

Appendix 3

Traffic Impact Assessment

**Proposed Residential Development at Various Lots in
D.D. 107 and Adjoining Government Land,
Fung Kat Heung, Yuen Long**

Traffic Impact Assessment Report

October 2025



CTA Consultants Limited

志達顧問有限公司



1. INTRODUCTION

1.1 Background

1.1.1 CTA Consultants Limited (“CTA”) is commissioned by the Applicant to prepare a Traffic Impact Assessment Study for a proposed development of various lots in D.D. 107 and adjoining Government land, Fung Kat Heung, Yuen Long.

1.1.2 The Applicant intends to implement a residential development at the site (the “Proposed Development”).

1.1.3 This TIA study aims to examine the impact of the traffic generated by the proposed development on the adjacent road network. Improvement proposals would be recommended if necessary to resolve any foreseeable traffic issues.

1.2 Study Objectives

1.2.1 The main objectives of this study are listed below:

- To assess the existing traffic condition in the vicinity of the proposed development;
- To forecast traffic flows on the adjacent road network in the design year 2038;
- To estimate the likely traffic generated by the proposed development;
- To appraise the traffic impact induced by the proposed development on the adjacent road network;
- To recommend traffic improvement measures to alleviate any foreseeable traffic problem to the surrounding road network, if any.



2. THE PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 The proposed development is located at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long as shown in **Figure 1.1** and **Figure 2.1**.

2.2 Development Proposal

2.2.1 Development parameters of the proposed development are listed in **Table 2.1**.

Table 2.1 Development Parameters of the Proposed Development

	Development Parameters
Proposed Use	Residential Use
Site Area	~ 7,290 m ²
Proposed GFA	~ 43,740 m ²
No. of block	2
No. of units	1,439 units

2.2.2 It is anticipated that the proposed development will be completed in year 2035. Therefore, design year 2038 (i.e., 3 years after the planned completion year of the proposed development) is adopted for the Traffic Impact Assessment.

3. EXISTING TRAFFIC CONDITIONS

3.1 Existing Road Network

- 3.1.1 The site is located to the north of Sha Po Tsuen, bounded by San Tin Highway and San Tam Road to the west, Mo Fan Heung to the north and Wah Shing Tsuen to the northeast in Yuen Long.
- 3.1.2 The site will be mainly served by the San Tam Road and San Tin Highway at the West and Kam Tin Road and Tsing Long Highway at the south.
- 3.1.3 Fung Kat Heung Road is a sub-standard single track access road, connecting local village of Mo Fan Heung, Yue Cheong Yuen and Fung Kat Heung to San Tam Road.
- 3.1.4 San Tin Highway is a dual-3 expressway, connecting Yuen Long Highway, Tsing Long Highway and Fanling Highway. It is currently serving as a major corridor connecting to the east- west New Territories.
- 3.1.5 San Tam Road is a rural road in mainly single-2 configuration with one traffic lane running both northbound and southbound traffic. The section at its south end connecting to Castle Peak Road – Tam Mi is in dual-2 carriageway configuration.
- 3.1.6 Castle Peak Road – Tam Mi is a rural road in single-2 configuration with one traffic lane running both northbound and southbound traffic. The section of Castle Peak Road – Tam Mi runs parallel with San Tin Highway between Au Tau Interchange and Geranium Path and Castle Peak Road – Tam Mi is a dual-2 carriageway between San Tam Road and Au Tau Interchange.

3.2 Critical Junctions in Surrounding Area

- 3.2.1 In order to study the existing traffic condition of the area as requested by the Transport Department, a comprehensive traffic survey has been conducted.

- 3.2.2 Based on the location of the Site and the road network in the vicinity, ten key junctions are identified for this Traffic Impact Assessment (TIA) due to the Proposed Development and listed in **Table 3.1**. The location of the junctions is shown in **Figure 3.1**, while the details of each are illustrated in **Figures 3.2 - 3.10** respectively.
- 3.2.3 The traffic count surveys were carried out at the critical junctions in the vicinity of the Proposed Development.

Table 3.1 Identified Key Junctions

Ref.	Junction	Type	Figure No.
A	Fairview Park Interchange	R/A	3.2
B	San Tam Road/ Local Road to Long Ha	Priority	3.3
C	San Tam Road/ Fung Kat Heung Road	Priority	3.4
D	San Tam Road / Unnamed Access	Site Access	N/A
E	Castle Peak Road – Tam Mi/ San Tam Road	Signal	3.5
F	Au Tau Interchange	R/A	3.6
G	Kam Tin Road & Tsing Long Highway	Signal	3.7
H	Kam Tin Road/ Kam Ho Road	R/A	3.8
I	Kam Ho Road/ Tung Wui Road	R/A	3.9
J	Pok Oi Interchange	R/A	3.10

Traffic Survey

- 3.2.4 In order to appraise the existing traffic conditions of these junctions, a traffic survey in the form of manual classified count was conducted on 26 Feb 2024 during AM and PM peak. The peak hour flows occurred from 8:00am to 9:00am and from 5:00pm to 6:00pm respectively. The 2024 observed traffic flows are presented in **Figure 3.11**.

Junction Assessments

- 3.2.5 Operation performance of the critical junctions has been examined in accordance with the existing traffic flow and the results are summarised in the **Table 3.2** below. Details of the junction assessment are enclosed in the **Appendix 1**.

Table 3.2 Existing Operational Performance of Key Junctions in 2024

Ref.	Junction	Method of Control	Year 2024 RC/DFC ⁽¹⁾	
			AM Peak	PM Peak
A	Fairview Park Interchange	R/A	0.64	0.60
B	San Tam Road/ Long Ha	Priority	0.17	0.17
C	San Tam Road/ Fung Kat Heung Road	Priority	0.38	0.31
D	San Tam Road / Unnamed Access	Site Access	N/A	N/A
E	Castle Peak Road – Tam Mi/ San Tam Road	Signal	35%	48%
F	Au Tau Interchange	R/A	0.64	0.66
G	Kam Tin Road & Tsing Long Highway	Signal	24%	17%
H	Kam Tin Road/ Kam Ho Road	R/A	0.63	0.62
I	Kam Ho Road/ Tung Wui Road	R/A	0.26	0.20
J	Pok Oi Interchange	R/A	0.59	0.53
		Signal (NB) ⁽²⁾	29%	67%
		Signal (SB) ⁽²⁾	34%	48%

Notes: (1) RC = Reserve Capacity

DFC = Ratio of Flow to Capacity for Priority Junction

(2) Partially changed to signalized roundabout in February 2025

Table 3.3 V/C Ratio of Critical Road Link in Year 2024

Index ⁽¹⁾	Direction	Cap. (veh/hr) (C)	Observed Scenario			
			Flow (veh/hr) (V)		V/C	
			AM Peak	PM Peak	AM Peak	PM Peak
L1	NB	700	210	230	0.30	0.33
	SB	700	530	630	0.76	0.90
L2	NB	700	370	320	0.53	0.46
	SB	700	560	660	0.80	0.94
L3	NB	700	230	220	0.33	0.31
	SB	700	160	110	0.23	0.16
L4	NB	2600	560	590	0.22	0.23
	SB	2600	440	400	0.17	0.15
L5	EB	4200	1550	1670	0.37	0.40
	WB	4200	850	1080	0.20	0.26
L6	EB	2800	1400	1420	0.50	0.51
	WB	2800	1100	1500	0.39	0.54
L7	EB	2800	1540	1710	0.55	0.61
	WB	2800	1320	1470	0.47	0.53
L8	NB	2600	400	380	0.15	0.15
	SB	2600	490	370	0.19	0.14

Note: (1) Index please refer to Figure 3.1

3.2.6 The assessment results in **Tables 3.2** and **3.3** indicate that all key junctions and road links are operating with ample capacities during the peak hours in 2024 except L1 and L2.

3.3 Internal Transport Facilities Provisions

3.3.1 For the proposed residential development, the transport provision requirements will be referenced to the Hong Kong Planning Standards and Guidelines (HKPSG). The provision requirement is summarized in the **Table 3.4**

Table 3.4 Proposed Internal Transportation Provision under the HKPSG Requirements

Residential Development										
Proposed Development			Parking Requirement							Loading/Unloading Requirement
			Private Car Parking Space				Motorcycle parking space	Visitors Car parking	Bicycle Parking Space	Loading / Unloading Bay for Goods Vehicles
Private Housing (2 towers; P.R= 6.0)	GFA	No. of Flat	GPS: 1 space per 4-7 flats			GPS x R1 X R2 X R3	1 motorcycle parking space per 100-150 flats	More than 75 units per block should provide at 5 visitor space per block in addition in the requirement	Within 0.5-2km radius of the rail station, 1 bicycle parking space for every 15 flats with flat size smaller than 70m ²	Provision of minimum 1 L/UL bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay for each housing block or as determined by the Authority
			R1	R2	R3					
	FS ≤40	1,439	0.5	0.75	0.9	70-122	10-15	10	96	2
Proposed						122⁽¹⁾	15	10	96	2

Note:

(1) Including 2 accessible car parking

3.4 Public Transport Services in the Vicinity of the Proposed Development

3.4.1 Numerous road-based public transport services are provided in the vicinity of the proposed development. Details of the current services of franchised buses and GMB routes within 500 meters catchment area are listed in **Table 3.5**, and the location of the nearby public transport stations is shown in **Figure 3.12**.

Table 3.5 Public Transport Services in the Vicinity of the Proposed Development

Service	Route	Origin - Destination	Headway (min)
Franchised Buses	76K	Sheung Shui (Ching Ho) to Long Ping Estate	25-30 ^{(1) (2)} (3)
		Fanling (Wah Ming) to Long Ping Estate	06:10 ⁽¹⁾ ; 06:50 ⁽¹⁾
	976	Lok Ma Chau (San Tin) to Sai Wan Ho	06:25 ⁽¹⁾ ; 07:15 ⁽¹⁾ ; 07:45 ⁽¹⁾
	976A	Lok Ma Chau (San Tin) to Siu Sai Wan (Island Resort)	06:55 ⁽¹⁾
GMB	36	Yuen Long (Fook Hong Street) to Tai Sang Wai Village Office	10-15 ⁽⁴⁾
	603	Yuen Long (Fung Cheung Road) to Fung Kat Heung	20-25 ⁽⁴⁾

Note: (1) Monday to Friday (except for public holidays)
(2) Saturdays (except for public holidays)
(3) Sundays and public holidays
(4) Monday to Sunday

- 3.4.2 The Au Tau Station of Northern Link Main Line will also be targeted to operate in 2034.
- 3.4.3 The PTI will be located at the Sha Po Public Housing Site B. The target completion year will be in 2031.
- 3.4.4 With the existing and planned public transport facilities, the Application Site is well served by comprehensive public transport services in the vicinity.

4. FUTURE TRAFFIC CONDITION & TRAFFIC IMPACT ASSESSMENT

4.1 Design Year

4.1.1 It is anticipated that the proposed development would be completed in 2035 tentatively. In order to assess the possible traffic impacts to the local road network due to the proposed development, year 2038 (i.e., 3 years after construction work completion) has been adopted as the design year for this TIA.

4.2 Traffic Forecast

Planning Data

4.2.1 Reference has also been made to the latest 2019-Based Territorial Population Employment Data Matrices (TPEDM) planning data published by the Planning Department for projection of population and employment within the study district from years 2019 to 2031. The average annual growth rates in terms of population and employment from 2019 to 2031 are tabulated in **Table 4.1**.

Table 4.1 2019-Based Planning Data from 2019 to 2031

Zone	Population			Employment		
	2019	2026	2031	2019	2026	2031
Northwest New Territories	58,400	76,850	140,150	222,800	239,250	353,900
Yuen Long	68,100	70,700	70,250	175,150	172,350	159,850
Tin Shui Wai	35,050	33,100	31,950	279,950	283,250	276,050
Total	161,550	180,650	242,350	677,900	694,850	789,800

4.3 Traffic Generations of Planned Adjacent New Developments

4.3.1 To fully reflect the growth traffic, trip generations of the future vicinity developments have been taken into consideration. The planned developments are detailed in **Table 4.2** and **Figure 4.1** shows their location.

Table 4.2 Planned Adjacent Developments in the Vicinity

Planning Application No.	Development Site	Site area	Applied use	Use	Total floor area	Development Parameter
A/YL-NSW/274	Lot 592 S.C. ss1 S.A + Lots 592 S.C ss 4 and 1252 S.C in DD 115	32,711sqm	Residential and Community Hub Development	Domestic	70,328sqm	1,518 units
				Non-domestic	4,550sqm	/
LSPS/002	Various Lots in DD 115 and Adjoining Government land	57,055sqm	Residential development	Domestic (Private housing)	50,179sqm	1,261 units
				Domestic (Public Housing)	93,400sqm	1,868 units
				Non-domestic GFA	3,045sqm	/
A/YL-KTN/604	Various Lots in DD 107 and Adjoining Government Land	156,065sqm	Residential and Comprehensive Development Area	Domestic	179,838sqm	3,891 units
				Non-domestic	8,088sqm	/
A/YL-KTN/663	Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790RP (Part), 1791RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in DD 107 and Adjoining Government Land	279,925sqm	Residential and Comprehensive Area	Domestic	258,896sqm	4,282 units ⁽¹⁾
				Non-domestic	10,000sqm	/
/	Public Housing Development at Sha Po, Yuen Long	118,000sqm	Residential Development	Domestic	767,650sqm	16,300 units
				Non-domestic	23,600sqm	
Y/YL-NSW/7	Various Lots in DD 104 and Adjoining Government Land	68,385sqm	Residential and Comprehensive Development (Wetland Restoration Area)	Domestic	97,682sqm	1,997 units
				Non-domestic	3,100sqm	/
A/YL-KTN/964	Lot 1071 in DD 103	16,293sqm	Residential Development	Domestic	23,299sqm	615 units
A/YL-KTN/791	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin	15,978 sqm	Residential Development	Domestic	12,782 sqm	243 flats 87 houses
Y/YL-NSW/8	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP,	116,231sqm	Comprehensive Residential Development with Government,	Domestic	255,708sqm	6,825 units

Planning Application No.	Development Site	Site area	Applied use	Use	Total floor area	Development Parameter
	45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land		Institution and Community, Retail Facilities and Wetland Restoration Area	Non-domestic	10,350sqm	-
Y/YL-NSW/9	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land	81,550sqm	Comprehensive Residential Development	Domestic	115,942sqm	3,115 units
				Non-domestic	24,000sqm	-
A/YL-NSW/293	Various Lots in D.D. 103 and D.D. 115	53,584sqm	Proposed Comprehensive Residential Development with Commercial Uses	Domestic	156,880sqm	3,556 units
				Non-domestic	6,337sqm	-
A/YL-NSW/314	Various Lots in D.D. 104	51,073sqm	Proposed Residential Development with Wetland Habitat	Domestic	20,429sqm	90 units

Note:

(1) The phase 1 includes 3128 units, and phase 2 includes 1154 units. The total units of phase 1 and 2 are 4282 units.

4.3.2 The estimation on trip generations and attractions of the adjacent planned developments have made reference to the trip rates as stipulated in Volume 1 Chapter 3 Appendix C Table 1 of the latest T.P.D.M published by Transport Department. The trip generations and attractions are shown in **Table 4.3**.

Table 4.3 Estimated Trip Generations and Attractions of Adjacent Developments

Planning Application No.	Development Site	Uses	Nos of units	Trips			
				Weekday AM Peak		Weekday PM Peak	
				Gen.	Att.	Gen.	Att.
A/YL-NSW/274	Lot 592 S.C. ss1 S.A + Lots 592 S.C ss 4 and 1252 S.C in DD 115	Residential and Community Hub Development	1,518 units	161	117	96	110
LSPS/002	Various Lots in DD 115 and Adjoining Government Land	Residential Development	1,261 units (Private Housing)	148	107	81	98
			1,868 units (Public Housing)				
A/YL-KTN/604	Various Lots in DD 107 and Adjoining Government Land	Residential and comprehensive Development Area	3,891 units	279	165	111	144
A/YL-KTN/663	Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797	Residential and comprehensive Development Area	Phase 2 - 1154 units	102 ⁽¹⁾	59 ⁽¹⁾	41 ⁽¹⁾	55 ⁽¹⁾



Planning Application No.	Development Site	Uses	Nos of units	Trips			
				Weekday AM Peak		Weekday PM Peak	
				Gen.	Att.	Gen.	Att.
	(Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land						
/	Public Housing Development at Sha Po, Yuen Long	Residential Development	16,300 units	837	667	538	654
Y/YL- NSW/7	Various Lots in D.D. 104 and Adjoining Government Land	Residential and Comprehensive Development (Wetland Restoration Area)	1,997 units	284	226	198	216
A/YL- KTN/964	Lot 1071 in DD103	Residential Development	615 units	44	26	18	23
A/YL- KTN/791	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin	Residential Development	243 flats 87 houses	56	25	17	38
Y/YL- NSW/8 ⁽²⁾	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land	Comprehensive Residential Development with Government, Institution and Community, Retail Facilities and Wetland Restoration Area	6,825 units	536	336	220	279
Y/YL- NSW/9 ⁽²⁾	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land	Comprehensive Residential Development	3,115 units	265	202	115	134
A/YL- NSW/293 ⁽²⁾	Various Lots in D.D. 103 and D.D. 115	Proposed Comprehensive Residential Development with Commercial Uses	3,556 units	272	168	123	155
A/YL- NSW/314 ⁽²⁾	Various Lots in D.D. 104	Proposed Residential Development with Wetland Habitat	90 units	28	21	21	31

Note: (1) The planning application A/YL-KTN/663 includes 2 phases. Phase 1 is fully occupied. Hence, only phase 2 developments (total of 1154 units) will be taken into account while estimating the trip generation and attraction.

(2) Trip generation/attraction according to their approved TIAs

4.4 Traffic Generations of the Proposed Development

4.4.1 While for the traffic generation and attraction of the proposed residential development, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix C Table 1 of the latest T.P.D.M. published by Transport Department. The adopted trip rates are also summarized in below **Table 4.4**.

4.4.2 Based on the adopted trip rate listed above and the development parameters in **Table 2.1**, the trip generated and attracted by the proposed development are estimated and summarized in the **Table 4.4**.

Table 4.4 Adopted Trip Rate and Trips of Proposed Development

Parameters			Trips Rates				Trips			
Use	Average Flat Size (sq. m.)	No. of Flats	Weekday AM Peak (pcu/hr/flat)		Weekday PM Peak (pcu/hr/flat)		Weekday AM Peak (pcu/hr)		Weekday PM Peak (pcu/hr)	
			Gen.	Att.	Gen.	Att.	Gen.	Att.	Gen.	Att.
Private Housing	FS ≤ 60	1,439	0.0718	0.0425	0.0286	0.0370	103	61	41	53
Total							103	61	41	53

4.5 Planned Junction Improvement Scheme

4.5.1 According to the TIA report of the Sha Po Public Housing, relevant planned junction improvements will be completed in 2031. Its planned junction layout, planned widening of San Tam Road and some planned junction layouts under other studies (Junction E and F by Planning Application No. A/YL-KTN/663 and Junctions G to I by CEDD Contract No. YL/2017/01) have been taken into consideration in the assessment of this TIA.

4.5.2 The detailed design of the improvement works are shown in the **Figures 4.2- 4.10**.

4.6 Traffic Modelling Methodology

Base Year

- 4.6.1 2019-based Based District Traffic Model (BDTM) NTW1 is used to develop the Local Area Traffic Model (LATM).
- 4.6.2 The model network was checked and updated. Survey flows were used to calibrate and validate the model to update to the latest condition.

Future Year

- 4.6.3 By considering the 2019-Based Planning Data listed in **Table 4.1**, planned developments listed in **Table 4.2**, the planned road and junction improvement schemes and the trips by the proposed development listed in **Table 4.4**, the base year model is used to produce the future year models. The reference and design flow are shown in **Figures 4.11** and **4.12** respectively.

4.7 Operational Assessment

- 4.7.1 To assess traffic impacts due to the proposed development, operational assessment of the critical junctions identified in **Chapter 3** and the critical Junction D to be constructed by the Government are carried out for both the reference (without the proposed development) and the design scenario (with the proposed development) in year 2038. The results are summarized in **Table 4.5**.

Table 4.5 Operational Performance of Key Junctions in Year 2038

Ref.	Junction	Method of Control ⁽¹⁾	Year 2038 RC/DFC ⁽¹⁾			
			Reference Scenario (without the proposed development)		Design Scenario (with the proposed development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Fairview Park Interchange	R/A ⁽²⁾	0.79	0.55	0.82	0.56
B	San Tam Road/ Local Road to Long Ha	Priority ⁽²⁾	0.09	0.04	0.09	0.04
C	San Tam Road/ Fung Kat Heung Road	Signal ⁽²⁾	25%	41%	19%	36%
D	San Tam Road/ Proposed New Access Road	Signal ⁽²⁾	28%	45%	22%	39%
E	Castle Peak Road – Tam Mi/ San Tam Road	R/A ⁽²⁾⁽³⁾	0.95	0.83	0.97	0.85
F	Au Tau Interchange	R/A ⁽²⁾⁽³⁾	0.77	0.67	0.77	0.67
G	Kam Tin Road & Tsing Long Highway	Signal ⁽⁴⁾	23%	29%	23%	29%
H	Kam Tin Road/ Kam Ho Road	R/A ⁽⁴⁾	0.88	0.77	0.88	0.77
I	Kam Ho Road/ Tung Wui Road	R/A ⁽⁴⁾	0.61	0.27	0.61	0.27
J	Pok Oi Interchange	R/A	0.67	0.36	0.67	0.36
		Signal (NB)	7%	1%	6%	0%
		Signal (SB)	2%	25%	1%	25%

Notes: (1) RC = Reserve Capacity for Signalized Junction

DFC = Ratio of Flow to Capacity for Priority Junction

(2) Road and junction improvement scheme under San Po Public Housing are considered

(3) Road and junction improvement scheme under Planning Application No. A/YL-KTN/663 are considered

(4) Road and junction improvement schemes under CEDD Contract No. YL/2017/01 is considered

Table 4.6 V/C Ratio of Critical Road Link in Year 2038

Index (1)	Direction	Cap. (veh/hr) (C) ⁽²⁾	Reference Scenario (without the proposed development)				Design Scenario (with the proposed development)			
			Flow (veh/hr) (V)		V/C		Flow (veh/hr) (V)		V/C	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
L1	NB	2600	640	320	0.25	0.12	0.25	0.12	0.25	0.12
	SB	2600	510	760	0.20	0.29	0.20	0.29	0.20	0.29
L2	NB	2600	920	570	0.35	0.22	0.35	0.22	0.35	0.22
	SB	2600	450	540	0.17	0.21	0.17	0.21	0.17	0.21
L3	NB	2600	800	780	0.31	0.30	0.31	0.30	0.31	0.30
	SB	2600	750	660	0.29	0.25	0.29	0.25	0.29	0.25
L4	NB	2600	1590	1410	0.61	0.54	0.61	0.54	0.61	0.54
	SB	2600	660	820	0.25	0.32	0.25	0.32	0.25	0.32
L5	EB	4200	2730	2850	0.65	0.68	0.65	0.68	0.65	0.68
	WB	4200	1470	1220	0.35	0.29	0.35	0.29	0.35	0.29
L6	EB	2800	1920	2030	0.69	0.73	0.69	0.73	0.69	0.73
	WB	2800	2200	2330	0.79	0.83	0.79	0.83	0.79	0.83
L7	EB	4200	2220	2260	0.53	0.54	0.53	0.54	0.53	0.54
	WB	2800	2460	2040	0.88	0.73	0.88	0.73	0.88	0.73
L8	NB	2600	770	590	0.30	0.23	0.30	0.23	0.30	0.23
	SB	2600	640	560	0.25	0.22	0.25	0.22	0.25	0.22

Note:

(1) Index please refer to Figure 3.1

(2) Include improvement works under Sha Po Public Housing Development

4.7.2 Based on the assessment results given in **Tables 4.5** and **4.6**, all key junctions and road links would operate with ample capacities in both reference and design scenarios in year 2038 except Junctions E in AM peak & Junction J (Signal) in both AM & PM peak. However, Junction E would still operate with DFC below 1.0 and Junction J (Signal) would still operate with R.C. $\geq 0\%$, which means these junctions would still have spare capacity or just at capacity. It is note that the DFC of Junction E would already over 0.85 and the R.C. of Junction J would already below 15% even without our proposed development. The impact by our development is very small which is only up to DFC 0.02 or R.C. 1% changes. Therefore, it is consider acceptable from traffic engineering point of view.

