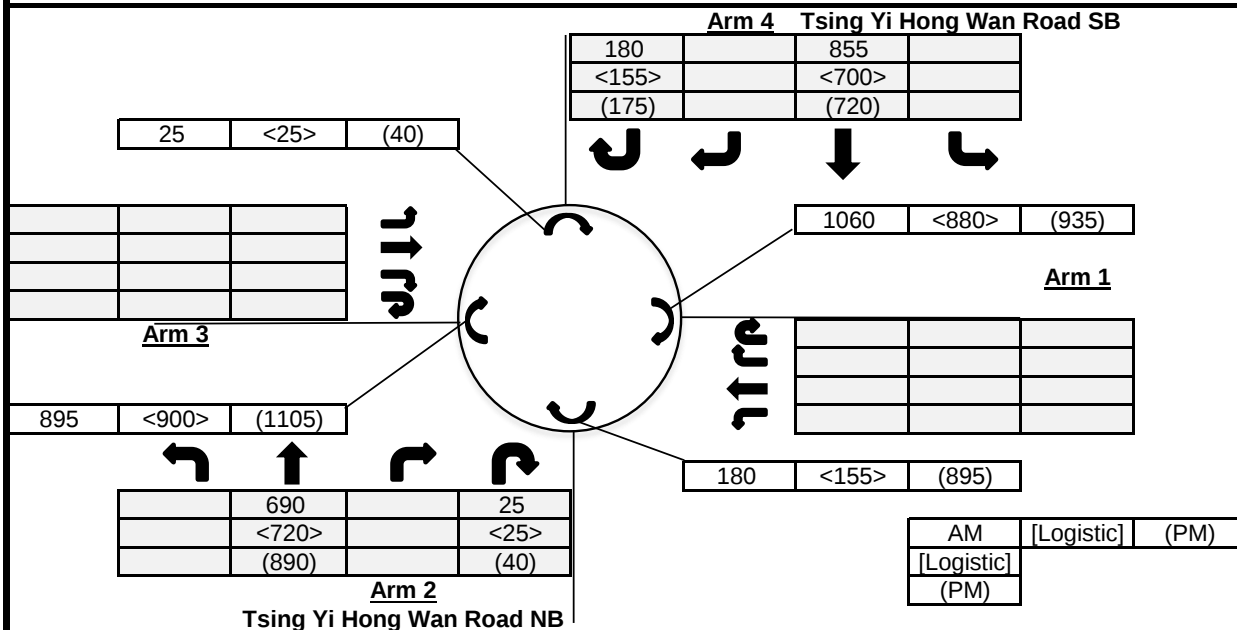
Analysis :	Traffic Flow pcu/hr	AM	Logistic	PM	Capacity pcu/hr	AM	Logistic	PM	
	q-CA	365	400	315	Q-BA	450	442	469	
	q-CB	60	85	25	Q-BC	646	648	652	
	q-AB	125	125	60	Q-CB	403	404	411	
	q-AC	390	380	380	Q-CA	N/A	N/A	N/A	(If C-B blocked C-
	q-BA	65	110	60	Q-BAC	N/A	N/A	N/A	(If Minor
	q-BC	110	95	60					Road Share
	f	0.629	0.463	0.500					LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	Logistic	PM
	B-A	0.14	0.25	0.13
	B-C	0.17	0.15	0.09
	C-B	0.15	0.21	0.06
	C-A	N/A	N/A	N/A
	B-AC	N/A	N/A	N/A
	Critical DFC	0.17	0.25	0.13

Roundabout Junction Calculation

Junction : (RA3) Tsing Yi Hong Wan Road Job No.: 23125HK

Scenario : 2024 Observed Traffic Flow



Input Parameters

		Arm 1	Arm 2	Arm 3	Arm 4
V	=	Approach half width (m)	7		7.3
E	=	Entry width (m)	14		12
L	=	Effective length of flare (m)	20		2
R	=	Entry radius	65		75
D	=	Inscribed circle diameter (m)	68		68
A	=	Entry angle (degree)	53		46
Q	=	Entry flow (pcu/hr)	715		1035
		AM	715		1035
		Logistic	745		855
		PM	930		895
Qc	=	Circulating flow across entry (pcu/hr)	180		25
		AM	180		25
		Logistic	155		25
		PM	895		40

Output Parameters

		Arm 1	Arm 2	Arm 3	Arm 4
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$	0.56		3.76
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$	0.95		0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$	10.30		7.85
M	=	$\text{Exp}((D - 60) / 10)$	2.23		2.23
F	=	$303 \cdot X2$	3121		2379
Td	=	$1 + (0.5 / (1 + M))$	1.16		1.16
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.74		0.62
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	2851		2317
		AM	2851		2317
		Logistic	2868		2317
		PM	2344		2308
DFC	=	Entry Flow/Capacity = Q / Qe	0.25		0.45
		AM	0.25		0.45
		Logistic	0.26		0.37
		PM	0.40		0.39

DFC of Critical Approach = AM 0.45
Logistic 0.37
PM 0.40

Job No: 23125HK

CTA Consultants Ltd.