4.8 Sensitivity Test for No Sha Po Public Housing Development

4.8.1 A sensitivity test is carried out with the assumption that if there is a mismatch between the programme of Sha Po Public Housing Development and the proposed development.

4.8.2 The reference and design traffic flows are shown in **Figure 4.13** and **Figure 4.14** respectively. The results are shown in the **Tables 4.7** and **4.8**.

**Table 4.7 Operational Performance of Key Junctions in Year 2038
(Sensitivity Test)**

Ref.	Junction	Method of Control ⁽¹⁾	Year 2038 RC/DFC ⁽¹⁾			
			Reference Scenario (Without Sha Po PH) (without the proposed development)		Design Scenario (Without Sha Po PH) (with the proposed development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Fairview Park Interchange	R/A	0.83	0.70	0.88	0.70
B	San Tam Road/ Local Road to Long Ha	Priority	0.33	0.12	0.35	0.13
C	San Tam Road/ Fung Kat Heung Road	Priority	0.61	0.29	0.96	0.40
D	San Tam Road/ / Unnamed Access	Site Access	N/A	N/A	N/A	N/A
E	Castle Peak Road – Tam Mi/ San Tam Road	R/A ⁽³⁾	0.77	0.64	0.78	0.65
F	Au Tau Interchange	R/A ⁽³⁾	0.99	1.00	0.99	1.00
G	Kam Tin Road & Tsing Long Highway	Signal ⁽⁴⁾	27%	35%	26%	35%
H	Kam Tin Road/ Kam Ho Road	R/A ⁽⁴⁾	0.79	0.72	0.80	0.72
I	Kam Ho Road/ Tung Wui Road	R/A ⁽⁴⁾	0.61	0.25	0.61	0.25
J	Pok Oi Interchange	R/A	0.61	0.38	0.61	0.38
		Signal (NB)	11%	10%	10%	9%
		Signal (SB)	6%	19%	5%	19%

Notes: (1) RC = Reserve Capacity for Signalized Junction

DFC = Ratio of Flow to Capacity for Priority Junction

(3) Road and junction improvement scheme under Planning Application No. A/YL-KTN/663 are considered

(4) Road and junction improvement schemes under CEDD Contract No. YL/2017/01 is considered

Table 4.8 V/C Ratio of Critical Road Link in Year 2038 (Sensitivity Test)

Index ⁽¹⁾	Direction	Cap. (veh/hr) (C)	Reference Scenario (Without Sha Po PH) (without the proposed development)				Design Scenario (Without Sha Po PH) (with the proposed development)			
			Flow (veh/hr) (V)		V/C		Flow (veh/hr) (V)		V/C	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
L1	NB	700	380	170	0.54	0.24	410	180	0.59	0.26
	SB	700	650	570	0.93	0.81	670	570	0.96	0.81
L2	NB	700	670	400	0.96	0.57	690	430	0.99	0.61
	SB	700	420	250	0.60	0.36	460	270	0.66	0.39
L3	NB	700	280	220	0.40	0.31	300	250	0.43	0.36
	SB	700	520	240	0.74	0.34	560	260	0.80	0.37
L4	NB	2600	1280	1080	0.49	0.42	1300	1110	0.50	0.43
	SB	2600	730	680	0.28	0.26	730	680	0.28	0.26
L5	EB	4200	2300	2550	0.55	0.61	2320	2570	0.55	0.61
	WB	4200	1290	1070	0.31	0.25	1310	1080	0.31	0.26
L6	EB	2800	1850	1910	0.66	0.68	1850	1910	0.66	0.68
	WB	2800	2070	2240	0.74	0.8	2070	2250	0.74	0.8
L7	EB	4200	2060	2150	0.74	0.77	2060	2150	0.74	0.77
	WB	2800	2230	1930	0.80	0.69	2230	1930	0.80	0.69
L8	NB	2600	760	560	0.29	0.22	760	560	0.29	0.22
	SB	2600	640	560	0.25	0.22	640	560	0.25	0.22
Fung Kat Heung Road	Two-way	100	140	110	1.4	1.1	250	170	2.5	1.7

Note:

(1) Index please refer to Figure 3.1

4.8.3 Based on the assessment results given in **Table 4.7**, all key junctions would operate with ample capacities in both reference and design scenarios in year 2038 except Junction F in both AM & PM peak & Junction J (Signal) in both AM & PM peak. However, Junction F would still operate with DFC below or at 1.0 and Junction J would still operate with R.C >0%, which means these junctions would still have spare capacity or just at capacity. The DFC of Junction F would already over 0.85 and the R.C. of Junction J (Signal) would already below 15% even without our proposed development. The impact by our development is very small which is no change in DFC or R.C. 1% changes. Therefore, it is consider acceptable from traffic engineering point of view.

- 4.8.4 As shown in **Table 4.8**, as Fung Kat Heung Road is a single track road at present which have only limited capacity, its V/C ratio would be overloaded if no widening works being carried out. As shown in **Figure 5.3**, it is planned to widen on Fung Kat Heung Road and construct a new road under Sha Po Public Housing development project.
- 4.8.5 It is the responsibility of the Government to implement the proposed road widening of the Fung Kat Heung Road and the new loop road to support the proposed SPPHD. It is therefore reasonable to assume that the population intake of the proposed development will be effected upon completion of the road widening of the Fung Kat Heung Road and the new loop road connecting San Tam Road by the Government.
- 4.8.6 Although the implementation programme of the SPPHD will need to be further reviewed by the Government, the Government should consider implementing the relevant road improvement works in advance or in phases to facilitate the SPPHD in the future and improve the road network of the locality, which tally with the planning principles of infrastructure-led and capacity-creating adopted by the Government. This would facilitate traffic ingress and egress for the proposed development scheme, while aligning with the broad development programme of the Sha Po Public Housing Development – or, at the very least, the target completion date for the Phase 2 works of the Northern Link Main Line (with intermediate stations at Au Tau, Ngau Tam Mei and San Tin) by 2034.
- 4.8.7 As government announced that the Northern Link Main Line (include Au Tau Station) will be completed in 2034, the target completion year of our proposed development is adjusted from 2032 to 2035. Therefore, our assumption on the new implementation of improvement works and transport facilities proposed by Sha Po Public Housing Development has already been completed in year 2035 is reasonable.

4.9 Micro-simulation for Pok Oi Interchange

- 4.9.1 As Pok Oi Interchange was partially signalized in February 2025, to study its operation performance, micro-simulations software “VISSIM” was used to simulate the situations. Queue length were obtained and shown in **Tables 4.9** and **4.10** below.

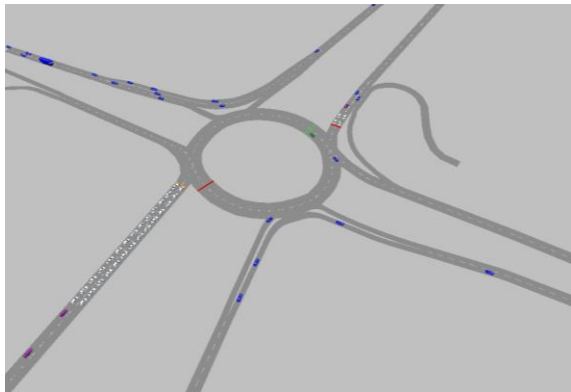


Diagram 4.1 Existing AM



Diagram 4.2 Existing PM



Diagram 4.3 Reference AM



Diagram 4.4 Reference PM



Diagram 4.5 Design AM

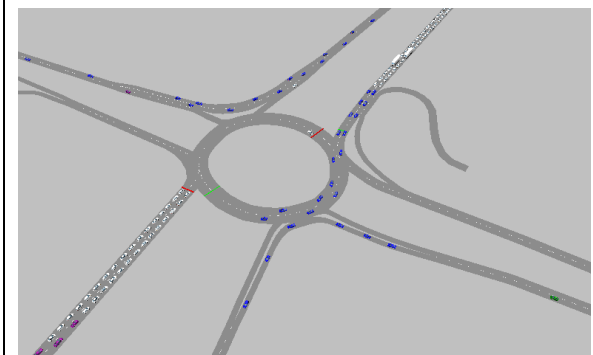


Diagram 4.6 Design PM



Diagram 4.7 Reference (Without Sha Po PH) AM

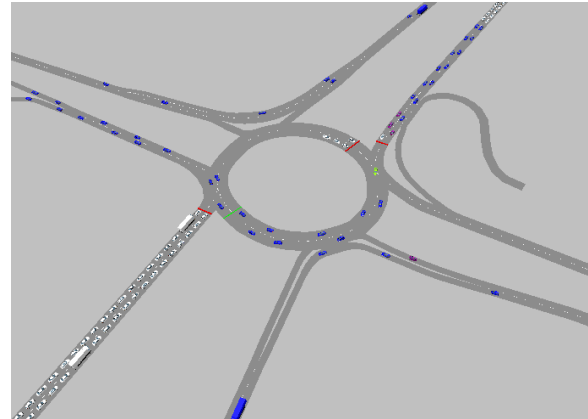


Diagram 4.8 Reference (Without Sha Po PH) PM



Diagram 4.9 Design (Without Sha Po PH) AM

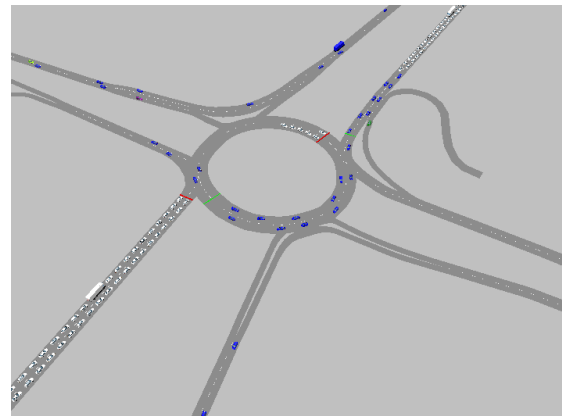


Diagram 4.10 Design (Without Sha Po PH) PM

Table 4.9 Queue Length Analysis of Junction J

Ref.	Junction	Direction		Allowable Queue length (m)	Calculated Queue Length (m)					
					Existing Case		Reference Case (Without Proposed Development)		Design Case (With Proposed Development)	
AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak					
J	Pok Oi Interchange	NB	Entry	>250	32	20	176	163	177	166
			Circulating	50	1	1	2	1	3	1
		SB	Entry	>250	32	42	138	161	139	161
			Circulating	50	3	2	8	3	8	3

Table 4.10 Queue Length Analysis of Junction J (Sensitivity Test)

Ref.	Junction	Direction		Allowable Queue length (m)	Calculated Queue Length (m)			
					Reference Case (Without Sha Po PH) (Without Proposed Development)		Design Case (Without Sha Po PH) (With Proposed Development)	
					AM Peak	PM Peak	AM Peak	PM Peak
J	Pok Oi Interchange	NB	Entry	>250	174	128	174	147
			Circulating	50	3	2	3	1
		SB	Entry	>250	110	166	85	166
			Circulating	50	10	3	8	6

4.9.2 **Tables 4.9** and **4.10** show that the traffic would not queue over their allowable queue length. It also shows that the traffic generated by our proposed development will not have significant effect on the queue length.

5. TRAFFIC ASSESSMENT FOR THE LOCAL ACCESS ROAD (AFTER THE PROPOSED ROAD WIDENING)

5.1 Existing Condition of the Local Access Road Branch Off from the Fung Kat Heung Road

5.1.1 The local access road is a one-lane two-way carriageway road and with a 1.3m eastern footpath (**Figure 5.1**).

5.1.2 The carriageway is narrow and its width is only approx. 3.6m (**Figure 5.1**).

5.1.3 There are a lot of goods vehicles parking within Fung Kat Heung and along the road side of the local access road.

5.2 Future Condition of the Local Access Road Branch Off from the Fung Kat Heung Road

5.2.1 According to the feasibility study of site formation and infrastructure works for proposed public housing development at Sha Po, Shap Pat Heung and Tai Kei Leng, Yuen Long (Agreement No CE10/2020), Fung Kat Heung Road will be partially widened to a standard 10.3m single 2 lanes carriageway with a roundabout at the eastern end partially of the widened section. It connects to the unnamed local access road which will also be partially widened to 10.3m. A 10.3m wide single 2 lanes carriageway parallel to Fung Kat Heung Road to the north of the Sha Po Public Housing Site B is proposed to provide the access to the G/IC facilities and the public housing development in site B (**Figure 5.3**). The proposed road network to be constructed by the Government is shown in the **Figure 5.3**.

5.2.2 In order to accommodate the proposed development, the southern section of the local access road is proposed to be widened by the Applicant to a 6m wide single 2 lanes carriageway with a 1.2m wide western footpath. The proposed road alignment is shown in the **Figure 5.2**.

5.3 Assessment Result

5.3.1 To fully reflect on the future conditions, the further increase of traffic demand in the locality of the local access road has been taken into consideration. The development parameter and the trip generation and attraction in relation to the proposed development are shown in **Table 2.1** and **Table 4.4** respectively.

5.3.2 Road link assessment of the two sections of the local access road (after the proposed road widening) has been carried out and the results are shown in the **Table 5.1**. According to the latest TPDM, for local roads, the design flow of 2 lane single carriageway is 720veh/ hr (with the 10% deduction due to the high heavy vehicles).

Table 5.1 Road Link Performance at the Widened Local Access Road in 2038

Road	Direction	Capacity (veh/hr)	Northern Section (10.3m wide)				Southern Section (6m wide)			
			Peak Design Flow (veh/ hr)		V/C Ratio		Peak Design Flow (veh/ hr)		V/C Ratio	
			AM	PM	AM	PM	AM	PM	AM	PM
Local Access Road	NB	720	280	165	0.39	0.23	90	50	0.13	0.07
	SB	720	215	195	0.30	0.27	80	45	0.11	0.06

5.3.3 The assessment results in the **Table 5.1** revealed that after widening of the local access road, it would still operate within their capacities when the proposed residential development and the public housing development are completed in 2038.

6. PUBLIC TRANSPORT DEMAND

6.1 Assessment on Public Transport Demand

6.1.1 Reference is made to the “Travel Characteristics Survey 2011 Report” as published by Transport Department in February 2014 to derive the estimated public transport demand due to the proposed development.

6.1.2 The total trips generated from the proposed development are derived from development parameters and assumptions from the TCS Report 2011. The calculation of total trips during peak hours is summarized in **Table 6.1** below:

Table 6.1 Calculation of Total Passenger Trips from Proposed Development

Item	Proposed Development
Nos. of units	1,439
Average household size	2.7 ppl/unit
Total population	= 1,439 x 2.7 = 3,886ppl
Trip Rate per Person	1.83**
Daily trips generated from proposed development	= 3,886ppl x 1.83 = 7,110 trips
Peak Hour Factor	12%**
Peak hour trips (Two-ways)	= 7,110 trips x 12% = 853 trips

Notes: **Data extracted from TCS Report 2011

6.1.3 The distribution of trips by transport mode derived from 2021 Population Census is given in below **Table 6.2**. As no ferry services and assume there is no residential coach services from the proposed development, the modal split is therefore re-distributed on a conservative approach, and the model split after re-distribution is also shown in **Table 6.2**.

Table 6.2 Distribution of Transport Modal Split

Year 2021 Census (Yuen Long)													
Yuen Long District	Mass Transit Railway	Bus	On foot only	Private car/ Passenger van	Public light bus	Company bus/ van	Light Rail	Taxi	Residential coach service	Ferry/ Vessel	Others	Total	
Number of Persons	90,523	59,345	16,860	24,012	7,913	6,848	20,458	1,275	2,628	468	4,146	234,476	
Modal Split	39%	25%	7%	10%	3%	3%	9%	1%	1%	0%	2%	100%	
Number of Persons (excluded on foot only)	90,523	59,345	-	24,012	7,913	6,848	20,458	1,275	2,628	468	4,146	217,616	
Modal Split (excluded on foot only)	42%	27%	-	11%	4%	3%	9%	1%	1%	0%	2%	100%	
Adjusted Modal Split for the Development Site	PT	48%	<u>32%</u>	-	-	<u>4%</u>	-	-	-	-	-	84%	100%
	Non-PT	-	-	-	13%	-	-	1%	-	-	2%	16%	

6.1.4 Government announced that the Northern Link Main Line (include Au Tau Station) will be completed in 2034. Therefore, the latest target completion year of our proposed development has been adjusted to 2035 (i.e. 1 year after the completion of Au Tau Station). As Au Tau Station will be located within the 500m catchment area of the proposed development, MTR will be one of the major transport modes of the residential of the proposed development.

6.1.5 Based on **Table 6.2**, there will be 36% (32% + 4%) of resident using Bus and Public Light Bus. Therefore, there will be $853 \times 36\% = 308$ trips/hr

6.1.6 Taking into consideration that the walking distance from the proposed development to the existing nearest bus stops at San Tam Road is long, the residents will most likely use the public transport in the new PTI of Sha Po Public Housing Development as shown in **Figure 5.3**. The bus assessment extracted from SPH's TIA is shown in **Table 6.3**.

**Table 6.3 Public Transport Services Proposed in the New PTI of Sha Po
Public Housing Development**

Public Transport Services	Proposed No. of Route	Assumed Occupancy for SPH	Proposed Headway (min)	Estimated Capacity per Route (Patronage/hr)	Estimated Service Capacity (Patronage/hr)
Bus	9	80%	6	1,040	9,360

6.1.7 The SPH's TIA assumed that 80% of the public transport in new PTI would be occupied by SPH's residents, which means there will be 20% spare capacity, i.e. 2,340 patronage/hr. There will be sufficient spare capacity for 308 trip/hr for PT of the proposed development.

6.1.8 As there will be a new PTI with 9 bus routes proposed by Sha Po Public Housing Development, there will be sufficient spare PT capacity for our proposed development. Also, the public transport provision will be improved with the completion of Au Tau Station of Northern Link Main Line in Year 2034.

6.2 Sensitivity Test

6.2.1 In the case of the programme of our development mismatches with that of the Sha Po Public Housing Development, a sensitivity test is carried out to assess the future public transport demand without the proposed population and PTI from Sha Po Public Housing Development.

6.2.2 It is assumed that passengers from the proposed development will walk to the existing nearest bus/GMB stops located at San Tam Road. The relevant bus/GMB stops are assessed.

6.2.3 A traffic survey on traffic pattern and localized public transport demand survey at bus/GMB stops in the vicinity was carried out. The survey was carried out during the morning peak period from 07:30 to 09:30 and evening peak period from 17:00 to 19:00 of a typical weekday in September 2024. Analysis of the observed traffic data indicates that the peak hour flow in the AM Peak and PM Peak occurred from 08:00 to 09:00 and from 17:00 to 18:00 respectively.



6.2.4 The details of bus stops location and finding are presented in **Figure 6.1** and **Table 6.4** respectively.

Table 6.4 Observed Boarding/Alighting of Public Transport in 2024

	Bus /GMB Stop	Mode	Route No.	Observed Vehicular Trips [A]	Passenger Capacity (per hour) [B]	Year 2024 Observed Scenario (per hour)					
						Surveyed passengers on board arriving bus stop [C]	Total no. of Boarding passengers [D]	Total no. of Alighting passengers [E]	Surveyed passengers on board leaving bus stop [F]=[C]+[D]	Surplus Capacity [G]=[B]-[F]	Surplus Capacity %
AM Peak (0800-0900)	Inbound										
	A	RMB	17	19	319	243	0	8	235	84	26%
		GMB	37	7	118	87	0	8	79	39	33%
			38	7	121	115	0	6	109	12	10%
			75	10	169	115	2	1	116	53	31%
			76	2	32	32	0	1	31	1	3%
			78	3	57	37	0	1	36	21	37%
		Bus	76K	3	411	137	1	3	135	276	67%
	C	GMB	36	1	19	13	0	1	12	7	37%
	Outbound										
	D	RMB	17	33	615	502	32	5	529	86	14%
		GMB	37	5	95	79	3	1	81	14	15%
			38	5	95	78	2	0	80	15	16%
			603	5	80	41	3	0	44	36	45%
75			8	146	117	5	3	119	27	18%	
Bus		76K	2	268	121	3	2	122	146	54%	
B	GMB	36	1	19	15	1	0	16	3	16%	
PM Peak (1700-1800)	Inbound										
	A	RMB	17	24	411	322	9	0	331	80	19%
		GMB	36	1	16	16	0	1	15	1	6%
			37	6	102	102	2	2	102	0	0%
			38	8	140	138	0	1	137	3	2%
			75	6	102	76	2	1	77	25	25%
			76	3	48	40	1	1	40	8	17%
			78	2	38	16	2	0	18	20	53%
		Bus	76K	3	411	179	2	1	180	231	56%
	C	GMB	36	2	38	24	1	3	22	16	42%
	Outbound										
	D	RMB	17	23	389	380	6	1	385	4	1%
		GMB	37	7	127	99	9	0	108	19	15%
			38	4	73	63	4	0	67	6	8%
603			3	48	34	7	0	41	7	15%	
75			12	213	178	1	0	179	34	16%	
76			3	48	48	1	1	48	0	0%	
Bus		76K	2	268	121	4	0	125	143	53%	

- 6.2.5 Based on the assessment shown in the **Table 6.4**, the existing public transport service in both AM and PM peak are having ample capacities in year 2024.
- 6.2.6 The same design year as vehicular traffic forecast for Year 2038 is adopted for the future public transport demand forecast.
- 6.2.7 Based on the observed flow and adopted growth rate of 1.79% (as shown in **Table 7.3** in **Chapter 7**) on the public transport demand, the expected surplus of public transport in reference scenario is shown in **Table 6.5**.



Table 6.5 Expected Surplus in 2038 Reference Scenario (Without Proposed Development)

	Bus /GMB Stop	Mode	Route No.	Passenger Capacity (per hour) [H]	Year 2038 Reference Scenario (per hour)							
					Surveyed passengers on board arriving bus stop with growth [I] = [C] x (1+G.F %)^14	Total no of boarding with growth [J]=[D]*(1+G .F%)^14	Total no of alighting with growth [K]=[E]*(1+ G.F%)^14	Surveyed passengers on board leaving bus stop [L]=[I]+[J] -[K]	Total passenger from the adjacent development [M]	Surplus Capacity [N]=[H]- [K]-[M]	Surplus in %	Additional Frequency Required
AM Peak (0800- 0900)	Inbound											
	A	RMB	17	319	312	0	9	302	0	17	5%	-
		GMB	37	118	112	0	10	101	0	17	14%	-
			38	121	147	0	8	140	0	-19	-15%	-2
			75	169	147	3	1	149	1	20	12%	-
			76	32	41	0	1	40	0	-8	-24%	-1
			78	57	47	0	1	46	0	11	19%	-
		Bus	76K	411	176	1	4	173	3	235	57%	-
	C	GMB	36	19	17	0	1	15	0	4	19%	-
	Outbound											
	D	RMB	17	615	579	41	6	614	11	-10	-2%	-1
		GMB	37	95	91	4	1	94	1	0	0%	-
			38	95	90	3	0	92	1	2	2%	-
			603	80	47	4	0	51	1	28	35%	-
			75	146	135	6	3	138	2	7	4%	-
		Bus	76K	268	139	4	2	141	8	119	45%	-
	B	GMB	36	19	17	1	0	19	0	0	0%	-
PM Peak (1700- 1800)	Inbound											
	A	RMB	17	411	413	12	0	424	3	-16	-4%	-1
		GMB	36	16	21	0	1	19	0	-3	-21%	-1
			37	102	131	3	3	131	1	-29	-29%	-2
			38	140	177	0	1	176	0	-36	-25%	-3
			75	102	97	3	1	99	1	3	3%	-
			76	48	51	1	1	51	0	-4	-8%	-1
			78	38	21	3	0	23	1	14	37%	-
		Bus	76K	411	229	3	1	231	5	175	43%	-
	C	GMB	36	38	31	1	4	28	0	9	25%	-
	Outbound											
	D	RMB	17	389	438	8	1	444	2	-58	-15%	-4
		GMB	37	127	114	12	0	126	3	-2	-1%	-1
			38	73	73	5	0	78	1	-6	-8%	-1
			603	48	39	9	0	48	2	-3	-5%	-1
			75	213	205	1	0	206	0	6	3%	-
			76	48	55	1	1	55	0	-8	-16%	-1
Bus			76K	268	139	5	0	145	10	113	42%	-

6.2.8 Table 6.5 indicates that there is a shortage of public transport services for both AM and PM peak of the reference scenario in year 2038.

6.2.9 Based on **Table 6.1 and 6.2**, the expected demand of public transport for design scenario in year 2038 is assessed by considering the proposed development and is shown in **Table 6.6**.

Table 6.6 Expected Surplus in 2038 Design Scenario (With Proposed Development)

	Bus /GMB Stop	Mode	Route No.	Surplus from Reference Scenario [N]	Year 2038 Design Scenario (per hour)				
					% of distribution	No of Passengers from Proposed Development [P]	Surplus Capacity [Q] = [N] – [P]	Surplus in %	Additional Frequency Required
AM Peak (0800-0900)	Inbound								
	A	RMB	17	17	0%	0	17	5%	-
		GMB	37	17	0%	0	17	14%	-
			38	-19	0%	0	-19	-15%	-2
			75	20	4%	1	18	11%	-
			76	-8	0%	0	-8	-24%	-1
			78	11	0%	0	11	19%	-
		Bus	76K	235	2%	5	230	56%	-
	C	GMB	36	4	0%	0	4	19%	-
	Outbound								
	D	RMB	17	-10	62%	22	-32	-5%	-2
		GMB	37	0	6%	2	-2	-2%	-1
			38	2	4%	1	0	1%	-
			603	28	6%	2	26	32%	-
75			7	10%	3	3	2%	-	
Bus		76K	119	6%	16	104	39%	-	
B	GMB	36	0	2%	1	-1	-3%	-1	
PM Peak (1700-1800)	Inbound								
	A	RMB	17	-16	18%	6	-23	-6%	-2
		GMB	36	-3	0%	0	-3	-21%	-1
			37	-29	4%	1	-31	-30%	-2
			38	-36	0%	0	-36	-25%	-3
			75	3	4%	1	1	1%	-
			76	-4	2%	1	-4	-9%	-1
			78	14	4%	1	13	34%	-
		Bus	76K	175	4%	11	164	40%	-
	C	GMB	36	9	2%	1	9	23%	-
	Outbound								
	D	RMB	17	-58	12%	4	-62	-16%	-4
		GMB	37	-2	18%	6	-8	-6%	-1
			38	-6	8%	3	-9	-12%	-1
603			-3	14%	5	-8	-16%	-1	
75			6	2%	1	6	3%	-	
76			-8	2%	1	-9	-18%	-1	
Bus		76K	113	8%	21	92	34%	-	

6.2.10 The assessment results in **Table 6.6** indicate that for the design scenario in year 2038, it is proposed to increase the frequency of the bus and minibus services. However, as shown in **Table 6.5**, there will be shortage of public transport services even without considering the proposed development. As the scale of the proposed development is small and it is believed that it will not bring significant impact to the future demand of public transport services.

6.3 Conclusion

- 6.3.1 As the proposed development is planned to be completed after the completion of Au Tau Station of Northern Link Main Line, the residents of the proposed development could be served by MTR services.
- 6.3.2 There will be a new PTI with 9 bus routes proposed by Sha Po Public Housing Development, there will be sufficient spare PT capacity for our proposed development.
- 6.3.3 Even if the Sha Po Public Housing Development is deferred, by future residents could be well serviced by increasing the frequency of the existing public transport services.

7. PEDESTRIAN ASSESSMENT

7.1 Existing Pedestrian Condition

7.1.1 In order to acquire the existing pedestrian condition around the proposed development, a pedestrian headcount survey was conducted at concerned footpath sections during periods on a typical weekday on September 2024. The layout of the critical sections of footpath is shown in **Figure 7.1**.

Footpath Assessment

7.1.2 The level-of-service (LOS) for the observed pedestrian flows of the identified critical sections are shown in **Table 7.1**.

Table 7.1 Operational Performance of Critical Footpath in Existing Scenario

Critical Section	Total Footpath Width (m)	Effective Width (m) ⁽¹⁾	Year 2024 Observed Scenario					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾	Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾
F1	0.9	0.4	10	0.42	A	20	0.83	A

Notes:

(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings or walls each for both sides and 1m from shop frontage).

(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.

(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.5.2.2.

7.1.3 The assessment results shown in **Table 7.1** indicate that critical sections are operating within LOS A.

7.2 Pedestrian Traffic Forecast

Reference Scenario (Without the Proposed Development)

Historical Trend

- 7.2.1 Transport Department has traffic count stations in the vicinity of the proposed development. The traffic counts reported in the Annual Traffic Census over a period of seven years, i.e., 2012 to 2018 are summarized in **Table 7.2**.

Table 7.2 Historical Traffic Data from Annual Traffic Census (ATC)

ATC Stn	Road Name	Annual Average Daily Traffic (AADT)							Avg. Annual Growth Rate
		2012	2013	2014	2015	2016	2017	2018	
5016	San Tin Highway, Castle Peak Road and San Tam Road (From Kam Tin Road to Fairview Park)	92,060	90,610	88,800	86,180	92,230	90,650	86,230	-1.08%
5019	Castle Peak Road – Yuen Long (From Yuen Long On Lok Road to Kam Tin Road)	34,550	34,530	36,490	34,380	31,990	30,040	29,300	-2.71%
Total		126,610	125,140	125,290	120,560	124,220	120,690	115,530	-1.51%

Note: *AADT estimated by Growth factor

**Due to the social movement in 2019 and COVID in 2020, the traffic flow will not be reliable and hence the growth rate will only take into account from 2016 to 2018

***As the traffic flow listed in the designated ATC stations are predicted, yet the flow will not be reliable and will not take it into the account.

Planning Data

- 7.2.2 Reference has also been made to the latest 2019-Based Territorial Population Employment Data Matrices (TPEDM) planning data published by the Planning Department for projection of population and employment within the study district from years 2019 to 2031. The average annual growth rates in terms of population and employment from 2019 to 2031 are tabulated in **Table 7.3**.

Table 7.3 2019-Based Planning Data from 2019 to 2031

Zone	Population				Employment			
	2019	2026	2031	Avg Annual Growth Rate (2019-2031)	2019	2026	2031	Avg Annual Growth Rate (2019-2031)
Northwest New Territories	58,400	76,850	140,150	7.57%	222,800	239,250	353,900	3.93%
Yuen Long	68,100	70,700	70,250	0.26%	175,150	172,350	159,850	-0.76%
Tin Shui Wai	35,050	33,100	31,950	-0.77%	279,950	283,250	276,050	-0.12%
Total	161,550	180,650	242,350	3.44%	677,900	694,850	789,800	1.28%
Weight Average Growth							<u>1.79%</u>⁽¹⁾	

Note (1) $((242,350 \times 3.44\%) + (789,800 \times 1.28\%)) / (242,350 + 789,800) = \sim 1.79\%$

Adopted Growth Rate

- 7.2.3 A.A.D.T. of ATC indicates that the traffic flow of the local road network has an average annual growth rate of **-1.51%** from year 2012 to year 2018.
- 7.2.4 Whilst, the 2019-based planning data indicates that the population and employment data of the study area are expected to grow with an average annual growth rate range from **-0.77% to 7.57%** and the range from **-0.12% to 3.93%** respectively from 2019 to 2031.
- 7.2.5 Therefore, the weight average growth **+1.79%** p.a. has been adopted for projecting traffic forecasts from year 2024 to year 2038.
- 7.2.6 To assess the future impact due to the proposed development, based on the survey flow and the growth rate of +1.79% adopted, future reference pedestrian flows (without the proposed development) at the critical sections are estimated.

Footpath Assessment

- 7.2.7 The LOS are assessed and summarized in **Table 7.4** below:

Table 7.4 Operational Performance of Critical Footpath in Reference Scenario (Without the Proposed Development)

Critical Section	Total Footpath Width (m)	Effective Width (m) ⁽¹⁾	Year 2038 Reference Scenario (Without the Proposed Development)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾	Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾
F1	0.9	0.4	15	0.63	A	25	1.07	A

Notes:

(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings or walls each for both sides and 1m from shop frontage).

(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.

(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.5.2.2.

7.2.8 The assessment results shown in **Table 7.4** indicate that critical sections are operating within LOS A.

Design Scenario (With the Proposed Development)

7.2.9 The total trips generated from the proposed development are estimated in **Tables 6.1** of **Chapter 6** above.

Footpath Assessment

7.2.10 As mentioned in subsection 5.2 and **Figure 5.2**, the Applicant proposes to widen the southern section of the local access road into a 6m wide, two-lane single carriageway, accompanied by a 1.2m wide footpath on the western side. To enhance the pedestrian walking environment, the footpath widening will continue along the western footpath adjacent to the Site, maintaining a consistent width of 1.2m.

7.2.11 The estimated trips are superimposed to the network. The assessment of the design scenario is summarized in **Table 7.5**.

**Table 7.5 Operational Performance of Critical Footpath in Design Scenario
(With the Proposed Development)**

Critical Section	Total Footpath Width (m)	Effective Width (m) ⁽¹⁾	Year 2038 Design Scenario (With the Proposed Development)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾	Two-way Pedestrian Flow (ped/hr)	Two-way Pedestrian Flow Rate (ped/min/m) ⁽²⁾	LOS ⁽³⁾
F1	1.2 ⁽⁴⁾	0.7	870	20.67	B	880	20.90	B

Notes:

(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings or walls each for both sides and 1m from shop frontage).

(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.

(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.5.2.2.

(4) Proposed widening of footpath as shown in **Figure 7.2**

7.2.12 The assessment results in **Table 7.5** shows that all critical footpaths would operate with LOS B and therefore considered acceptable.

7.3 Conclusion

7.3.1 Based on the assessment results, the critical footpath and crossing facilities are able to meet the future pedestrian demand due to the proposed development.

8. SUMMARY AND CONCLUSION

8.1 Summary

- 8.1.1 CTA Consultants Limited (CTA) is commissioned as the traffic consultant to prepare the Traffic Impact Assessment (TIA) and technical justifications in supporting the S12A Amendment of Plan Application for proposed rezoning of the Site from “Industrial (Group D)”, “Residential (Group A)” and “Agriculture to Residential (Group A) 1” for Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long.
- 8.1.2 To appraise the existing traffic condition, a vehicular survey in the form of manual classified count was conducted at the surrounding road network of the proposed development. Current operational performance of the critical junctions has been assessed with the observed traffic flow. The results reveal that all critical junctions are at present operating within its capacities.
- 8.1.3 Assessment of operational performance of the critical junctions indicates that all critical junctions will still operate within their capacities in both reference and design scenarios in year 2038 except Junctions E, F and J. However, these junctions would already over DFC 0.85 or R.C. below 15% even without our proposed development. The impact by our development is very small and insignificant.
- 8.1.4 As the traffic trips of the proposed development will not result in significant impact on the surrounding road network. Therefore, the application is supported from the traffic point of view.
- 8.1.5 Road link assessment for the local access road has been carried out with the proposed improvement including widening of the northern section to 10.3m and the southern section to 6m. The assessment has indicated that after widening the local access road, the roads would still operate within their capacities when the proposed development and the public housing developments are completed in 2038.

- 8.1.6 It is the responsibility of the Government to implement the proposed road widening of the Fung Kat Heung Road and the new loop road to support the proposed SPPHD. It is therefore reasonable to assume that the population intake of the proposed development will be effected upon completion of the road widening of the Fung Kat Heung Road and the new loop road connecting San Tam Road by the Government.
- 8.1.7 Although the implementation programme of the SPPHD will need to be further reviewed by the Government, the Government should consider implementing the relevant road improvement works in advance or in phases to facilitate the SPPHD in the future and improve the road network of the locality, which tally with the planning principles of infrastructure-led and capacity-creating adopted by the Government. This would facilitate traffic ingress and egress for the proposed development scheme, while aligning with the broad development programme of the Sha Po Public Housing Development – or, at the very least, the target completion date for the Phase 2 works of the Northern Link Main Line (with intermediate stations at Au Tau, Ngau Tam Mei and San Tin) by 2034.
- 8.1.8 As government announced that the Northern Link Main Line (include Au Tau Station) will be completed in 2034, the target completion year of our proposed development is adjusted from 2032 to 2035. Therefore, our assumption on the new implementation of improvement works and transport facilities proposed by Sha Po Public Housing Development has already been completed in year 2035 is reasonable.
- 8.1.9 Public transport demand has also been assessed. Due to the long walking distance to the existing public transport, it is believed that the residents of the proposed development will most likely use the public transport in the new PTI of Sha Po Public Housing Development. The assessment shows that there will be sufficient spare capacity of the public transport in the new PTI for the residents of the proposed development. Even if the PTI is deferred, the residents of the proposed development could be well serviced by increasing the frequency of the existing public transport services.
- 8.1.10 Pedestrian assessment also revealed that the concerned sections of footpath would all operate with ample LOS during AM and PM peak hours in design year 2038.

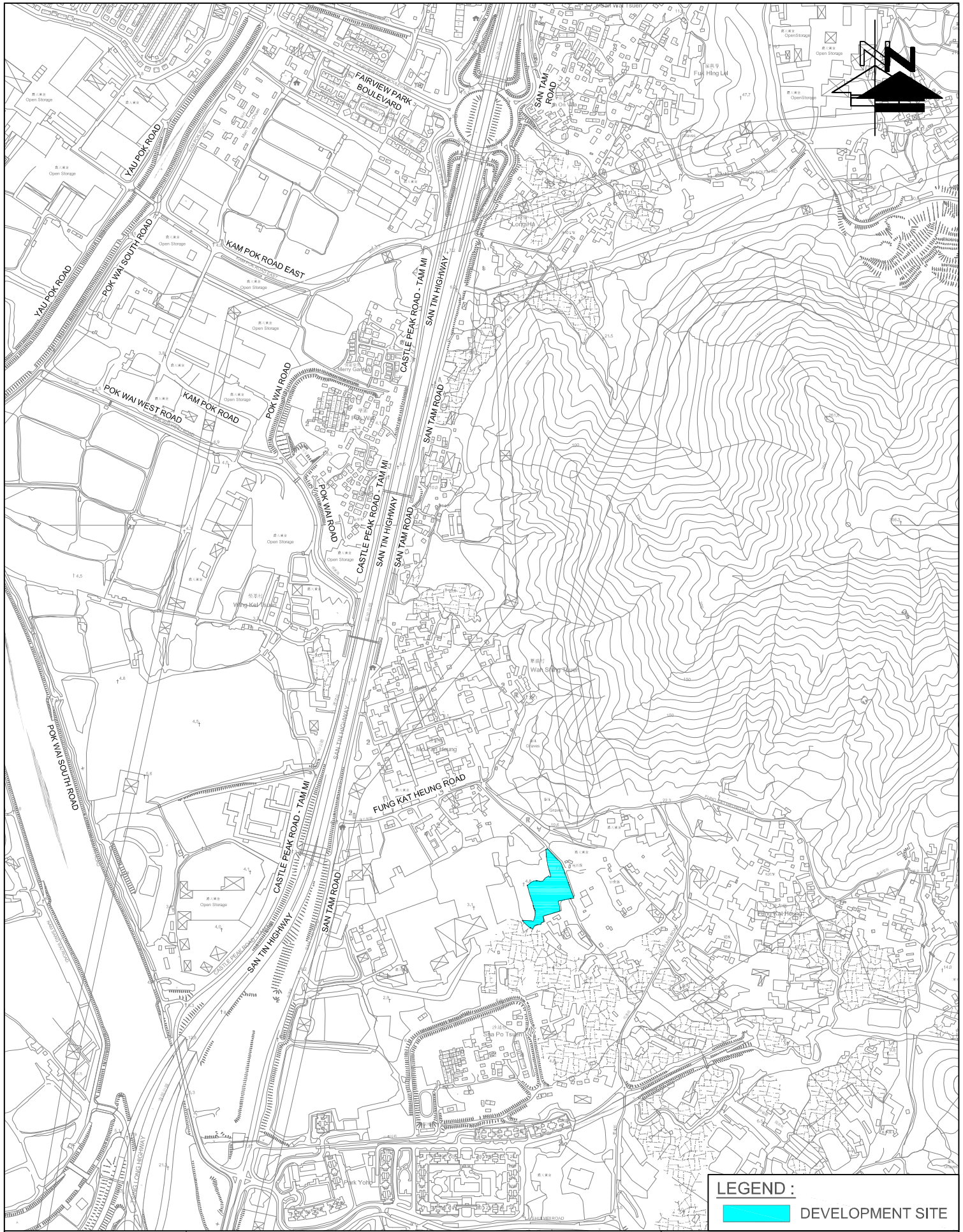


8.1.11 Thus, the proposed residential development will not cause any significant impact on the widened local access road.

8.2 Conclusion

8.2.1 Traffic Impact Assessment (TIA) study indicates that no adverse traffic impact will be induced by the proposed development.

8.2.2 Therefore, the proposed residential development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long is reckoned feasible from traffic engineering point of view.