Junction: (J5) Sai Tso Wan Road Near VEC

Description: 2029 Reference Traffic Flow

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)			AM Peak			PM Peak		
						Left	Right		AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	

Sai Tso Wan Road	EB		3	A	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	595	0.295	0.295	490	0.243	
Sai Tso Wan Road	WB		1	A,B	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	555	0.275		675	0.335	0.335
Sai Tso Wan Road	WB		2	B,C	4.0	0.0	10	0	100%	100%	2155	2155	1875	1875	1875	1875	150	0.080	0.080	35	0.019	

Pedestrian Crossing



4P

C

$$\text{Green time} = 13\text{Gm} + 5 \text{FGm} = 18\text{s}$$

Notes:
(None)

Traffic Flow (pcu / hr)	AM (PM) Peak
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595(490) →



150(35)

← 555(675)

A,BC AB,C

	AM Peak Check Phase
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ε_V	0.375	0.275
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L (sec)	11	25
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C (sec)	91	91
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y pract.	0.791	0.65
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R.C. (%)	111%	137%
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A,BC AB,C

PM Peak Check Phase	
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ϵ_V	0.262	0.335
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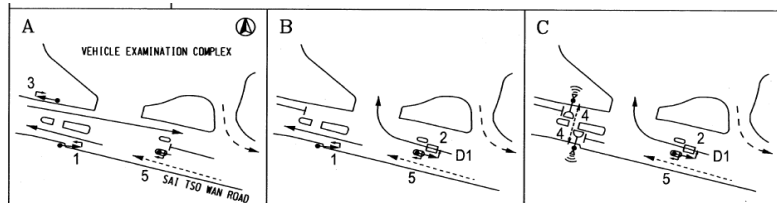
L (sec)	11	25
---------	----	----

C (sec)	91	91
---------	----	----

y pract.	0.791	0.653
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R.C. (%)	202%	95%
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Stage / Phase Diagrams

 $I/G = 6$

I/G = 7

 $I/G = 3$

I/G = 7

I/G = 5 + Ped 18s

Junction: (J9) Tsing Yi Road West / Liu To Road																											
Description: 2029 Reference Traffic Flow																											
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient	Nearside O/I	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak						
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y				
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%	0%	1735	3610	1735	1735	3610	3610	211	0.122		180	0.104					
	S	↘	2	A,B	3.3	0.0	0	5	0	0%	0%	1875	0	1875	1875	0	0	229	0.122		195	0.104					
	S	↙	3	B	3.3	0.0	22	5	0	100%	100%	1875	1875	1755	1755	1755	1755	310	0.177	0.177	335	0.191	0.191				
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	50%	38%	1935	4100	1800	1830	3965	3995	288	0.160	0.160	300	0.164	0.164				
	N	↕	1	A	4.1	0.0	0	0	0	0%	0%	2165	0	2165	2165	0	0	347	0.160		355	0.164					
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%	100%	1935	1935	1685	1685	1685	1685	410	0.243		295	0.175					
	E	↘	4	C	4.1	0.0	18	0	0	100%	100%	2165	2165	2000	2000	2000	2000	250	0.125	0.125	80	0.040	0.040				
Pedestrian crossing		↕	6P	A,D		AM: Green time = 49GM + 9FG = 58s, PM: Green time = 46GM + 9FG = 55s																					
		↕	7P	C,D		AM: Green time = 51GM + 13FG = 64s, PM: Green time = 28GM + 13FG = 41s																					
		↔	8P	D		Green time = 10GM + 8FG = 18s																					
Pedestrian Crossing																											
													A,BC,D			A,B,C,D			A,BC,D			A,B,C,D					
Notes:										Traffic Flow (pcu / hr) Weekday AM Peak										AM Peak Check Phase				PM Peak Check Phase			
										410(295) ↗ 250(80) ↓ ↙ 145(115) 490(540) ↖ 310(335) 440(375) ↓										ey 0.404 0.462 L (sec) 39 43 C (sec) 130 130 y pract. 0.630 0.602 R.C. (%) 56% 30%				ey 0.339 0.395 L (sec) 39 43 C (sec) 110 110 y pract. 0.581 0.548 R.C. (%) 71% 39%			
Stage / Phase Diagrams																											
I/G = 5					I/G = 7					I/G = 5					I/G = 11 + Ped 18												