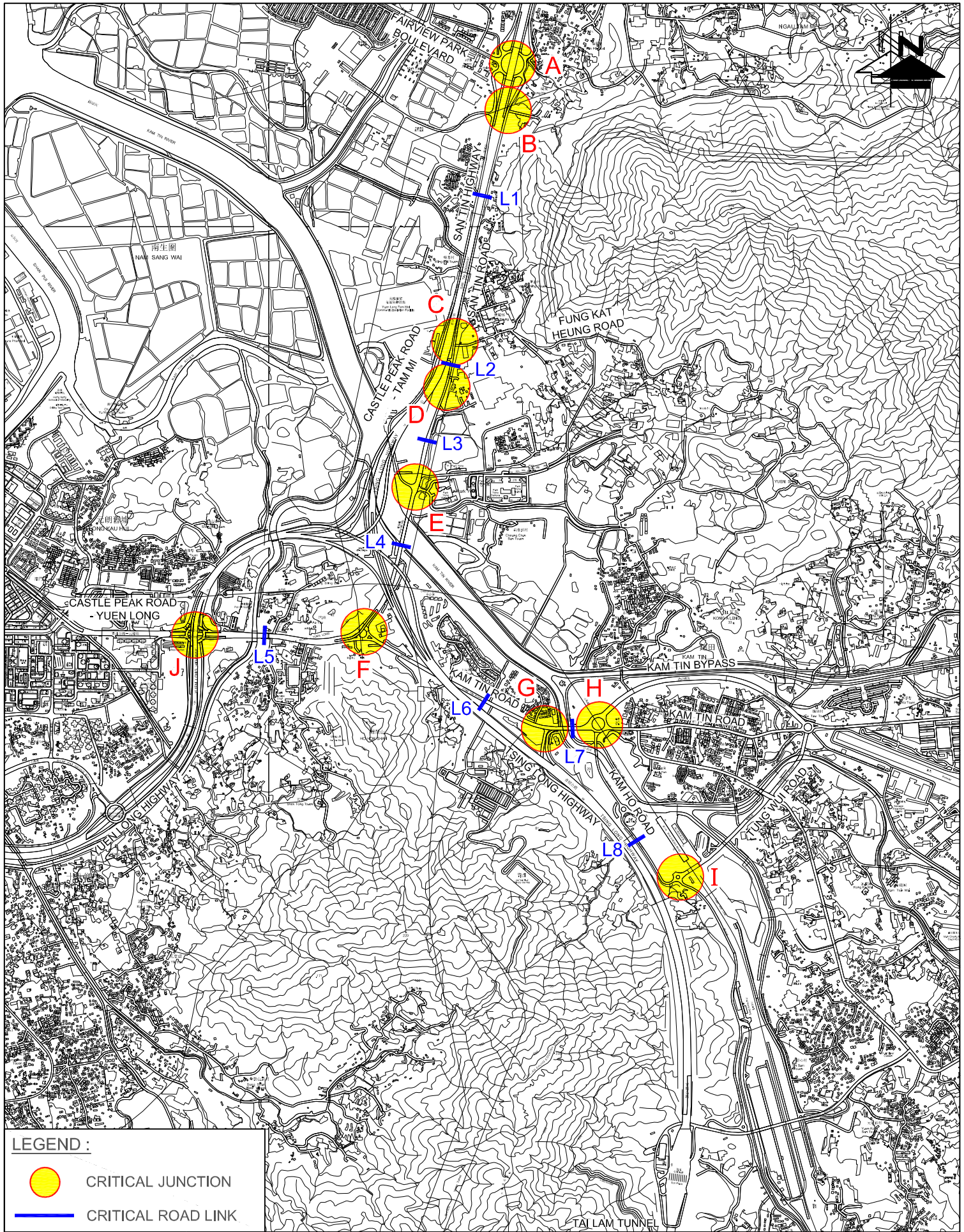
LEGEND :

DEVELOPMENT SITE

FIGURE NO.: 1.1		PROJECT TITLE: Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	
PROJECT NO.: 23004HK		DRAWING TITLE:	
SCALE: 1 : 10000 @A4	DATE: 30 OCT 2025	SITE LOCATION PLAN	



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LEGEND :



CRITICAL JUNCTION



CRITICAL ROAD LINK

FIGURE NO.:

3.1

PROJECT TITLE:

Proposed Residential Development at Various Lots in D.D. 107 and
Adjoining Government Land, Fung Kat Heung, Yuen Long

PROJECT NO.:

23004HK

DRAWING TITLE:

IDENTIFIED CRITICAL JUNCTIONS

SCALE:

1 : 25000 @A4

DATE:

30 OCT 2025



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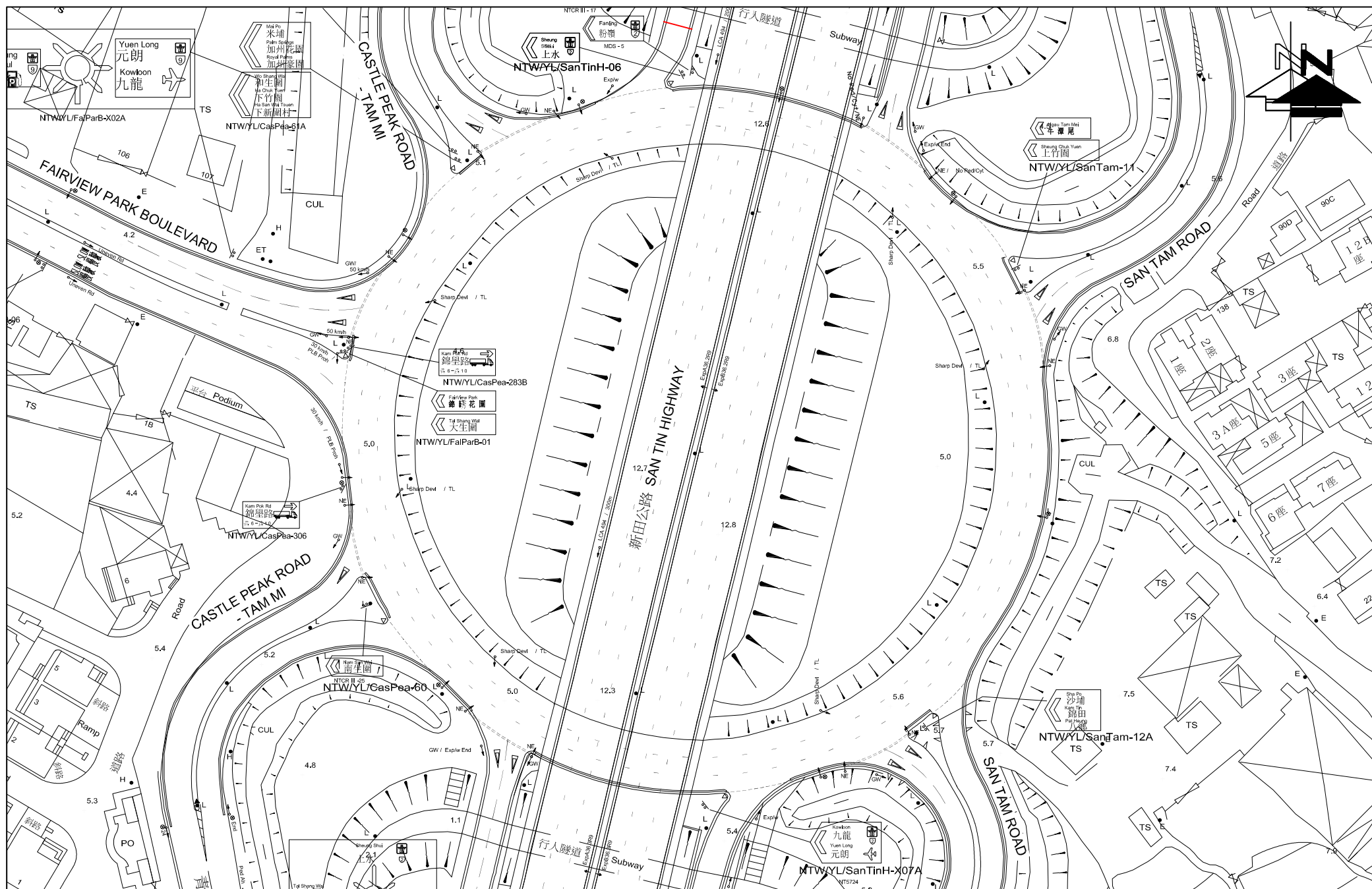


FIGURE NO.: 3.2	PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF FAIRVIEW PARK INTERCHANGE (A)	
SCALE: 1: 1000 @A4	DATE: 30 OCT 2025	

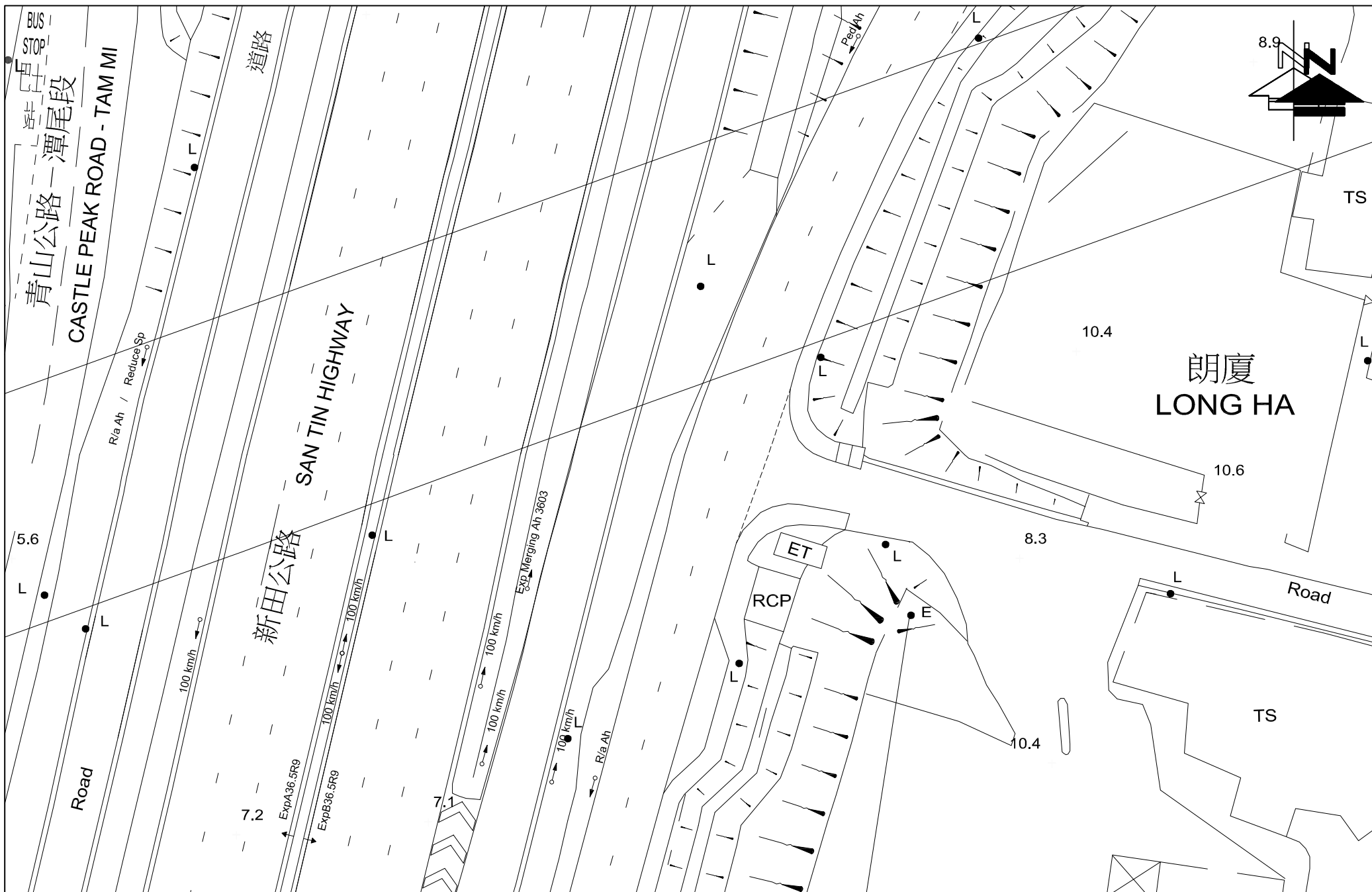


FIGURE NO.: 3.3		PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long		 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK		DRAWING TITLE: EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / LOCAL ROAD TO LONG HA (B)		
SCALE: 1 : 500 @A4	DATE: 30 OCT 2025			

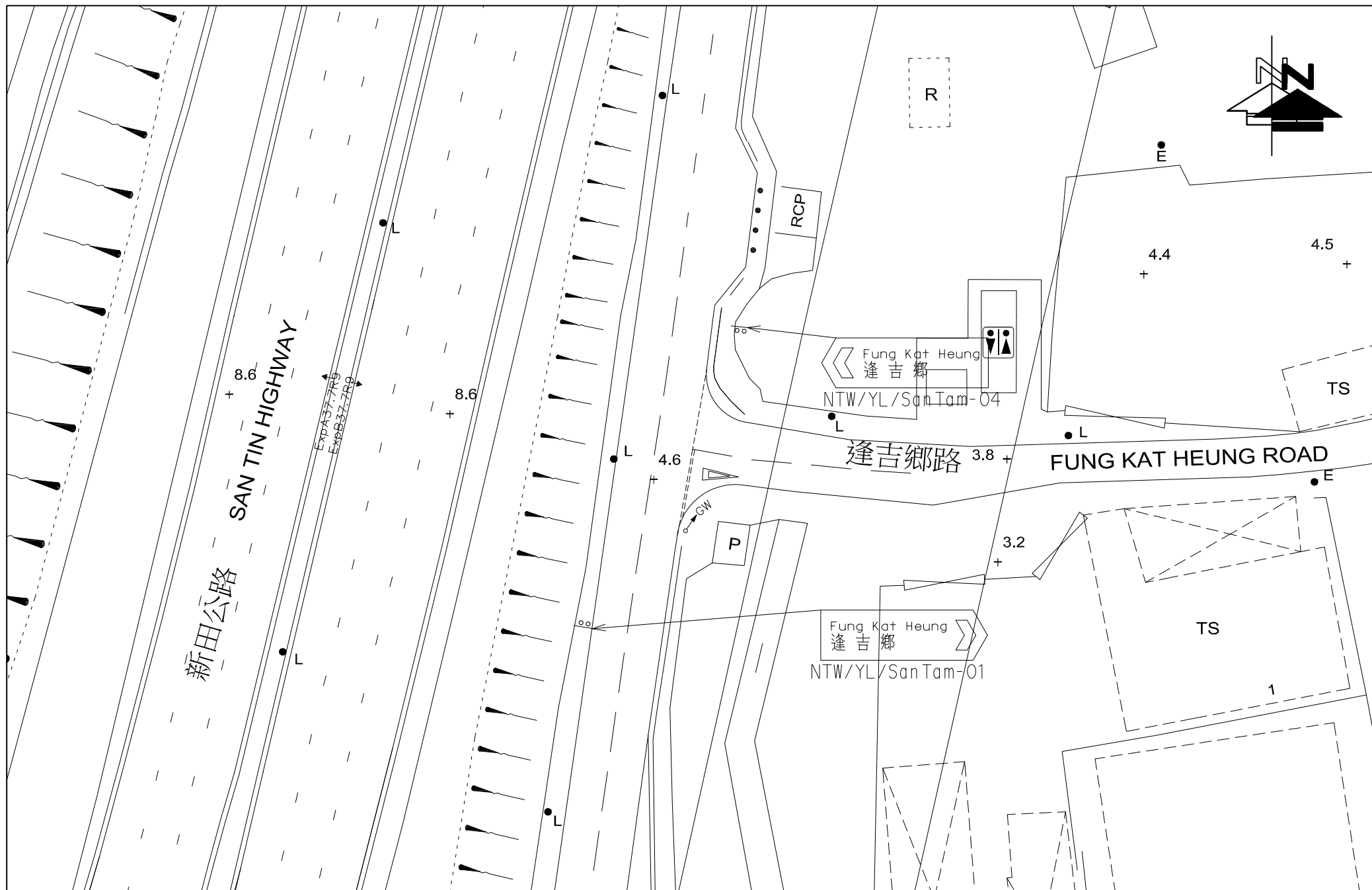
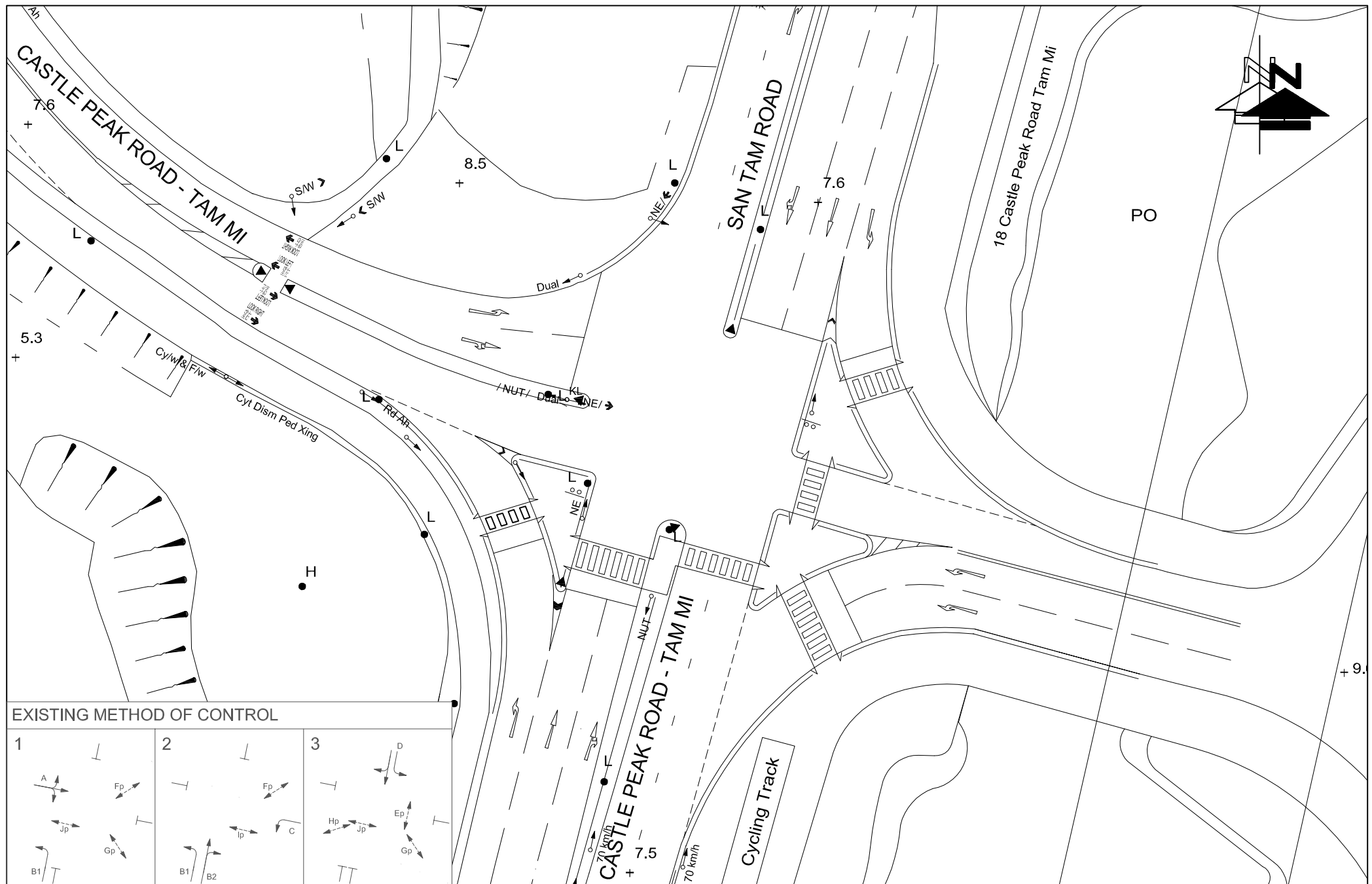


FIGURE NO.: 3.4	PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / FUNG KAT HEUNG ROAD (C)	
SCALE: 1 : 500 @A4	DATE: 30 OCT 2025	



EXISTING METHOD OF CONTROL

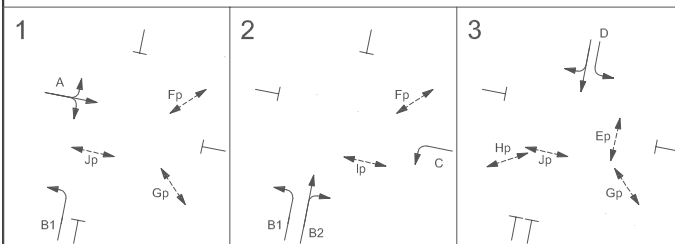


FIGURE NO.: 3.5		PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	
PROJECT NO.: 23004HK		DRAWING TITLE: EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - TAM MI / SAN TAM ROAD (E)	
SCALE: 1 : 500 @A4	DATE: 30 OCT 2025	 CTA Consultants Limited 志達顧問有限公司	

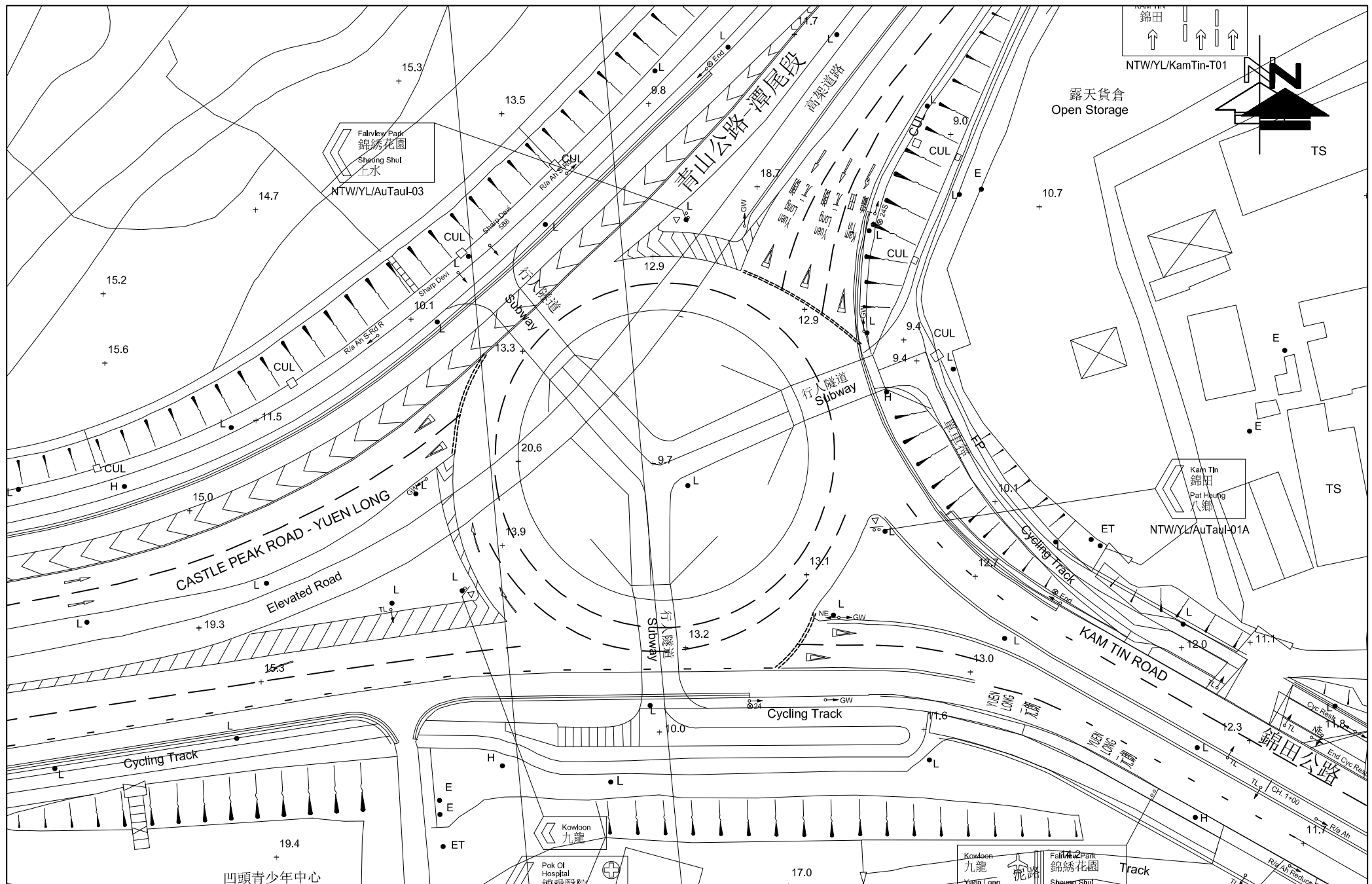


FIGURE NO.: 3.6	PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF AU TAU INTERCHANGE (F)	
SCALE: 1 : 750 @A4	DATE: 30 OCT 2025	

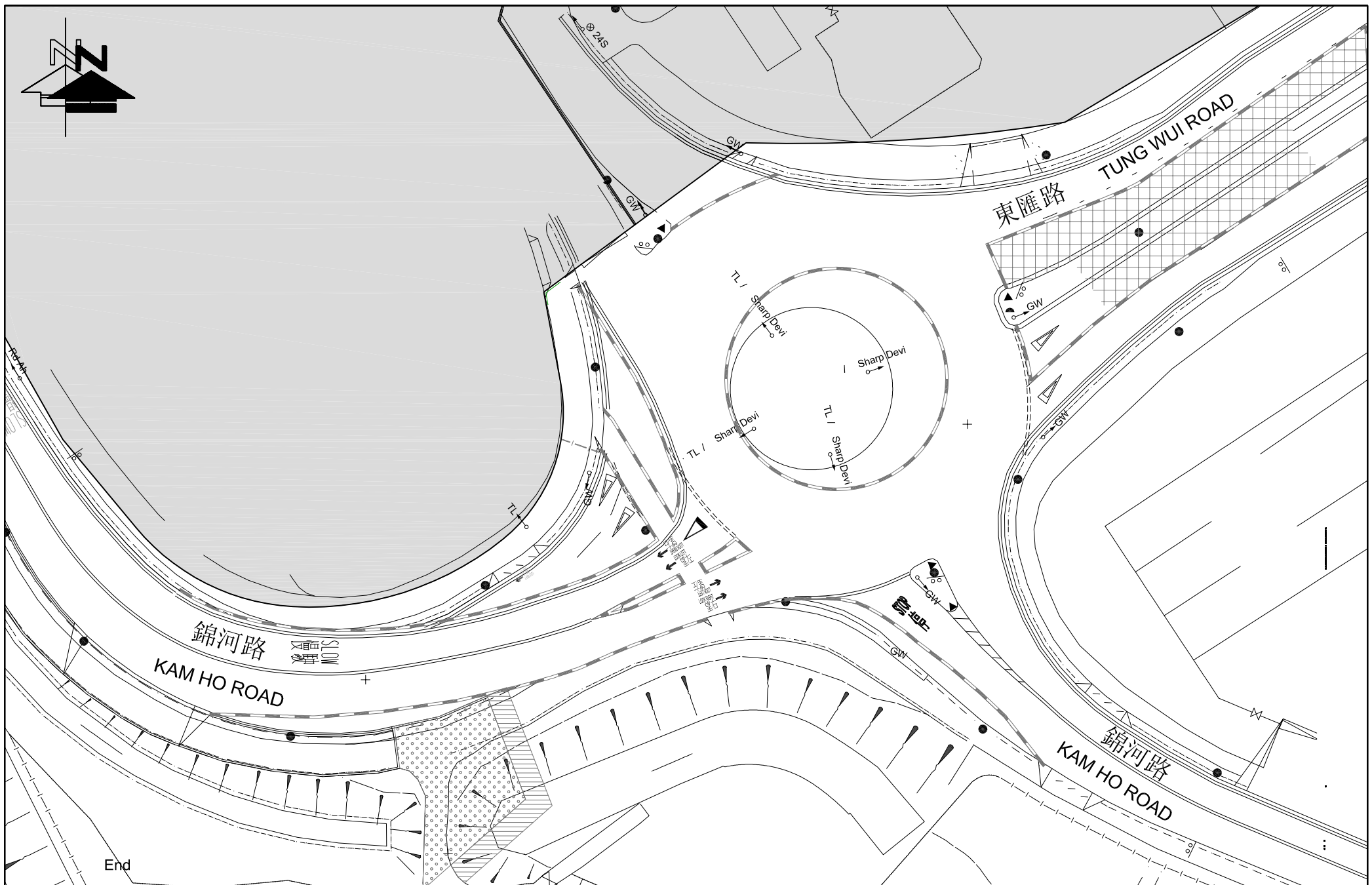
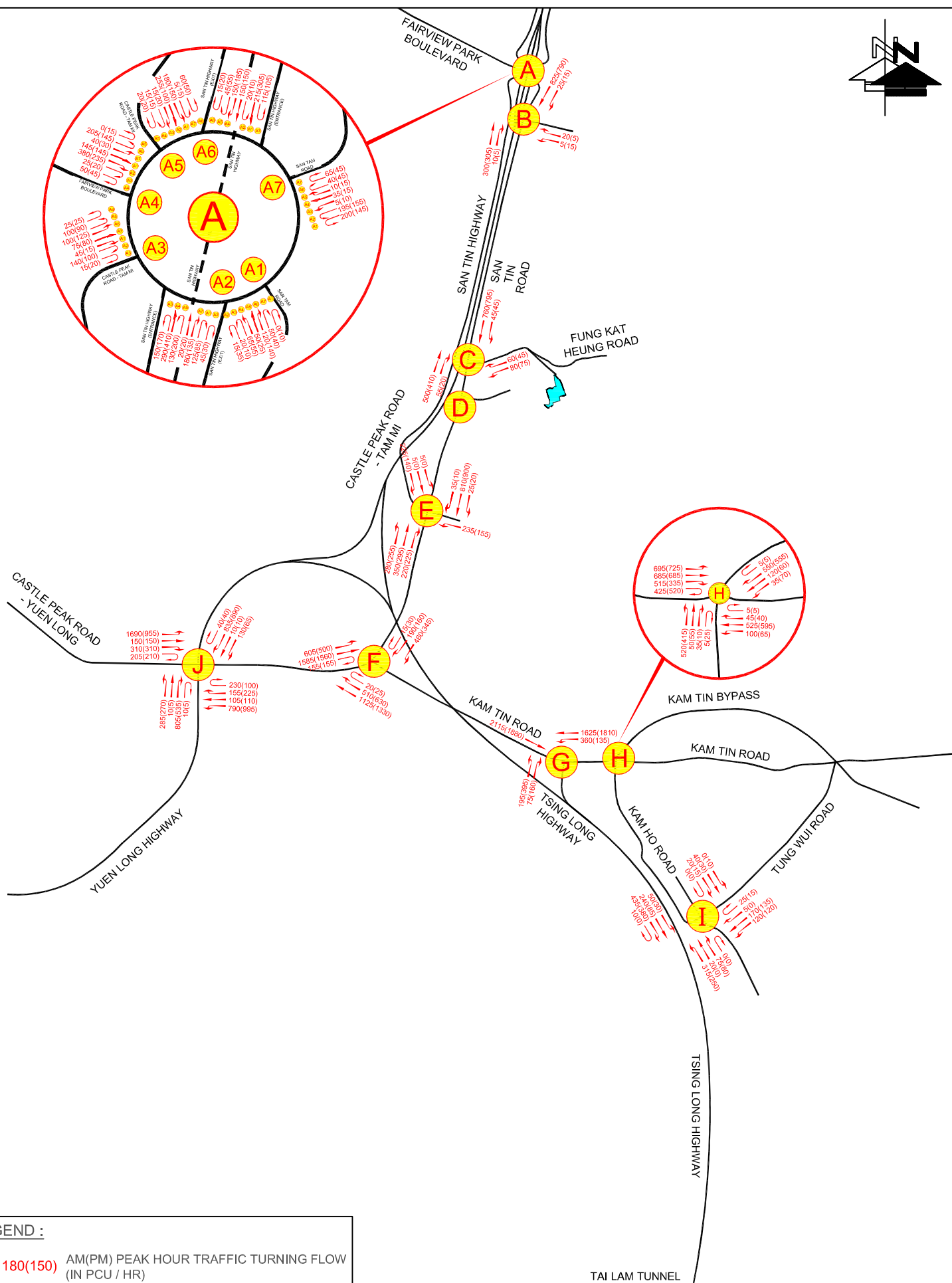
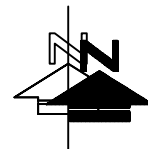


FIGURE NO.: 3.9	PROJECT TITLE: Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF KAM HO ROAD / TUNG WUI ROAD (I)	
SCALE: 1 : 500 @A4	DATE: 30 OCT 2025	



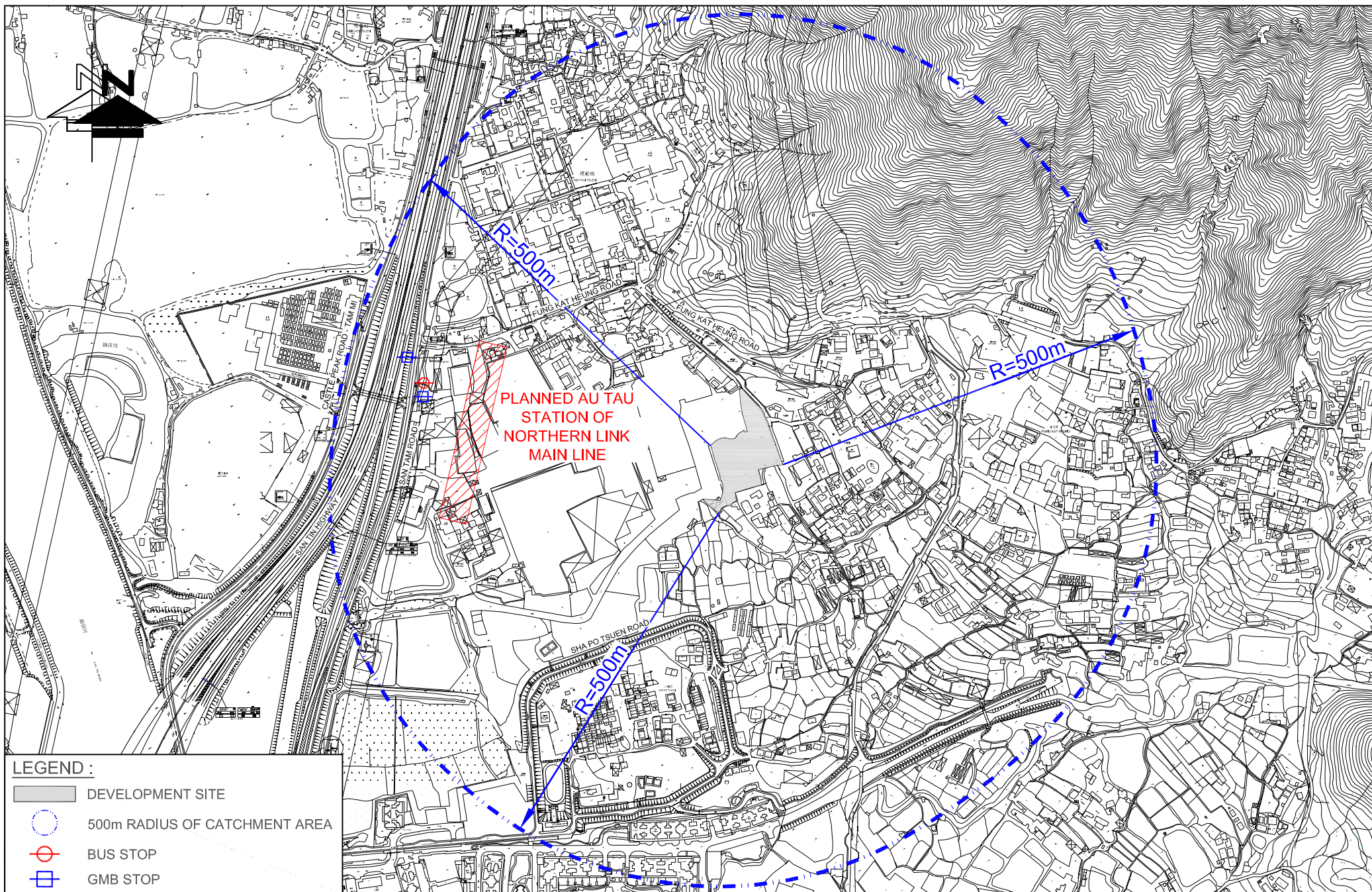


FIGURE NO.:	3.12	PROJECT TITLE:	Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long
PROJECT NO.:	23004HK	DRAWING TITLE:	
SCALE:	DATE:	PUBLIC TRANSPORT SERVICES IN THE VICINITY	
1 : 6700 @A4	30 OCT 2025		

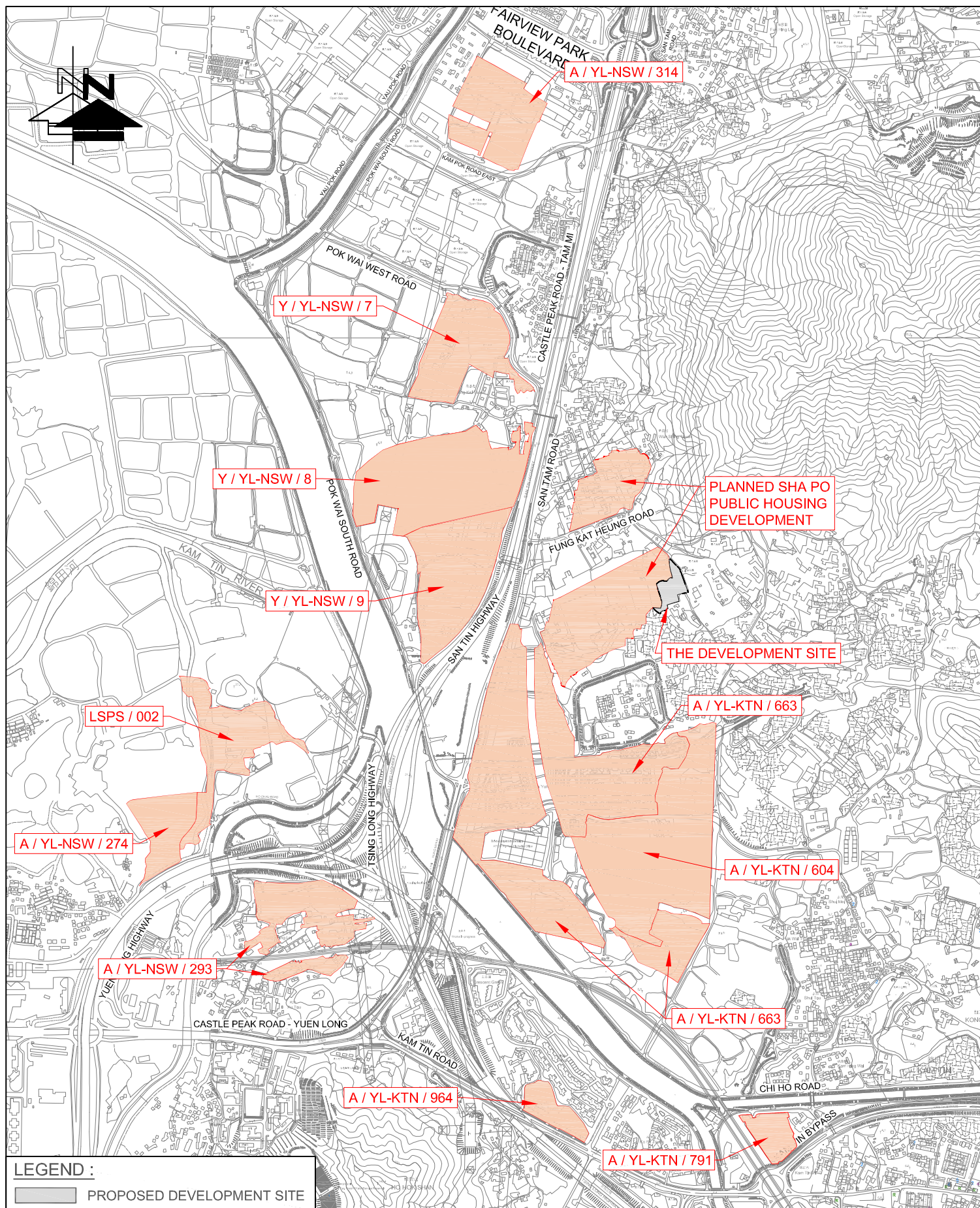
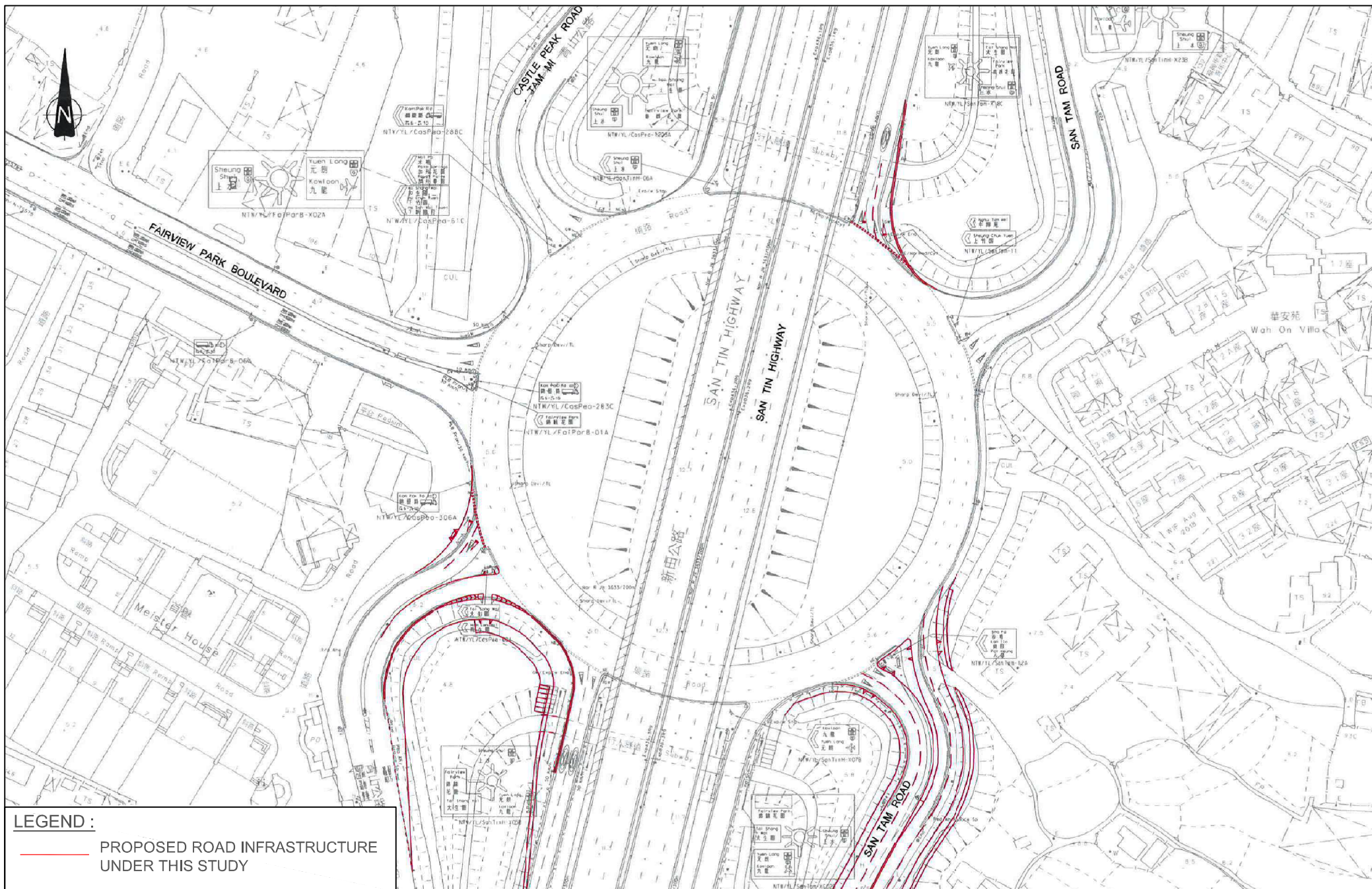


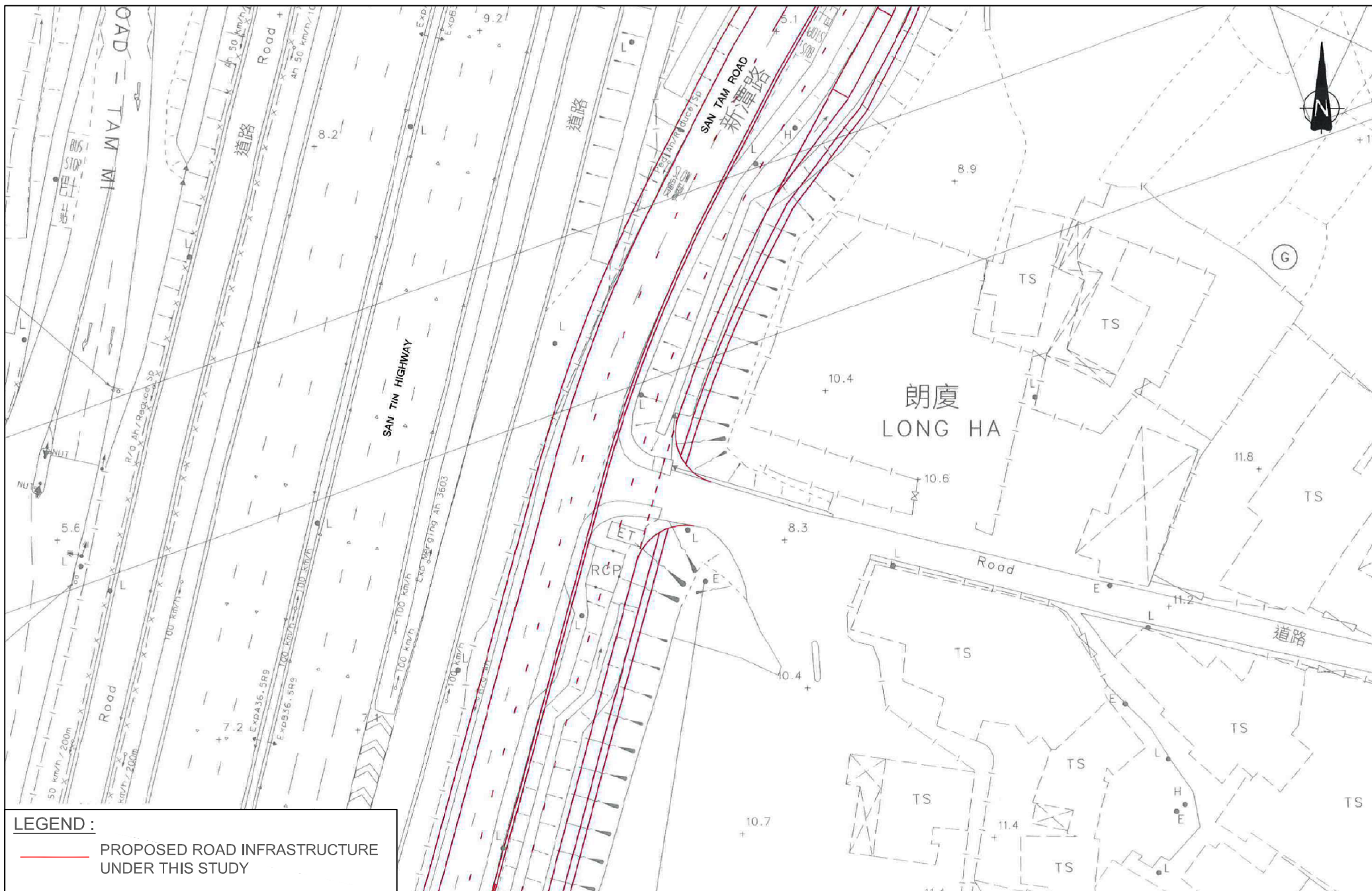
FIGURE NO.: 4.1		PROJECT TITLE: Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	
PROJECT NO.: 23004HK		DRAWING TITLE: PLANNED COMMITTED FUTURE DEVELOPMENT IN THE VICINITY	
SCALE: 1 : 15000 @A4	DATE: 30 OCT 2025	 CTA Consultants Limited 志達顧問有限公司	