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																								
Description: 2029 Reference Traffic Flow																								
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient	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)		AM Peak			PM Peak			
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	702	0.357		611	0.311	0.311	
	N	↑	2	A,B	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	753	0.357		654	0.311		
Cheung Wan Street	W	↶	3	C	3.5	18.0	20	0	0	31% / 69%	47% / 53%	2105	0	1955	1950	0	0	428	0.219	0.219	360	0.185	0.185	
	W	↷	3	C	3.5	15.0	0	0	1	100%	100%	1965	4070	1785	1785	3740	3735	392	0.219		330	0.185		
Tsing Yi Heung Sze Wui Road	S	↘	1	A,D	3.5	10.0	0	0	1	100%	100%	1965	6175	1710	1710	5920	5920	695	0.406	0.406	495	0.289		
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	555	0.264		428	0.203		
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	555	0.264		428	0.203		
Pedestrian crossing		↔	4P	B						AM: Green time = 12GM + 11FG = 23s, PM: Green time = 12GM + 11FG = 23s														
		↑	5P	D						AM: Green time = 6GM + 8FG = 14s, PM: Green time = 10GM + 8FG = 18s														
		↓	6P	B,C						AM: Green time = 45GM + 10FG = 55s, AM: Green time = 41GM + 10FG = 51s														
Notes:													Traffic Flow (pcu / hr)		Weekday AM Peak		AM Peak Check Phase		PM Peak Check Phase					
															1110(855) 695(495)		Ey 0.577 0.626		Ey 0.496 0.474					
															↓ ↘		L (sec) 31 37		L (sec) 35 37					
															↗ ↙		C (sec) 114 114		C (sec) 100 100					
															↑		y pract. 0.655 0.608		y pract. 0.585 0.567					
													1455(1265)				295(190) 525(500)		R.C. (%) 14% -3%		R.C. (%) 18% 20%			
Stage / Phase Diagrams																								
I/G = 2						I/G = 8 + Ped 23						I/G = 3						I/G = 5						
												I/G = 5						I/G = 12 + Ped 18						

Junction: (J5) Sai Tso Wan Road Near VEC

Description: **2029 Reference Traffic Flow**

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)		Logistic Peak					
						Left	Right		Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Sai Tso Wan Road	EB	→	3	A	4.0	0.0	0	1	0%		2015	2015	2015		2015		780	0.387	0.387			
Sai Tso Wan Road	WB	←	1	A,B	4.0	0.0	0	1	0%		2015	2015	2015		2015		580	0.288				
Sai Tso Wan Road	WB	↰	2	B,C	4.0	0.0	10	0	100%		2155	2155	1875		1875		130	0.069	0.069			
Pedestrian Crossing		↕	4P	C		Green time = 13Gm + 5 FGm = 18s																
Notes: (None)												Traffic Flow (pcu / hr) AM (PM) Peak 780 → ↰ 130 ← 580				A,B,C AB,C Logistic Peak Check Phase Ey 0.456 0.288 L (sec) 11 25 C (sec) 91 91 y pract. 0.791 0.653 R.C. (%) 73% 127%						
Stage / Phase Diagrams																						
A VEHICLE EXAMINATION COMPLEX 3 1 5 SAI TSO WAN ROAD B 4 2 5 SAI TSO WAN ROAD C 4 2 5 SAI TSO WAN ROAD																						
I/G = 6					I/G = 7					I/G = 3					I/G = 5 + Ped 18s							

Junction: J9 - Tsing Yi Road West / Liu To Road																													
Description: 2029 Reference Traffic Flow																													
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Nearside O/I	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		Logistic Peak											
						Left	Right			Logistic Peak				Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y								
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%		1735	3610	1735		3610		207	0.119										
	S	↓	2	A,B	3.3	0.0	0	5	0	0%		1875	0	1875		0		223	0.119										
	S	↙	3	B	3.3	0.0	22	5	0	100%		1875	1875	1755		1755		355	0.202	0.202									
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	47%		1935	4100	1805		3970		284	0.157	0.157									
	N	↑	1	A	4.1	0.0	0	0	0	0%		2165	0	2165		0		341	0.157										
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%		1935	1935	1685		1685		320	0.190										
	E	↘	4	C	4.1	0.0	18	0	0	100%		2165	2165	2000		2000		70	0.035	0.035									
Pedestrian crossing		↕	6P	A,D		Green time = 46GM + 9FG = 55s																							
		↕	7P	C,D		Green time = 31GM + 13FG = 44s																							
		↔	8P	D		Green time = 10GM + 8FG = 18s																							
Pedestrian Crossing																													
																		A,BC,D			A,B,C,D								
Notes:												Traffic Flow (pcu / hr)				Weekday AM Peak				Logistic Peak Check Phase									
												320 70								by L (sec) C (sec) y pract. R.C. (%)				0.347 39 130 0.630 81%			0.395 43 130 0.602 53%		
												135				490													
Stage / Phase Diagrams																													
I/G = 5						I/G = 7						I/G = 5						I/G = 11 + Ped 18											

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																							
Description: 2029 Reference Traffic Flow																							
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		uphill Gradient (%)	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)		Logistic Peak					
						Left	Right							Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y			
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%		1965	4070	1965		4070		558	0.284				
	N	↑	2	A,B	3.5	0.0	0	0	0	0%		2105	0	2105		0		597	0.284				
Cheung Wan Street	W	↵	3	C	3.5	18.0	20	0	0	44% / 56%		2105	0	1950		0		384	0.197	0.197			
	W	↵	3	C	3.5	15.0	0	0	1	100%		1965	4070	1785		3735		351	0.197				
Tsing Yi Heung Sze Wui Road	S	↘	1	A,D	3.0	10.0	0	0	1	100%		1915	6025	1665		5775		595	0.357	0.357			
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		360	0.175				
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		360	0.175				
Pedestrian crossing		↔	4P	B						Green time = 12GM + 11FG = 23s													
		↑	5P	D						Green time = 8GM + 8FG = 16s													
		↓	6P	B,C						Green time = 42GM + 10FG = 52s													
AB,C,D AD,B,C																							
Notes:												Traffic Flow (pcu / hr) Weekday AM Peak				Logistic Peak Check Phase							
												720 595				Ey 0.481 0.554							
												↘ ↙				L (sec) 33 37							
												↑ ↗				C (sec) 90 90							
												1155 215 520				y pract. 0.570 0.530							
																R.C. (%) 19% -4%							
Stage / Phase Diagrams																							
I/G = 2						I/G = 5						I/G = 12 + Ped 16											

TRAFFIC SIGNALS CALCULATION Job No: 23125HK CTA Consultants Ltd.