LEGEND :

— PROPOSED ROAD INFRASTRUCTURE UNDER THIS STUDY

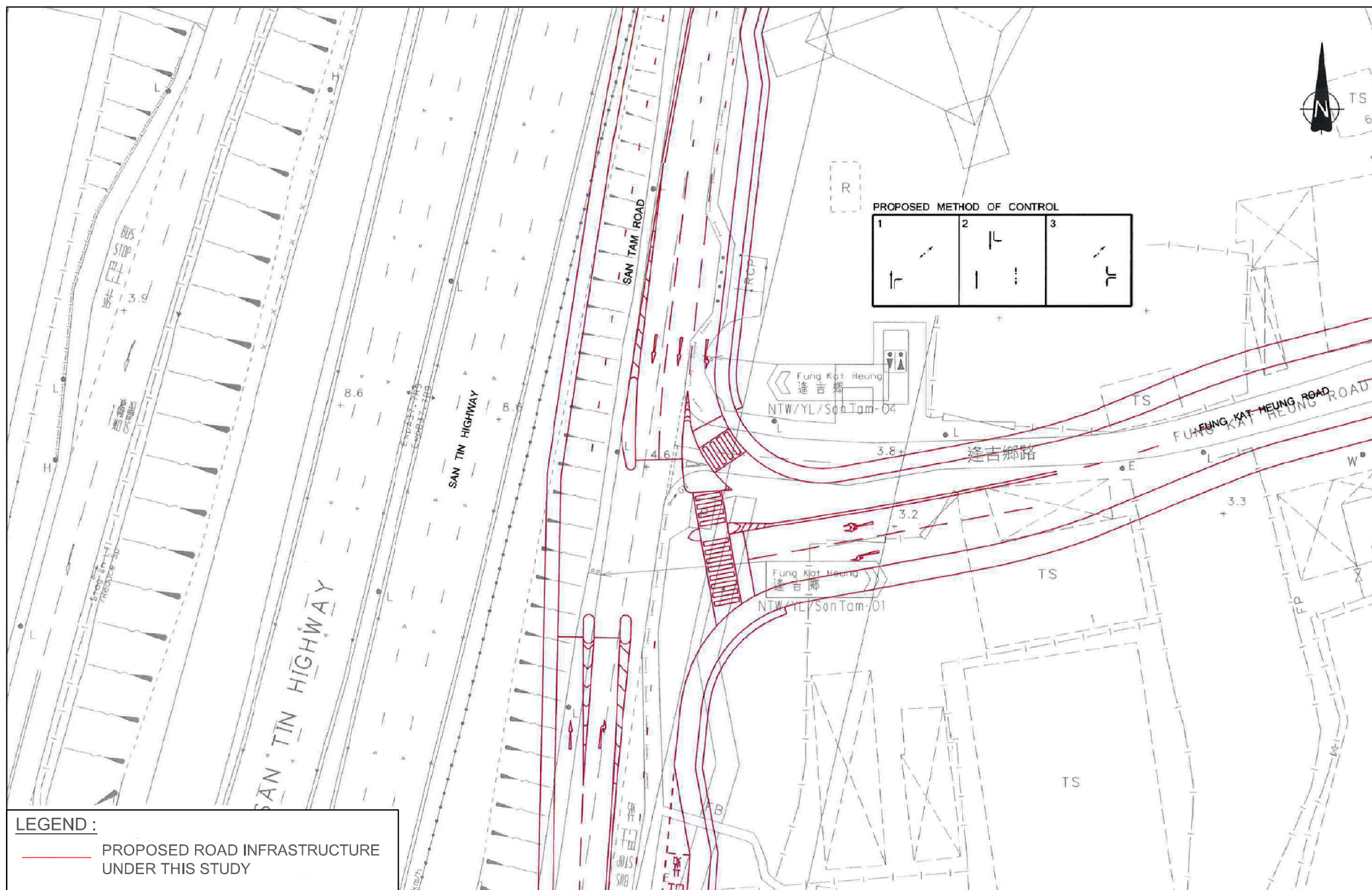
FIGURE NO.: 4.2		PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long		 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK		DRAWING TITLE: PROPOSED JUNCTION LAYOUT OF FAIRVIEW PARK INTERCHANGE (A)		
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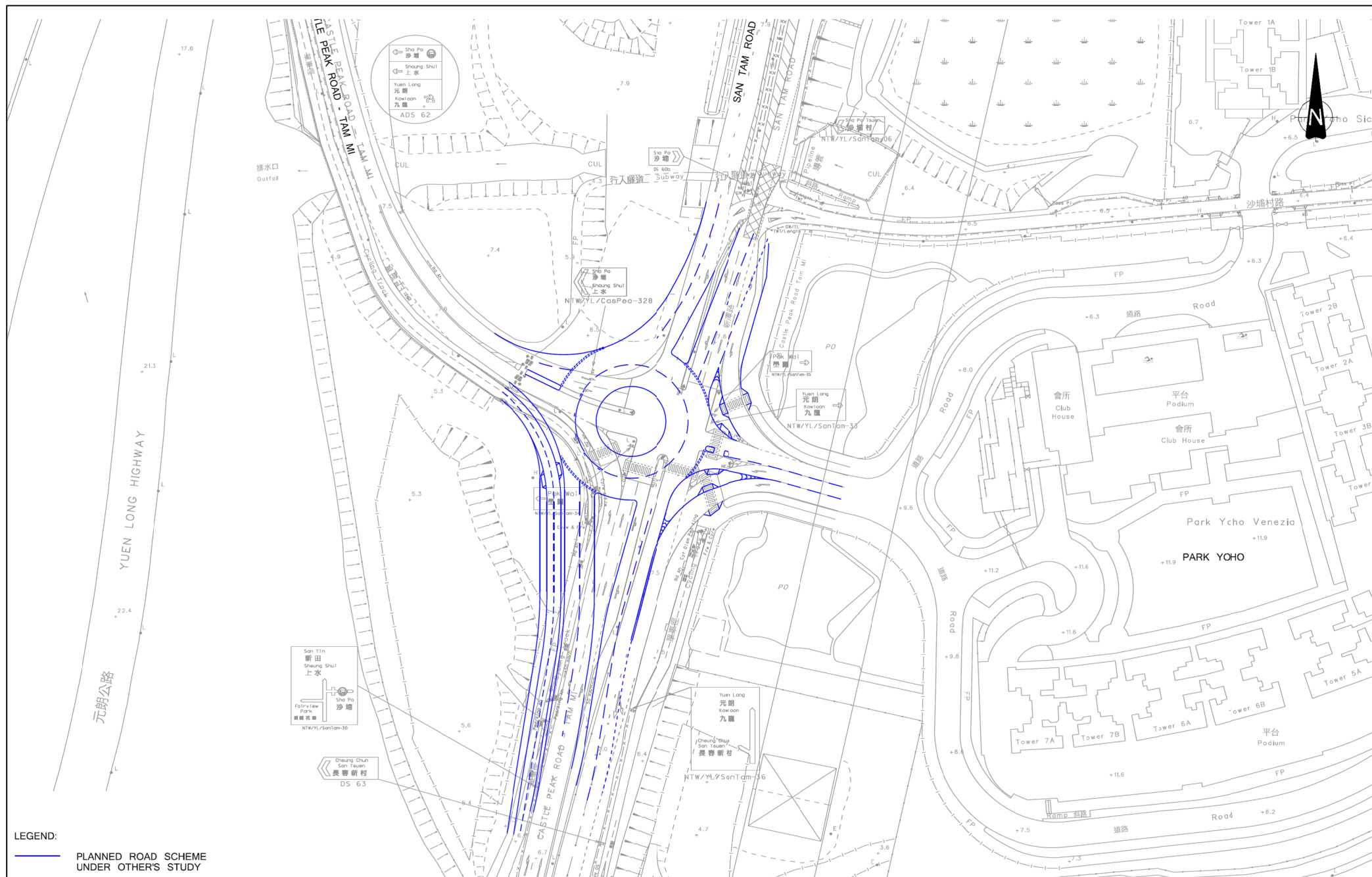


LEGEND :

— PROPOSED ROAD INFRASTRUCTURE UNDER THIS STUDY

FIGURE NO.: 4.3		PROJECT TITLE: Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	
PROJECT NO.: 23004HK		DRAWING TITLE: PROPOSED JUNCTION LAYOUT OF SAN TAM ROAD / LOCAL ROAD TO LONG HA (B)	
SCALE: N.T.S. @A4	DATE: 30 OCT 2025		





LEGEND :

PROPOSED ROAD INFRASTRUCTURE
UNDER THIS STUDY

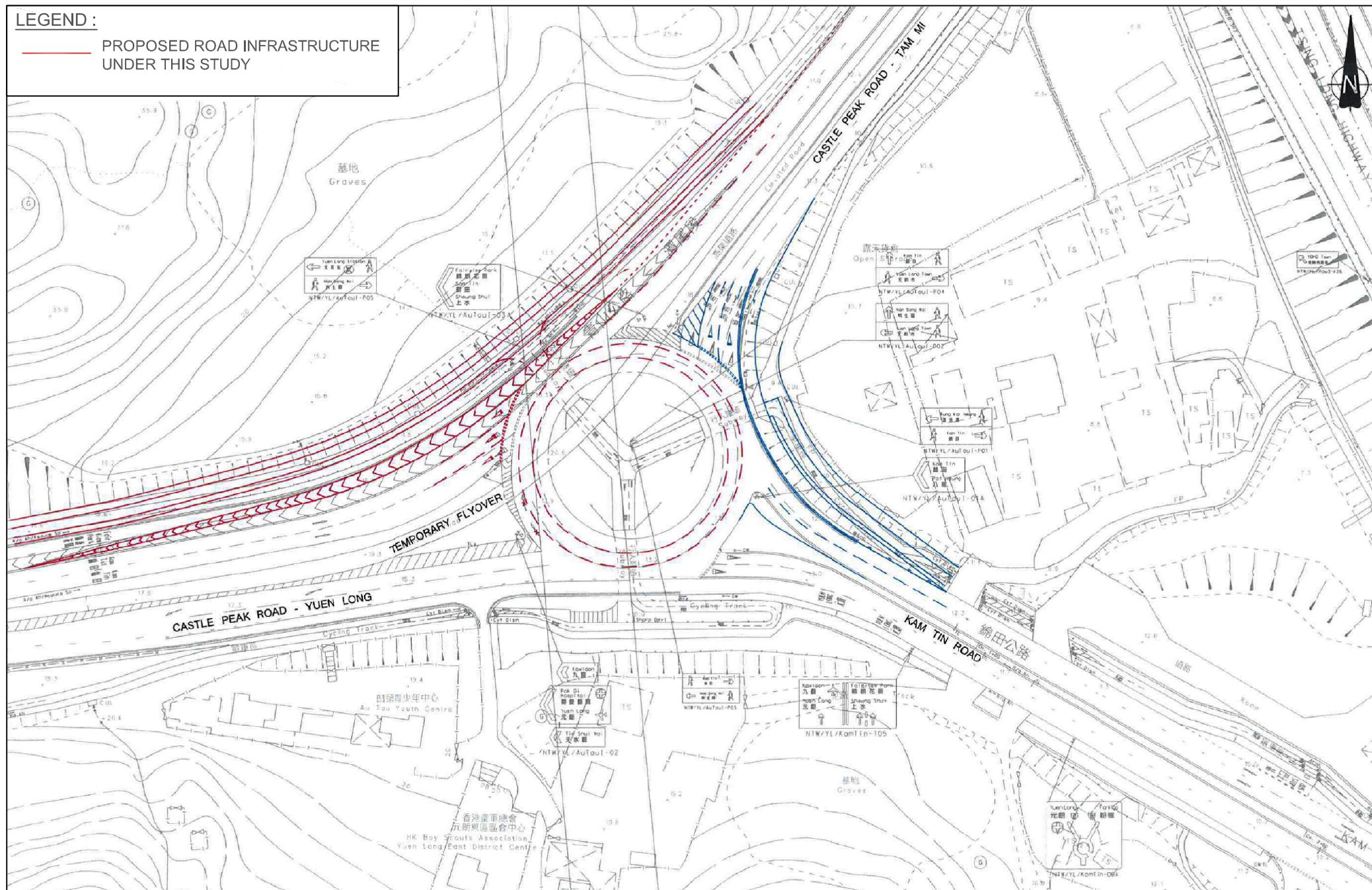


FIGURE NO.: 4.7	PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long	 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK	DRAWING TITLE: PROPOSED JUNCTION LAYOUT OF AU TAU INTERCHANGE (F)	
SCALE: N.T.S. @A4	DATE: 30 OCT 2025	

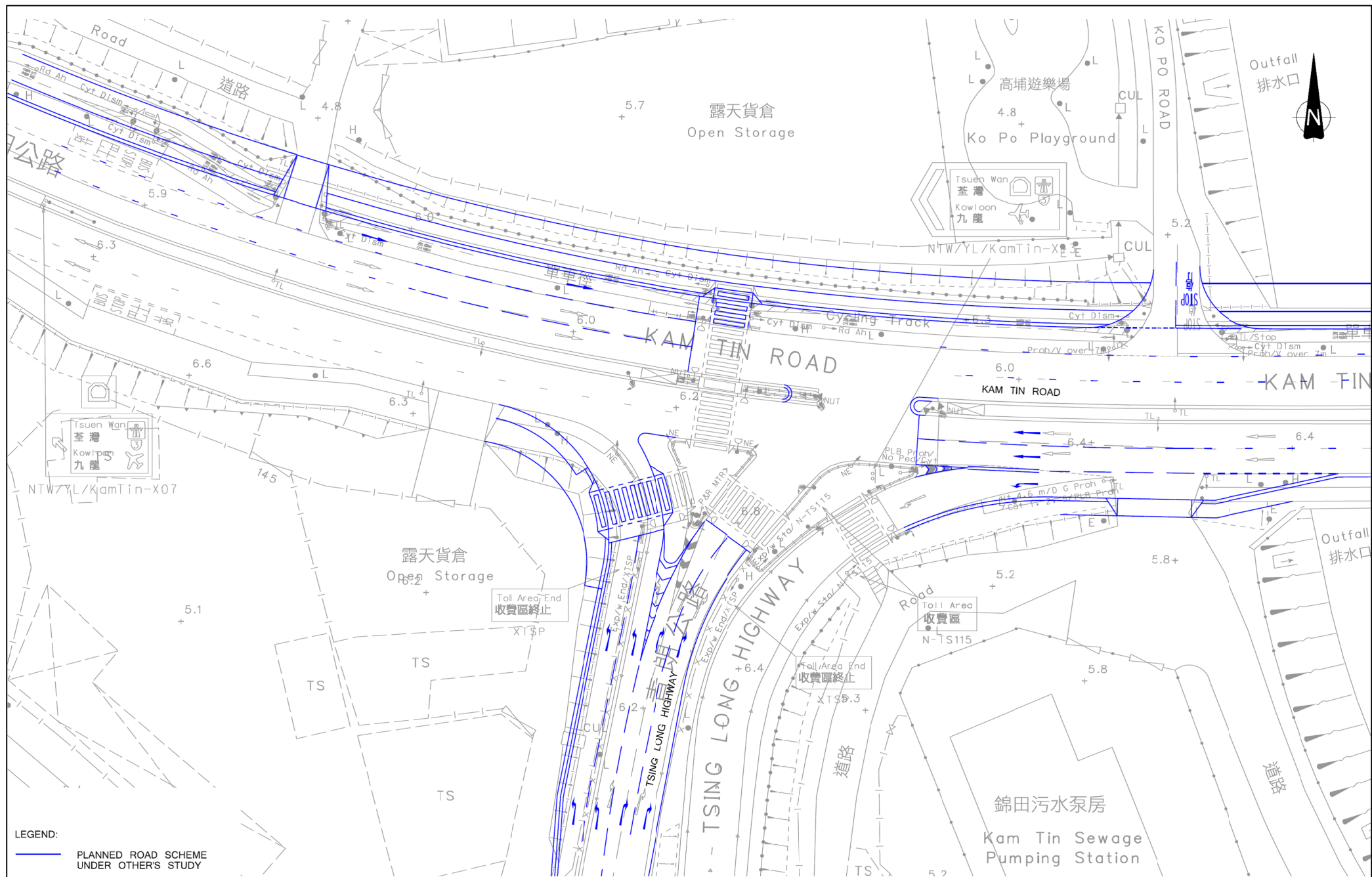


FIGURE NO.: 4.8		PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long		CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK		DRAWING TITLE: PROPOSED JUNCTION LAYOUT OF KAM TIN ROAD / TSING LONG HIGHWAY (G)		
SCALE: N.T.S. @A4	DATE: 30 OCT 2025			