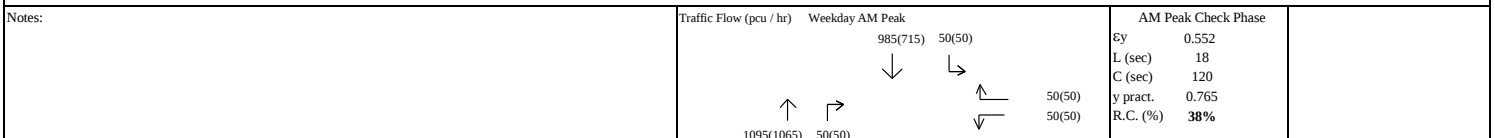
TRAFFIC SIGNALS CALCULATION Job No: 23125HK **CTA Consultants Ltd.**

TRAFFIC SIGNALS CALCULATION Job No: 23125HK **CTA Consultants Ltd.**

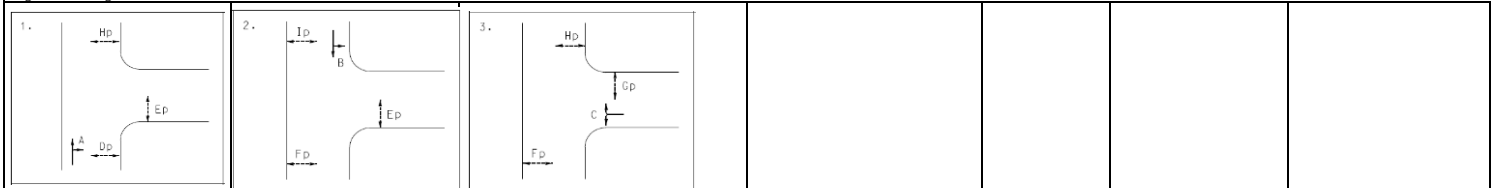
Junction: (J14) Tsing Yi Road / Planned New Road	
Description: 2029 Reference Traffic Flow	(With Planned New Road)

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Neasside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		Logistic Peak					
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Tsing Yi Road	N	↑	A	1	3.5	0.0	0	0	1	0%		1965	4070	1965		4065		573	0.292	0.292			
	N	↗	A	1	3.5	0.0	40	0	0	8%		2105	0	2100		0		612	0.291				
Planned New Road	W	↖	C	3	3.5	0.0	18	0	0	100%		2105	2105	1945		1945		50	0.026				
	W	↘	C	3	3.5	10.0	0	0	1	100%		1965	1965	1710		1710		50	0.029	0.029			
Tsing Yi Road	S	↘	B	2	3.5	10.0	0	0	1	11%		1965	4070	1935		4040		448	0.231	0.232			
	S	↓	B	2	3.5	0.0	0	0	0	0%		2105	0	2105		0		487	0.232				
Pedestrian crossing		↔	Dp	1		Green time = 28GM + 7FG = 35s																	
		↕	EP	1,2		Green time = 78GM + 7FG = 85s																	
		↔	Fp	2,3		Green time = 68GM + 7FG = 75s																	
		↕	Gp	3		Green time = 20GM + 7FG = 27s																	
		↔	Hp	1,3		Green time = 66GM + 7FG = 73s																	
		↔	Ip	2		Green time = 32GM + 7FG = 39s																	

Notes:	Traffic Flow (pcu / hr)	Weekday AM Peak	AM Peak Check Phase
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Stage / Phase Diagrams			
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$l/G = 5$	$l/G = 10$	$l/G = 6$			
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$l/G = 5$	$l/G = 10$	$l/G = 6$			
-----------	------------	-----------	--	--	--

$l/G = 5$	$l/G = 10$	$l/G = 6$			
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Priority Junction Calculation

Junction :	<u>(J13) Tsing Yi Road / Tsing Keung Street</u>	Job No.:	<u>23125HK</u>
Scenario :	<u>2029 Reference Traffic Flow</u>		

Arm C Tsing Yi Road

385	<420>	(330)
65	<90>	(25)

Arm A Tsing Yi Road

410	<400>	(400)
130	<130>	(65)

115	70
<100>	<115>
(65)	(65)

AM	[Logistic]	(PM)
[Logistic]		
(PM)		

Arm B Tsing Keung Street

The predictive equations of capacity of movement are:

$$Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))$$

$$Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))$$

$$Q-CB = F(745 - 0.364Y(q-AC + q-AB))$$

The geometric parameters represented by D, E, F are:

$$D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))$$

$$E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))$$

$$F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))$$

where

Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input	Calculated
W	15	D 0.910
W-CR	0	E 0.968
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	F 0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	Y 0.483
V-rBA	50	
V-IBA	50	
V-rBC	50	
V-rCB	50	
w-BA	4	
w-BC	4	
w-CB	0	

Analysis :	Traffic Flow pcu/hr	AM	Logistic	PM	Capacity pcu/hr	AM	Logistic	PM	
q-CA	385		420	330	Q-BA	443	436	464	
q-CB	65		90	25	Q-BC	643	644	649	
q-AB	130		130	65	Q-CB	400	401	408	
q-AC	410		400	400	Q-CA	N/A	N/A	N/A	(If C-B blocked C-
q-BA	70		115	65	Q-BAC	N/A	N/A	N/A	(If Minor Road Share
q-BC	115		100	65					LT&RT)
f	0.622		0.465	0.500					

Results :	Ratio of Flow-to-Capacity	AM	Logistic	PM
	B-A	0.16	0.26	0.14
	B-C	0.18	0.16	0.10
	C-B	0.16	0.22	0.06
	C-A	N/A	N/A	N/A
	B-AC	N/A	N/A	N/A
	Critical DFC	0.18	0.26	0.14

Roundabout Junction Calculation

Junction :	(RA3) Tsing Yi Hong Wan Road	Job No.:	23125HK
Scenario :	2029 Reference Traffic Flow (With Planned New Road)		

Arm 4 Tsing Yi Hong Wan Road SB

190	50	900
<165>	<50>	<735>
(185)	(50)	(755)

Arm 1

1220	<1030>	(1085)

Arm 2 Tsing Yi Hong Wan Road NB

50	725	25
<50>	<755>	<25>
(50)	(935)	(40)

Arm 3

50	<50>	(50)
50	<50>	(50)
5	<5>	(5)

Input Parameters		Arm 1	Arm 2	Arm 3	Arm 4
V	= Approach half width (m)		7	7.3	7.3
E	= Entry width (m)		14	13	12
L	= Effective length of flare (m)		20	10	2
R	= Entry radius		65	25	75
D	= Inscribed circle diameter (m)		68	68	68
A	= Entry angle (degree)		53	60	46
Q	= Entry flow (pcu/hr)	AM	800	105	1140
		Logistic	830	105	950
		PM	1025	105	990
Qc	= Circulating flow across entry (pcu/hr)	AM	245	940	80
		Logistic	220	945	80
		PM	995	1160	95

Output Parameters		Arm 1	Arm 2	Arm 3	Arm 4
S	= Sharpness of flare = $1.6 \cdot (E-V)/L$		0.56	0.91	3.76
K	= $1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$		0.95	0.91	0.98
X2	= $V + ((E-V)/(1+2 \cdot S))$		10.30	9.32	7.85
M	= $\text{Exp}((D-60)/10)$		2.23	2.23	2.23
F	= $303 \cdot X2$		3121	2823	2379
Td	= $1 + (0.5/(1+M))$		1.16	1.16	1.16
Fc	= $0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.74	0.69	0.62
Qe	= Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	2805	1966	2283
		Logistic	2822	1963	2283
		PM	2273	1827	2274
DFC	= Entry Flow/Capacity = Q/Qe	AM	0.29	0.05	0.50
		Logistic	0.29	0.05	0.42
		PM	0.45	0.06	0.44

DFC of Critical Approach	=	AM	0.50	
		Logistic	0.42	
		PM	0.45	

Job No: 23125HK

CTA Consultants Ltd.

Junction: (J5) Sai Tso Wan Road Near VEC

Description: **2029 Design Traffic Flow**

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)			AM Peak			PM Peak		
						Left	Right		AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	

Sai Tso Wan Road	EB		3	A	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	640	0.318	0.318	535	0.266	
Sai Tso Wan Road	WB		1	A,B	4.0	0.0	0	1	0%	0%	2015	2015	2015	2015	2015	2015	600	0.298		720	0.357	0.357
Sai Tso Wan Road	WB		2	B,C	4.0	0.0	10	0	100%	100%	2155	2155	1875	1875	1875	1875	150	0.080	0.080	35	0.019	

Pedestrian Crossing



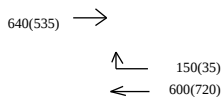
4P

C

Green time = 13Gm + 5 FGm = 18s

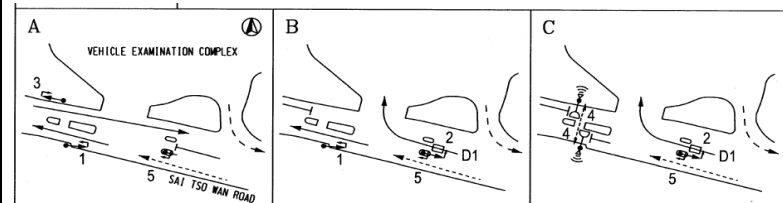
Notes:
(None)

Traffic Flow (pcu / hr)	AM (PM) Peak
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A,BC			AB,C		
AM Peak Check Phase			PM Peak Check Phase		
εy	0.398	0.298	εy	0.284	0.357
L (sec)	11	25	L (sec)	11	25
C (sec)	91	91	C (sec)	91	91
y pract.	0.791	0.653	y pract.	0.791	0.653
R.C. (%)	99%	119%	R.C. (%)	178%	83%

Stage / Phase Diagrams

 $I/G = 6$

I/G = 7

 $I/G = 3$

	$I/G = 7$
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I/G = 5 + Ped 18s

Junction: (J9) Tsing Yi Road West / Liu To Road																									
Description: 2029 Design Traffic Flow																									
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		uphill Gradient (%)	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)		AM Peak			PM Peak				
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y		
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%	0%	1735	3610	1735	1735	3610	3610	211	0.122		180	0.104			
	S	↓	2	A,B	3.3	0.0	0	5	0	0%	0%	1875	0	1875	1875	0	0	229	0.122		195	0.104			
	S	↙	3	B	3.3	0.0	22	5	0	100%	100%	1875	1875	1755	1755	1755	1755	310	0.177	0.177	335	0.191	0.191		
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	50%	38%	1935	4100	1800	1830	3965	3995	288	0.160	0.160	300	0.164	0.164		
	N	↑	1	A	4.1	0.0	0	0	0	0%	0%	2165	0	2165	2165	0	0	347	0.160		355	0.164			
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%	100%	1935	1935	1685	1685	1685	1685	410	0.243		295	0.175			
	E	↘	4	C	4.1	0.0	18	0	0	100%	100%	2165	2165	2000	2000	2000	2000	250	0.125	0.125	80	0.040	0.040		
Pedestrian crossing		↕	6P	A,D	AM: Green time = 49GM + 9FG = 58s, PM: Green time = 46GM + 9FG = 55s																				
		↕	7P	C,D	AM: Green time = 51GM + 13FG = 64s, PM: Green time = 28GM + 13FG = 41s																				
		↔	8P	D	Green time = 10GM + 8FG = 18s																				
Pedestrian Crossing																									
																		A,B,C,D		A,B,C,D		A,BC,D		A,B,C,D	
Notes:												Traffic Flow (pcu / hr) Weekday AM Peak						AM Peak Check Phase			PM Peak Check Phase				
																		6y	0.404	0.462	6y	0.339	0.395		
																		L (sec)	39	43	L (sec)	39	43		
																		C (sec)	130	130	C (sec)	110	110		
																		y pract.	0.630	0.602	y pract.	0.581	0.548		
																		R.C. (%)	56%	30%	R.C. (%)	71%	39%		
Stage / Phase Diagrams																									
L/G = 5					L/G = 7					L/G = 5					L/G = 11 + Ped 18										

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																								
Description: 2029 Design Traffic Flow																								
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient)	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)		AM Peak			PM Peak			
						Left	Right			AM	PM			AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	702	0.357		611	0.311	0.311	
	N	↑	2	A,B	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	753	0.357		654	0.311		
Cheung Wan Street	W	↵	3	C	3.5	18.0	20	0	0	31% / 69%	47% / 53%	2105	0	1955	1950	0	0	428	0.219	0.219	360	0.185	0.185	
	W	↘	3	C	3.5	15.0	0	0	1	100%	100%	1965	4070	1785	1785	3740	3735	392	0.219		330	0.185		
Tsing Yi Heung Sze Wui Road	S	↘↵	1	A,D	3.5	10.0	0	0	1	100%	100%	1965	6175	1710	1710	5920	5920	695	0.406	0.406	495	0.289		
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	555	0.264		428	0.203		
	S	↓	1	A,D	3.5	0.0	0	0	0	0%	0%	2105	0	2105	2105	0	0	555	0.264		428	0.203		
Pedestrian crossing		↔	4P	B						AM: Green time = 12GM + 11FG = 23s, PM: Green time = 12GM + 11FG = 23s														
		↑	5P	D						AM: Green time = 6GM + 8FG = 14s, PM: Green time = 10GM + 8FG = 18s														
		↓	6P	B,C						AM: Green time = 45GM + 10FG = 55s, AM: Green time = 41GM + 10FG = 51s														
Notes:													Traffic Flow (pcu / hr)		Weekday AM Peak		AM Peak Check Phase		PM Peak Check Phase					
															1110(855) 695(495)		Ey 0.577 0.626		Ey 0.496 0.474					
															↓ ↘ ↗		L (sec) 31 37		L (sec) 35 37					
															↗ ↘ ↓		C (sec) 114 114		C (sec) 100 100					
															↑		y pract. 0.655 0.608		y pract. 0.585 0.567					
													1455(1265)				295(190) 525(500)		R.C. (%) 14% -3%		R.C. (%) 18% 20%			
Stage / Phase Diagrams																								
I/G = 8 + Ped 23						I/G = 3						I/G = 5												
I/G = 2						I/G = 5						I/G = 12 + Ped 18												

Junction: (J5) Sai Tso Wan Road Near VEC																													
Description: 2029 Design Traffic Flow																													
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)		Logistic Peak												
						Left	Right		Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y							
Sai Tso Wan Road	EB	→	3	A	4.0	0.0	0	1	0%		2015	2015	2015		2015		825	0.409	0.409										
Sai Tso Wan Road	WB	←	1	A,B	4.0	0.0	0	1	0%		2015	2015	2015		2015		625	0.310											
Sai Tso Wan Road	WB	↰	2	B,C	4.0	0.0	10	0	100%		2155	2155	1875		1875		130	0.069	0.069										
Pedestrian Crossing		↕	4P	C	Green time = 13Gm + 5 FGm = 18s																								
Notes: (None)											Traffic Flow (pcu / hr) AM (PM) Peak					A,BC AB,C													
											825 →					Logistic Peak Check Phase													
											↰ 130					εy 0.479 0.310													
											← 625					L (sec) 11 25													
																C (sec) 91 91													
																y pract. 0.791 0.653													
																R.C. (%) 65% 110%													
Stage / Phase Diagrams																													
A VEHICLE EXAMINATION COMPLEX B C																													
I/G = 6				I/G = 7																									
I/G = 3				I/G = 7				I/G = 5 + Ped 18s																					

Junction: J9 - Tsing Yi Road West / Liu To Road																																		
Description: 2029 Design Traffic Flow																																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Nearside O/I	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		Logistic Peak																
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y											
Tsing Yi Road West	S	↓	2	A,B	3.3	0.0	0	5	1	0%		1735	3610	1735		3610		207	0.119															
	S	↓	2	A,B	3.3	0.0	0	5	0	0%		1875	0	1875		0		223	0.119															
	S	↙	3	B	3.3	0.0	22	5	0	100%		1875	1875	1755		1755		355	0.202	0.202														
Tsing Yi Road West	N	↕	1	A	3.2	10.0	0	0	1	47%		1935	4100	1805		3970		284	0.157	0.157														
	N	↑	1	A	4.1	0.0	0	0	0	0%		2165	0	2165		0		341	0.157															
Liu To Road	E	↗	5	B,C	3.2	10.0	0	0	1	100%		1935	1935	1685		1685		320	0.190															
	E	↘	4	C	4.1	0.0	18	0	0	100%		2165	2165	2000		2000		70	0.035	0.035														
Pedestrian crossing		↕	6P	A,D		Green time = 46GM + 9FG = 55s																												
		↕	7P	C,D		Green time = 31GM + 13FG = 44s																												
		↔	8P	D		Green time = 10GM + 8FG = 18s																												
Pedestrian Crossing																																		
																		A,BC,D			A,B,C,D													
Notes:												Traffic Flow (pcu / hr)				Weekday AM Peak				Logistic Peak Check Phase														
												320 70								355 430 135 490				by 0.347 0.395 L (sec) 39 43 C (sec) 130 130 y pract. 0.630 0.602 R.C. (%) 81% 53%										
Stage / Phase Diagrams																																		
I/G = 5					I/G = 7					I/G = 5					I/G = 11 + Ped 18																			

Junction: (J11) Tsing Yi Heung Sze Wui Road / Cheung Wan Street																											
Description: 2029 Design Traffic Flow																											
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		uphill Gradient (%)	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)		Logistic Peak									
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y				
Tsing Yi Heung Sze Wui Road	N	↑	2	A,B	3.5	0.0	0	0	1	0%		1965	4070	1965		4070		558	0.284								
	N	↑	2	A,B	3.5	0.0	0	0	0	0%		2105	0	2105		0		597	0.284								
Cheung Wan Street	W	↶	3	C	3.5	18.0	20	0	0	44% / 56%		2105	0	1950		0		384	0.197	0.197							
	W	↷	3	C	3.5	15.0	0	0	1	100%		1965	4070	1785		3735		351	0.197								
Tsing Yi Heung Sze Wui Road	S	↘	1	A,D	3.0	10.0	0	0	1	100%		1915	6025	1665		5775		595	0.357	0.357							
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		360	0.175								
	S	↓	1	A,D	3.0	0.0	0	0	0	0%		2055	0	2055		0		360	0.175								
Pedestrian crossing		↔	4P	B	Green time = 12GM + 11FG = 23s																						
		↑	5P	D	Green time = 8GM + 8FG = 16s																						
		↓	6P	B,C	Green time = 42GM + 10FG = 52s																						
AB,C,D AD,B,C																											
Notes:												Traffic Flow (pcu / hr)				Weekday AM Peak				Logistic Peak Check Phase							
																720 595				8y 0.481 0.554							
																↘ ↗				L (sec) 33 37							
																↖ ↙				C (sec) 90 90							
																215 520				y pract. 0.570 0.530							
																1155				R.C. (%) 19% -4%							
Stage / Phase Diagrams																											
A B C D																											
I/G = 2					I/G = 5					I/G = 12 + Ped 16																	

Junction: (J14) Tsing Yi Road / Planned New Road																													
Description: 2029 Design Traffic Flow										(With Planned New Road)																			
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient	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)		Logistic Peak											
						Left	Right			Logistic Peak				Logistic Peak		Logistic Peak		Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y						
Tsing Yi Road	N	↑	A	1	3.5	0.0	0	0	1	0%		1965	4070	1965		4065		573	0.292	0.292									
	N	↗	A	1	3.5	0.0	40	0	0	8%		2105	0	2100		0		612	0.291										
Planned New Road	W	↖	C	3	3.5	0.0	18	0	0	100%		2105	2105	1945		1945		50	0.026										
	W	↘	C	3	3.5	10.0	0	0	1	100%		1965	1965	1710		1710		50	0.029	0.029									
Tsing Yi Road	S	↘	B	2	3.5	10.0	0	0	1	11%		1965	4070	1935		4040		448	0.231	0.232									
	S	↓	B	2	3.5	0.0	0	0	0	0%		2105	0	2105		0		487	0.232										
Pedestrian crossing		↔	Dp	1		Green time = 28GM + 7FG = 35s																							
		↑↓	EP	1,2		Green time = 78GM + 7FG = 85s																							
		↔	Fp	2,3		Green time = 68GM + 7FG = 75s																							
		↑↓	Gp	3		Green time = 20GM + 7FG = 27s																							
		↔	Hp	1,3		Green time = 66GM + 7FG = 73s																							
		↔	Ip	2		Green time = 32GM + 7FG = 39s																							
Notes:												Traffic Flow (pcu / hr) Weekday AM Peak					AM Peak Check Phase												
												985(730) 50(50)					Ey 0.552												
												1095(1080) 50(50)					L (sec) 18												
																	C (sec) 120												
																	y pract. 0.765												
																	R.C. (%) 38%												
Stage / Phase Diagrams																													
1.					2.					3.																			
I/G = 5					I/G = 10					I/G = 6																			

Priority Junction Calculation

Junction :	(J13) Tsing Yi Road / Tsing Keung Street	Job No.:	23125HK
Scenario :	2029 Design Traffic Flow		

Arm C Tsing Yi Road

385	<420>	(345)
65	<90>	(25)

Arm A Tsing Yi Road

410	<400>	(415)
130	<130>	(65)

115	70
<100>	<115>
(65)	(65)

AM	[Logistic]	(PM)
[Logistic]		
(PM)		

Arm B Tsing Keung Street

The predictive equations of capacity of movement are:

$$Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))$$

$$Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))$$

$$Q-CB = F(745 - 0.364Y(q-AC + q-AB))$$

The geometric parameters represented by D, E, F are:

$$D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))$$

$$E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))$$

$$F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))$$

where

Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input	Calculated
W	15	D 0.910
W-CR	0	E 0.968
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	F 0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	Y 0.483

Analysis :	Traffic Flow pcu/hr	AM	Logistic	PM	Capacity pcu/hr	AM	Logistic	PM	
q-CA	385	420	345	Q-BA	443	436	460		
q-CB	65	90	25	Q-BC	643	644	646		
q-AB	130	130	65	Q-CB	400	401	407		
q-AC	410	400	415	Q-CA	N/A	N/A	N/A	(If C-B blocked C-	
q-BA	70	115	65	Q-BAC	N/A	N/A	N/A	(If Minor Road Share LT&RT)	
q-BC	115	100	65						
f	0.622	0.465	0.500						

Results :	Ratio of Flow-to-Capacity	AM	Logistic	PM
	B-A	0.16	0.26	0.14
	B-C	0.18	0.16	0.10
	C-B	0.16	0.22	0.06
	C-A	N/A	N/A	N/A
	B-AC	N/A	N/A	N/A
	Critical DFC	0.18	0.26	0.14

Roundabout Junction Calculation

Junction :	(RA3) Tsing Yi Hong Wan Road	Job No.:	23125HK
Scenario :	2029 Design Traffic Flow (With Planned New Road)		

Arm 4 Tsing Yi Hong Wan Road SB

190	50	900
<165>	<50>	<735>
(185)	(50)	(755)

Arm 1

Arm 2 Tsing Yi Hong Wan Road NB

50	725	25
<50>	<755>	<25>
(50)	(935)	(40)

Arm 3

50	<50>	(50)
50	<50>	(50)
5	<5>	(5)

Input Parameters		Arm 1	Arm 2	Arm 3	Arm 4
V	= Approach half width (m)		7	7.3	7.3
E	= Entry width (m)		14	13	12
L	= Effective length of flare (m)		20	10	2
R	= Entry radius		65	25	75
D	= Inscribed circle diameter (m)		68	68	68
A	= Entry angle (degree)		53	60	46
Q	= Entry flow (pcu/hr)	AM	800	105	1140
		Logistic	830	105	950
		PM	1025	105	990
Qc	= Circulating flow across entry (pcu/hr)	AM	245	940	80
		Logistic	220	945	80
		PM	995	1160	95

Output Parameters		Arm 1	Arm 2	Arm 3	Arm 4
S	= Sharpness of flare = 1.6*(E-V)/L		0.56	0.91	3.76
K	= 1-0.00347*(A-30)-0.978*(1/R-0.05)		0.95	0.91	0.98
X2	= V+((E-V)/(1+2*S))		10.30	9.32	7.85
M	= Exp((D-60)/10)		2.23	2.23	2.23
F	= 303*X2		3121	2823	2379
Td	= 1+(0.5/(1+M))		1.16	1.16	1.16
Fc	= 0.21*Td*(1+0.2*X2)		0.74	0.69	0.62
Qe	= Capacity = K*(F-Fc*Qc)	AM	2805	1966	2283
		Logistic	2822	1963	2283
		PM	2273	1827	2274
DFC	= Entry Flow/Capacity = Q/Qe	AM	0.29	0.05	0.50
		Logistic	0.29	0.05	0.42
		PM	0.45	0.06	0.44

DFC of Critical Approach	=	AM	0.50	Logistic	0.42	PM	0.45
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