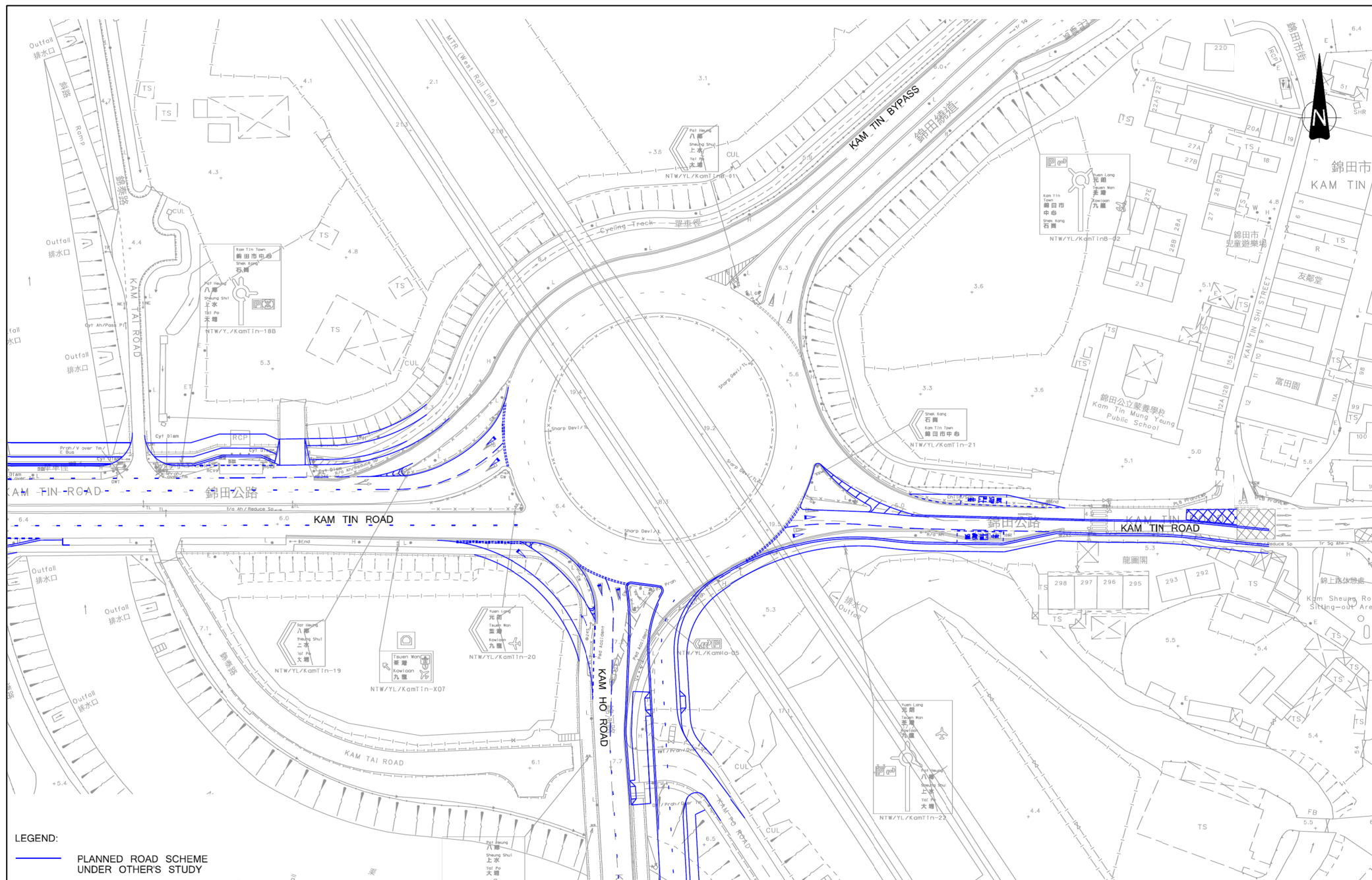
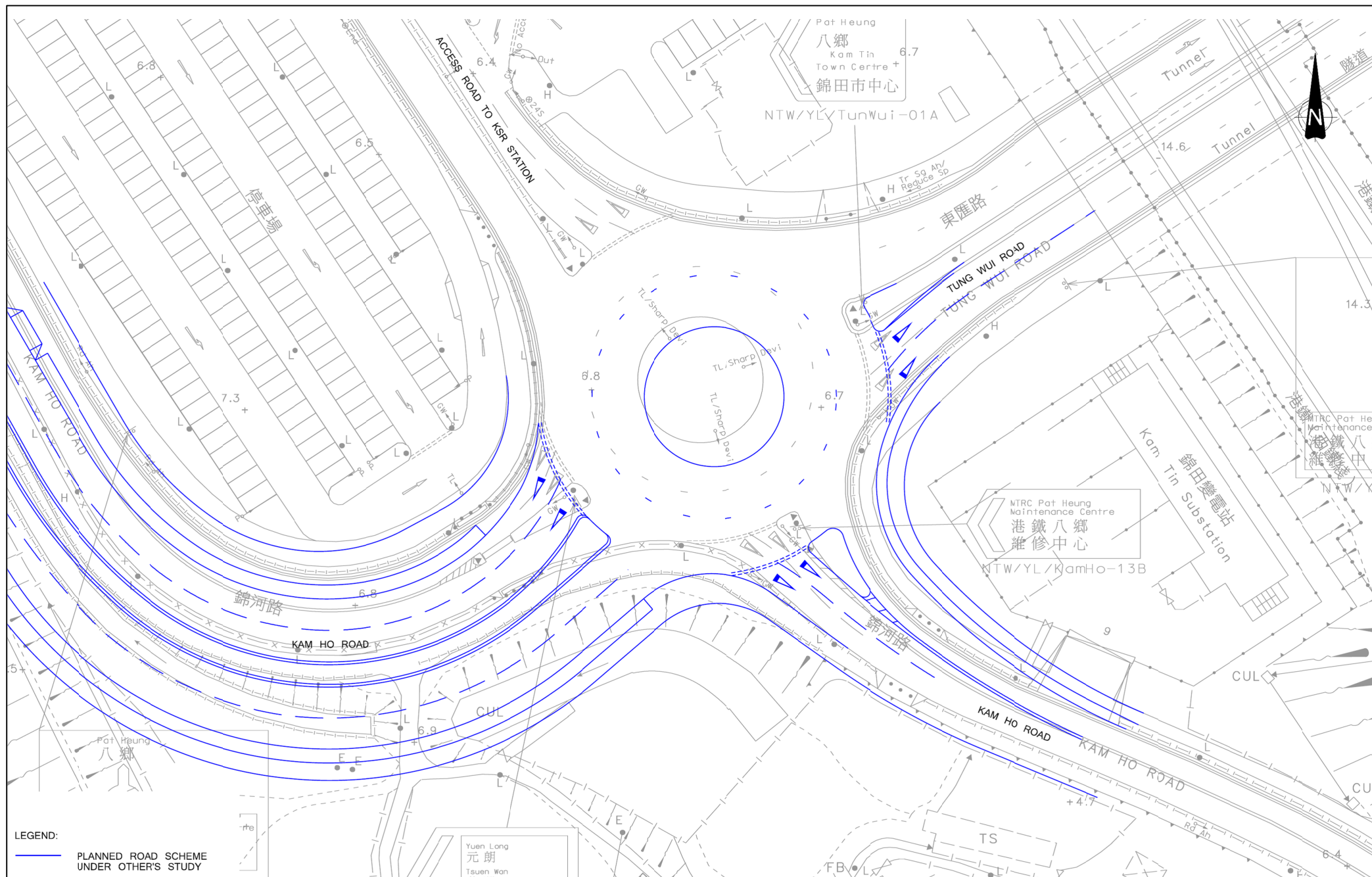
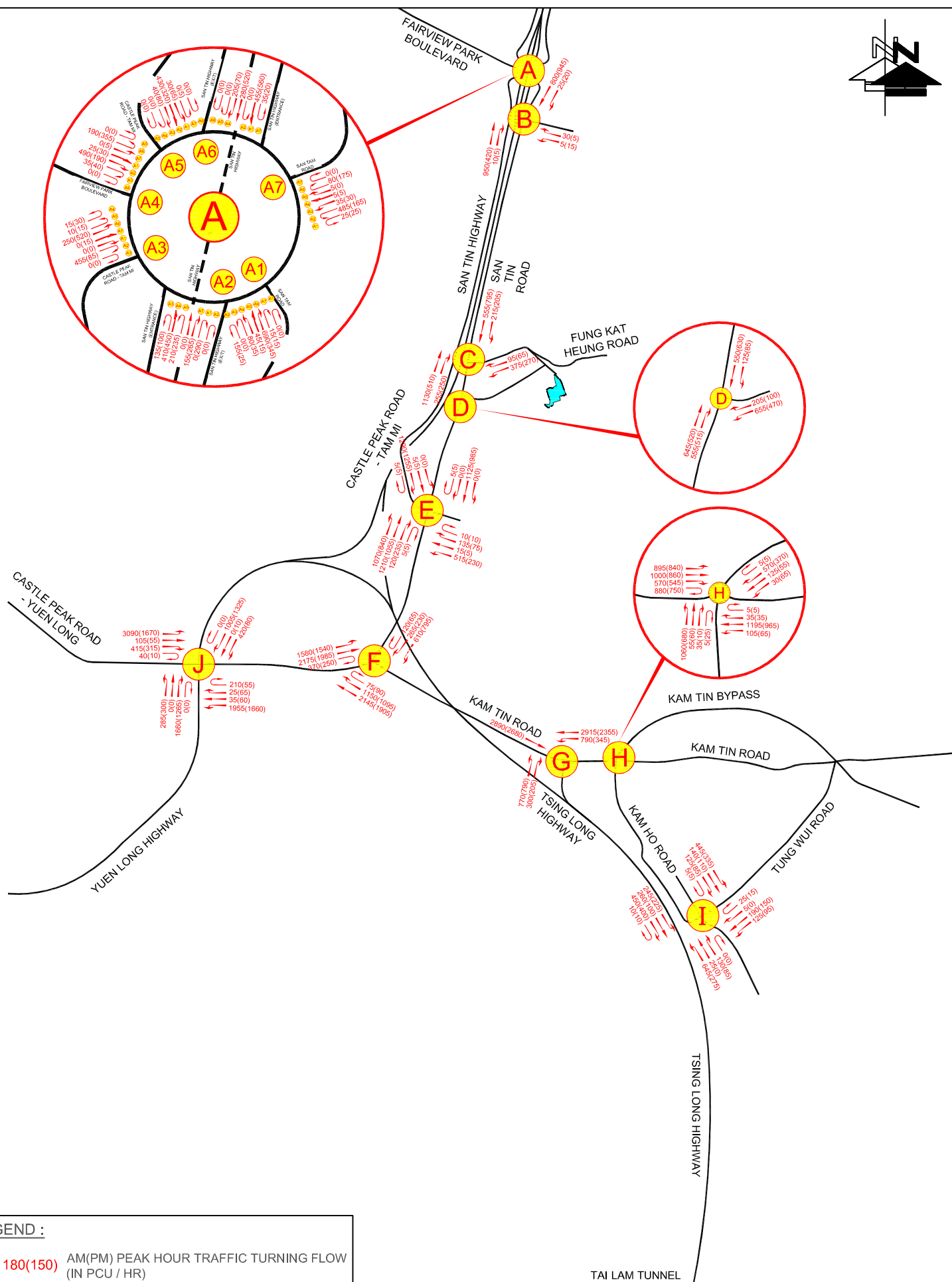
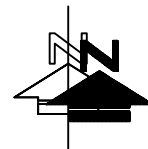
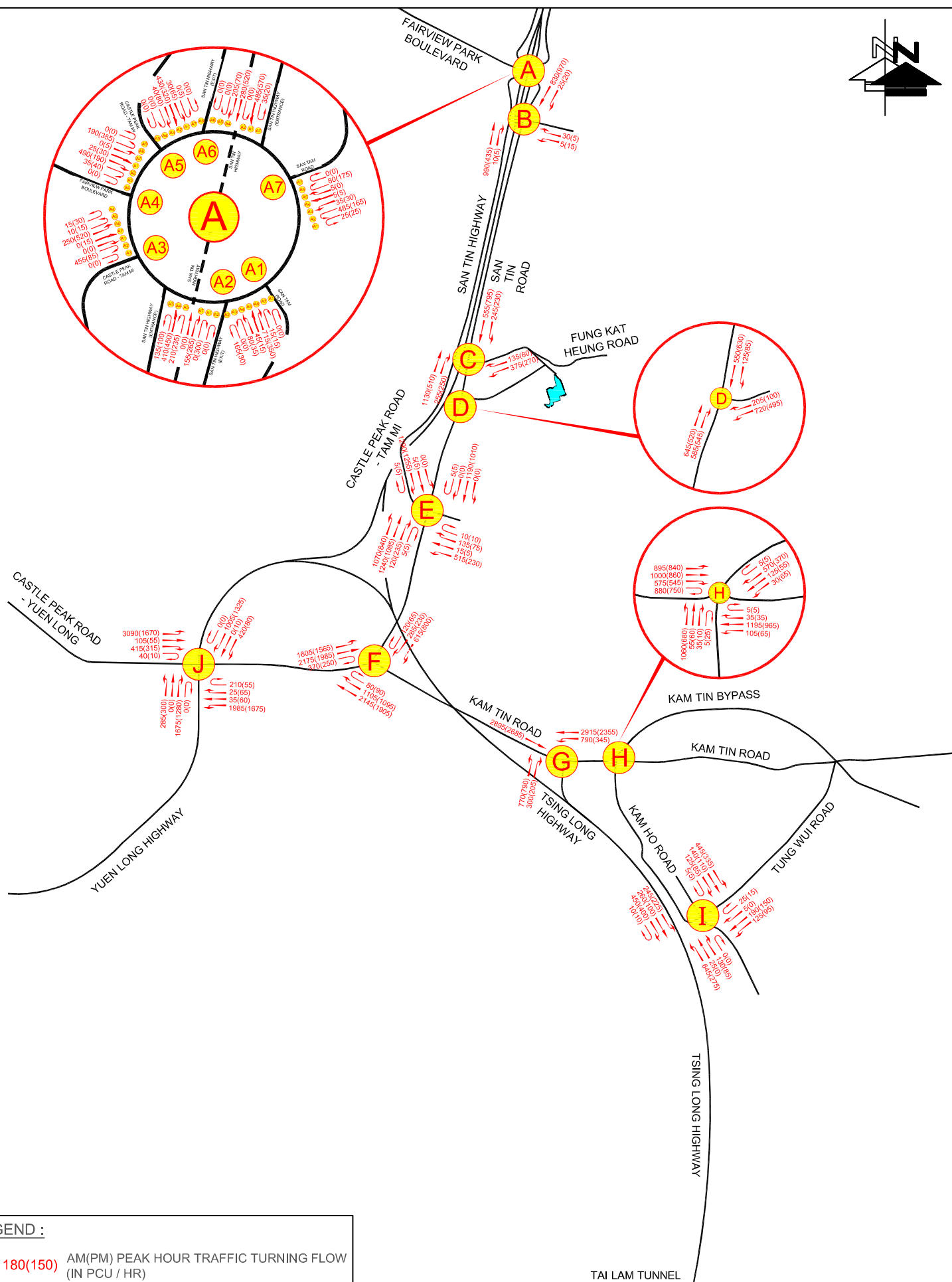
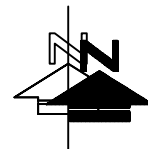


FIGURE NO.: 4.9		PROJECT TITLE: Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long		 CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 23004HK		DRAWING TITLE: PROPOSED JUNCTION LAYOUT OF KAM TIN ROAD / KAM TIN BYPASS / KAM HO ROAD (H)		
SCALE: N.T.S. @A4	DATE: 30 OCT 2025			







LEGEND :

← 180(150) AM(PM) PEAK HOUR TRAFFIC TURNING FLOW
(IN PCU / HR)

FIGURE NO.:

4.12

PROJECT TITLE:

Proposed Residential Development at Various Lots in D.D. 107 and
Adjoining Government Land, Fung Kat Heung, Yuen Long

PROJECT NO.:

23004HK

DRAWING TITLE:

2038 DESIGN TRAFFIC FLOWS

SCALE:

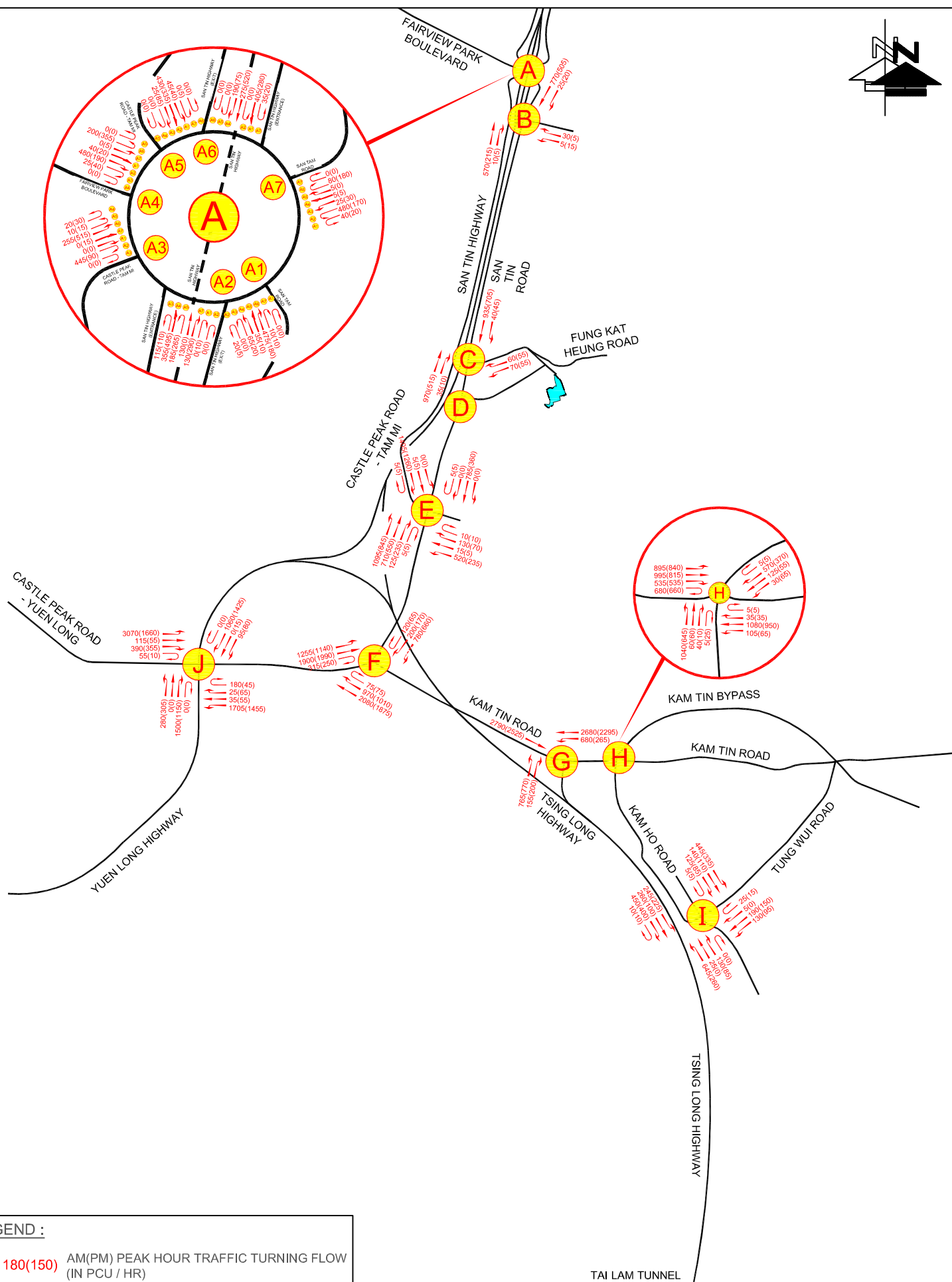
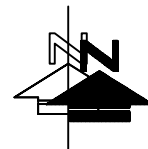
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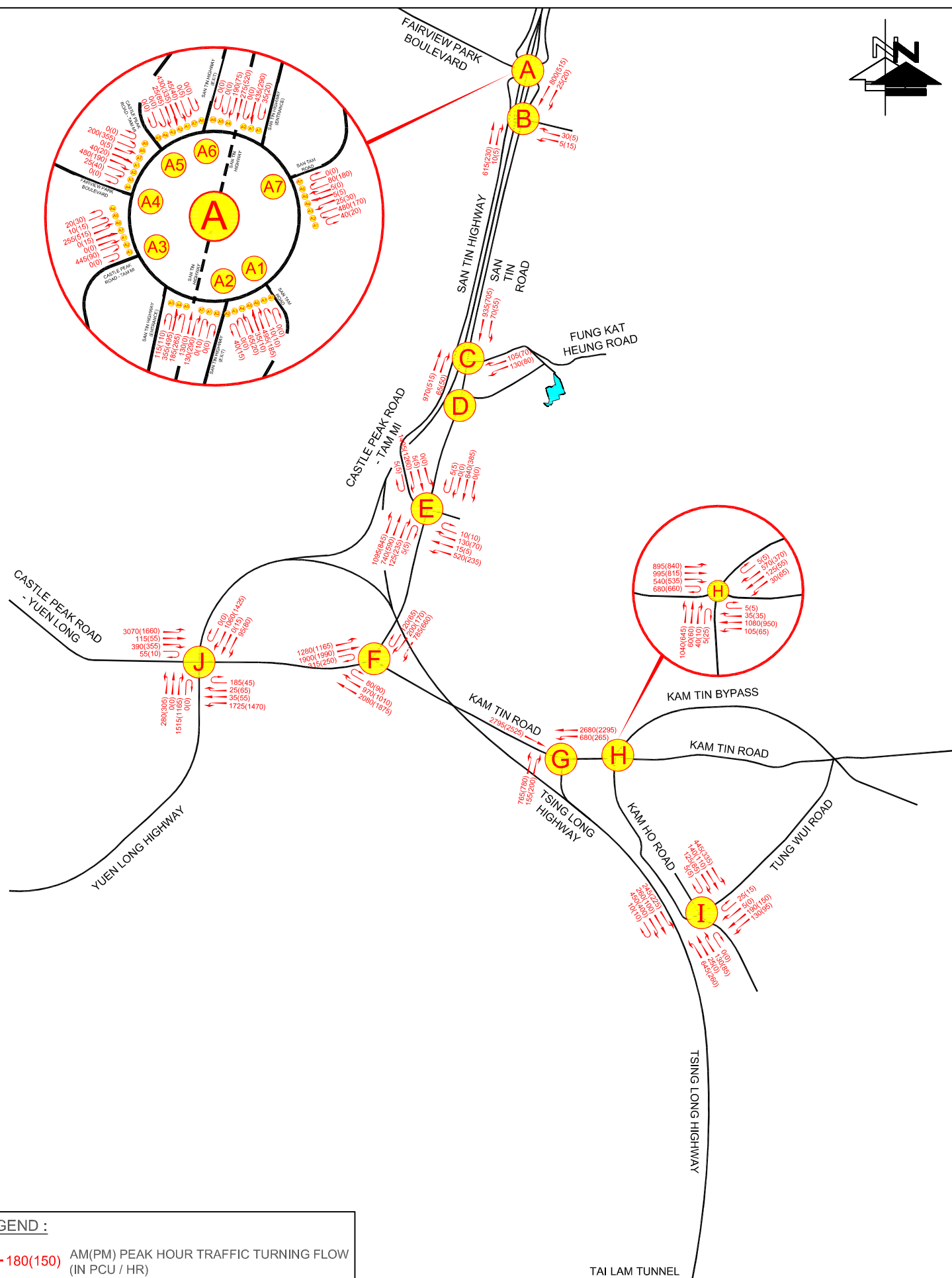
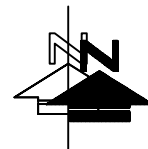
DATE:

30 OCT 2025



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LEGEND :

180(150) AM(PM) PEAK HOUR TRAFFIC TURNING FLOW (IN PCU / HR)

FIGURE NO.:

4.14

PROJECT TITLE:

Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long

PROJECT NO.:

23004HK

DRAWING TITLE:

2038 DESIGN TRAFFIC FLOWS
(NO SHA PO PUBLIC HOUSING DEVELOPMENT)

SCALE:

N.T.S. @A4

DATE:

30 OCT 2025



CTA Consultants Limited
志達顧問有限公司

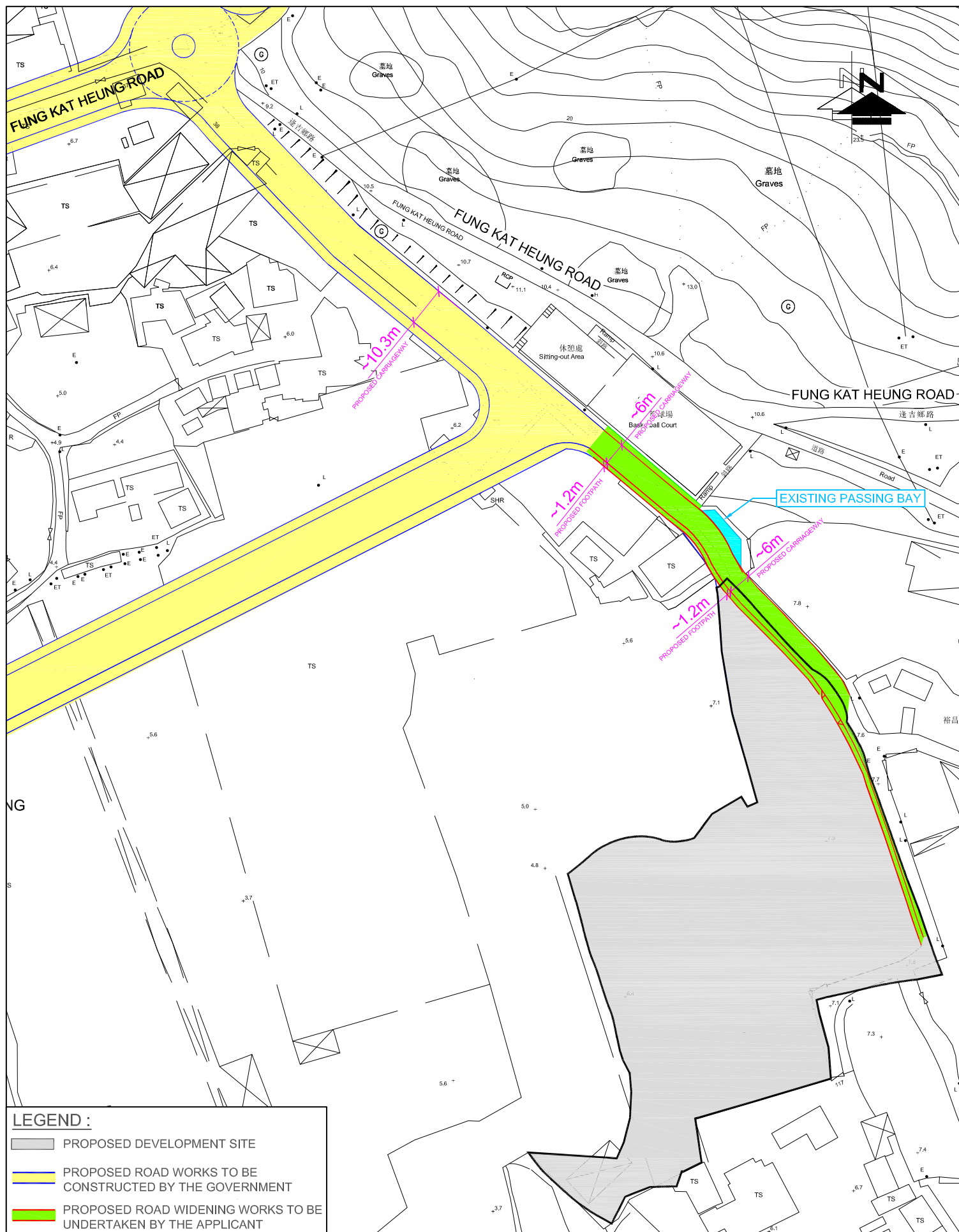


FIGURE NO.: 5.2

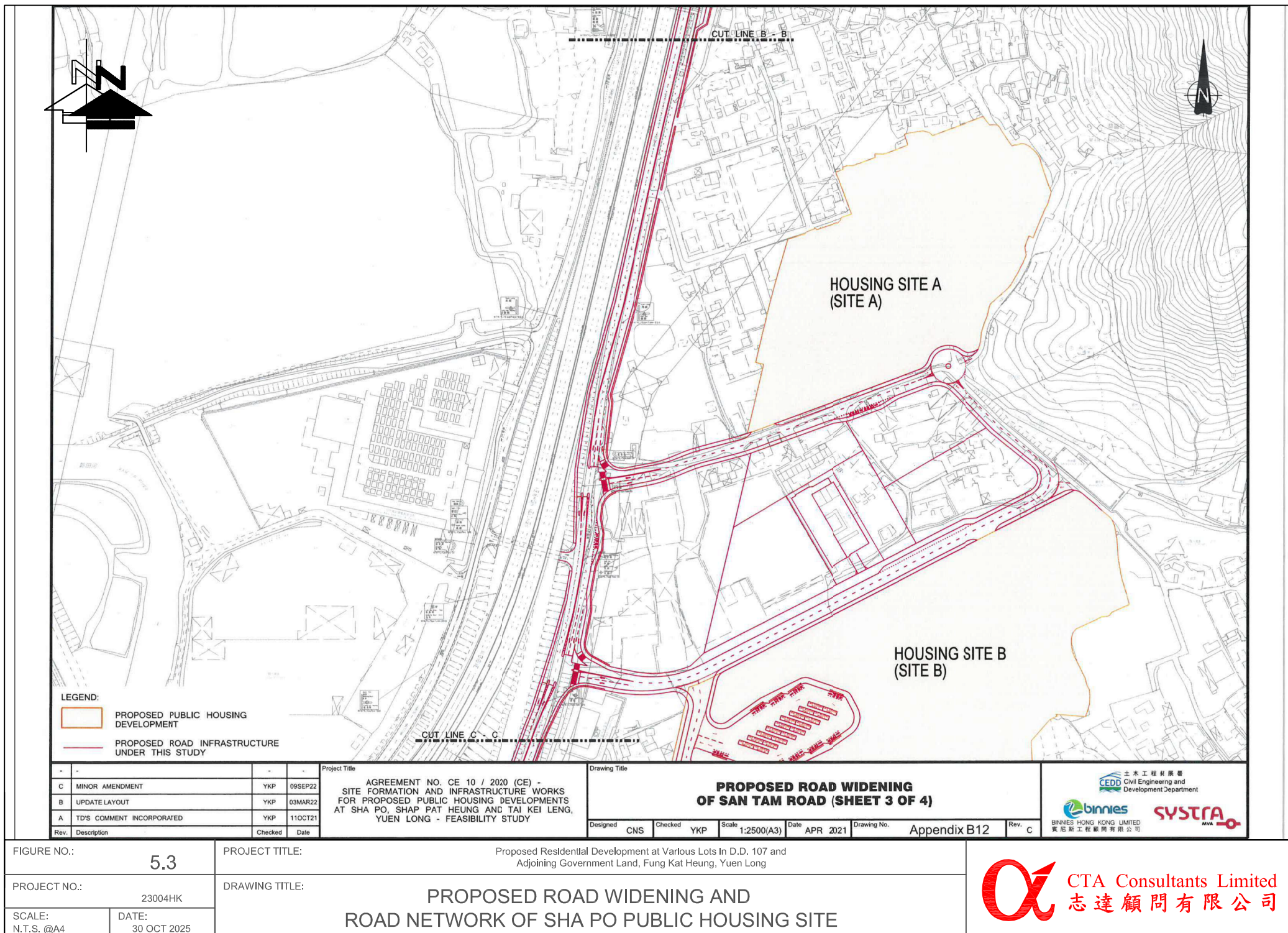
PROJECT TITLE: Proposed Residential Development at Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long

PROJECT NO.: 23004HK

DRAWING TITLE: PROPOSED ROAD WIDENING OF THE LOCAL ACCESS ROAD

SCALE: 1 : 1250 @A4
DATE: 30 OCT 2025

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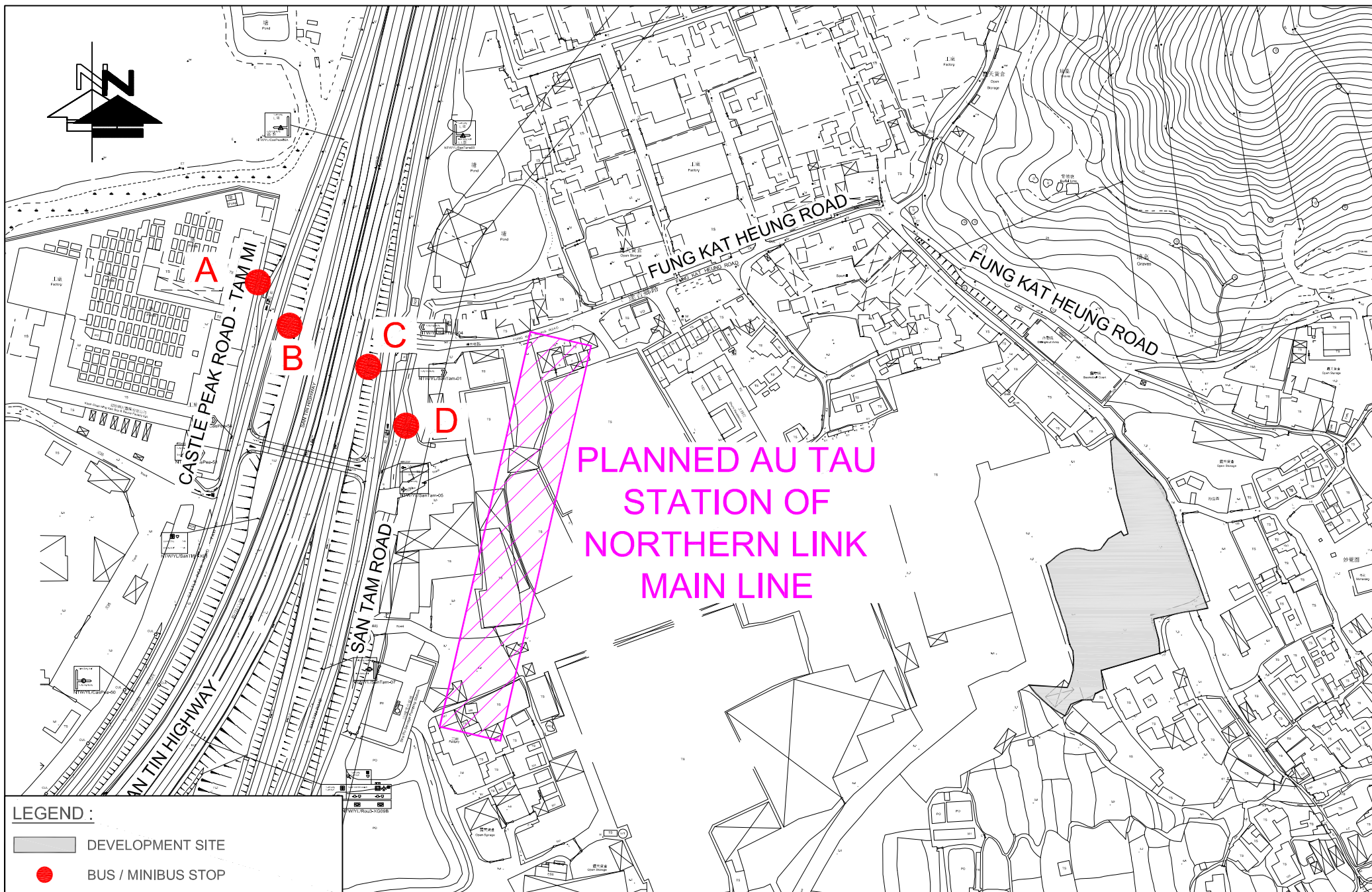
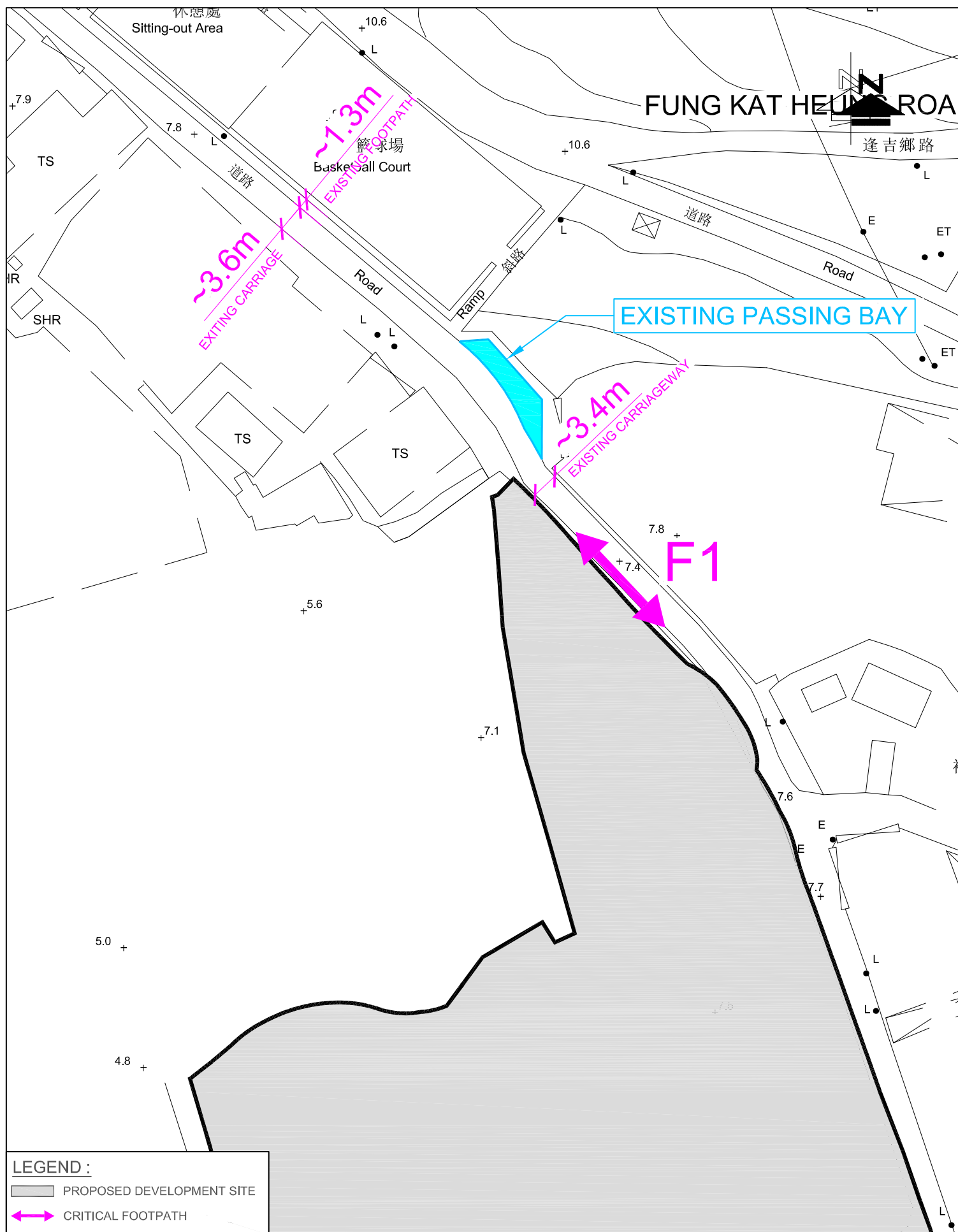


FIGURE NO.:	6.1	PROJECT TITLE:	Proposed Residential Development at Various Lots In D.D. 107 and Adjoining Government Land, Fung Kat Heung, Yuen Long
PROJECT NO.:	23004HK	DRAWING TITLE:	
SCALE:	DATE:	PUBLIC TRANSPORT SERVICE LOCATIONS	
1 : 3000 @A4	30 OCT 2025		



LEGEND :

- PROPOSED DEVELOPMENT SITE
- CRITICAL FOOTPATH

FIGURE NO.:

7.1

PROJECT TITLE:

Proposed Residential Development at Various Lots in D.D. 107 and
Adjoining Government Land, Fung Kat Heung, Yuen Long

PROJECT NO.:

23004HK

DRAWING TITLE:

CRITICAL FOOTPATH

SCALE:

1 : 625@A4

DATE:

30 OCT 2025



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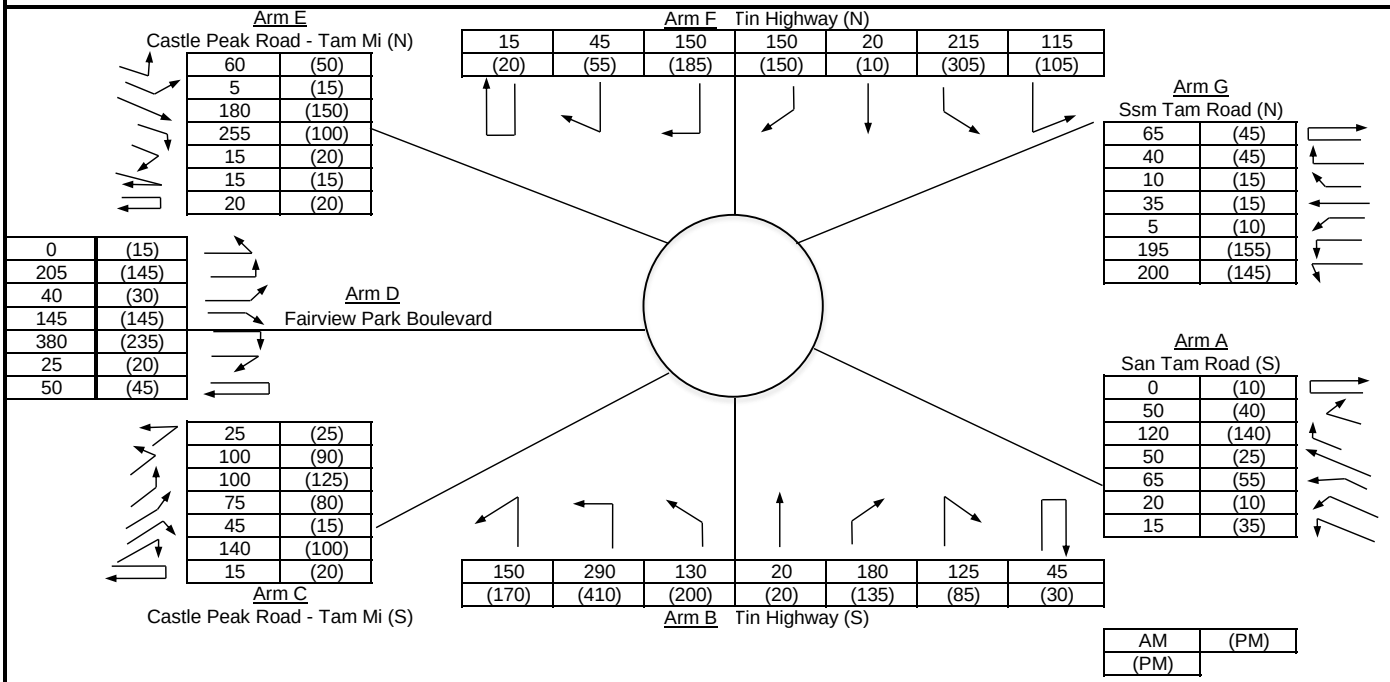


APPENDIX 1

JUNCTION CALCULATION SHEETS

Junction : (A) Fairview Park Interchange Job No.: 23004HK

Scenario : 2024 OBSERVED TRAFFIC FLOWS



Input Parameters

Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G	
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5	
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8	
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10	
R	=	Entry radius	60	20	25	20	20	18	20	
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140	
A	=	Entry angle (degree)	50	65	50	55	50	41	57	
Q	=	Entry flow (pcu/hr)	AM	320	940	500	845	550	710	550
			PM	315	1050	455	635	370	830	430
Qc	=	Circulating flow across entry (pcu/hr)	AM	1690	960	1540	1390	1880	1870	2050
			PM	1025	550	1220	995	1250	1260	1725

Output Parameters

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G	
S	=	Sharpness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40	
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.96	0.88	0.94	0.91	0.93	0.96	0.91	
X2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89	
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	
F	=	303*X2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33	
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fc	=	0.21*Td*(1+0.2*X2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50	
Qe	=	Capacity = K*(F-Fc*Qc)	AM 1095	1561	935	1639	923	1102	964	
DFC	=	Entry Flow/Capacity = Q/Qe	PM	1403	1750	1068	1844	1199	1393	1111
			AM	0.29	0.60	0.53	0.52	0.60	0.64	0.57
			PM	0.22	0.60	0.43	0.34	0.31	0.60	0.39

DFC of Critical Approach = AM 0.64
PM 0.60

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Priority Junction Calculation

Junction :	San Tam Road / Local Road to Long Ha (Junction B)	Job No.:	23004HK
Scenario :	2024 OBSERVED TRAFFIC FLOWS		

Arm C San Tam Road

300	305
10	5

Arm A San Tam Road

825	790
25	15

Arm B Fung Kat Heung Road

5	20
(15)	(5)

AM	(PM)
(PM)	

The predictive equations of capacity of movement are:

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

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

$$Q\text{-CB} = F(745 - 0.364Y(q\text{-AC} + q\text{-AB}))$$

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

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

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

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

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	8	V-rBA	50	w-BA	3.8	D	0.893
W-CR	0	V-IBA	50	w-BC	3.8	E	0.950
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	0	F	0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.724

Analysis :	Traffic Flow pcu/hr	AM	PM	Capacity pcu/hr	AM	PM
q-CA	300	305		Q-BA	316	326
q-CB	10	5		Q-BC	499	509
q-AB	25	15		Q-CB	321	328
q-AC	825	790		Q-CA	1744	1773
q-BA	20	5		Q-BAC	341	446
q-BC	5	15				
f	0.200	0.750				

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.03	0.02
	C-A	0.17	0.17
	B-AC	0.07	0.04

Critical DFC	0.17	0.17
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Priority Junction Calculation

Junction :	San Tam Road / Fung Kat Heung Road (Junction C)	Job No.:	23004HK
Scenario :	2024 OBSERVED TRAFFIC FLOWS		

Arm C San Tam Road

500	410
55	20

Arm A San Tam Road

760	795
45	45

Arm B Fung Kat Heung Road

80	60
(75)	(45)

AM	(PM)
(PM)	

The predictive equations of capacity of movement are:

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

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

$$Q\text{-CB} = F(745 - 0.364Y(q\text{-AC} + q\text{-AB}))$$

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

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

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

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

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	7.5	V-rBA	50	w-BA	3.6	D	0.877
	W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
	C-B blocked C-A, residual width < 2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	0	F	0.616
	Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.741

Analysis :	Traffic Flow pcu/hr	AM	PM	Capacity pcu/hr	AM	PM
	q-CA	500	410	Q-BA	273	290
	q-CB	55	20	Q-BC	499	490
	q-AB	45	45	Q-CB	325	319
	q-AC	760	795	Q-CA	1495	1687
	q-BA	60	45	Q-BAC	368	389
	q-BC	80	75			
	f	0.571	0.625			

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.17	0.06
	C-A	0.33	0.24
	B-AC	0.38	0.31

Critical DFC	0.38	0.31
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Description: **2024 Existing Traffic Flow**

Approach	Direction		Phase	Stage	Width (m)	Radius (m)		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)		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
San Tam Road	N		B1	1,2	3.5	30	0	1	100%	100%	1965	1965	1870	1870	1870	1870	280	0.150		255	0.136	
	N		B2	2	3.5	0	0	0	0%	0%	2105	2810.2	2105	2105	2735	2735	350	0.166	0.166	295	0.140	0.140
	N		B2	2	3.5	0	12.5	0	100%	100%	705.18	0	630	630	0	0	220	0.349		225	0.357	
Castle Peak Road - Tam Mi	E		A	1	3.5	17	0	1	100%	100%	1965	1965	1810	1810	1810	1810	5	0.003		0	0.000	
	E		A	1	3.5	0	20	0	98%	100%	2105	2105	1960	1960	1960	1960	230	0.117	0.117	140	0.071	0.071
San Tam Road	S		D	3	3.9	0	20	0	21%	5%	544.83	0	535	545	0	0	169	0.316	0.316	184	0.337	0.337
	S		D	3	3.9	0	0	0	0%	0%	2145	2689.8	2145	2145	2680	2690	676	0.315		726	0.339	
	S		D	3	3.5	30	0	1	100%	100%	567.49	567.49	540	540	540	540	25	0.046		20	0.037	
Castle Peak Road - Tam Mi	W		C	2	3.5	23	0	1	100%	100%	1965	4070	1840	1840	3815	3815	113	0.062		75	0.041	
	W		C	2	3.5	23	0	0	100%	100%	2105	0	1975	1975	0	0	122	0.062		80	0.041	
Pedestrian crossing						Min. Crossing Time = 5GM + 5FGM = 10s Min. Crossing Time = 5GM + 5FGM = 10s Min. Crossing Time = 7GM + 5FGM = 12s Min. Crossing Time = 5GM + 5FGM = 11s Min. Crossing Time = 5GM + 5FGM = 11s																

P.M. Check Phase

Εy	0.549
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	48%

 $I/G=5s$

Roundabout Junction Calculation

Junction :	(F) Au Tau Interchange	Job No.:	23004HK
Scenario :	2024 OBSERVED TRAFFIC FLOWS		

Arm A
Castle Peak Road - Yuen Long

0	(0)
1585	(1560)
155	(155)

Arm C
Castle Peak Road - Tam Mei

15	190	460
(30)	(160)	(345)

Arm B
Kam Tin Road

20	(25)
510	(630)
0	(0)

AM	(PM)
(PM)	

Input Parameters				Arm A	Arm B	Arm C
V	=	Approach half width (m)		7.3	7	7
E	=	Entry width (m)		10.5	7.5	10
L	=	Effective length of flare (m)		30	5	13
R	=	Entry radius		100	100	50
D	=	Inscribed circle diameter (m)		65	65	65
A	=	Entry angle (degree)		20	30	45
Q	=	Entry flow (pcu/hr)	AM	1740	530	665
			PM	1715	655	535
Qc	=	Circulating flow across entry (pcu/hr)	AM	545	360	1760
			PM	685	345	1740

Output Parameters				Arm A	Arm B	Arm C
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.17	0.16	0.37
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$		1.07	1.04	0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		9.69	7.38	8.73
M	=	$\text{Exp}((D - 60) / 10)$		1.65	1.65	1.65
F	=	$303 \cdot X2$		2934.76	2235.77	2643.88
Td	=	$1 + (0.5 / (1 + M))$		1.19	1.19	1.19
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.73	0.62	0.69
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	2722	2092	1405
			PM	2612	2102	1418
DFC	=	Entry Flow/Capacity = Q / Qe	AM	0.64	0.25	0.47
			PM	0.66	0.31	0.38

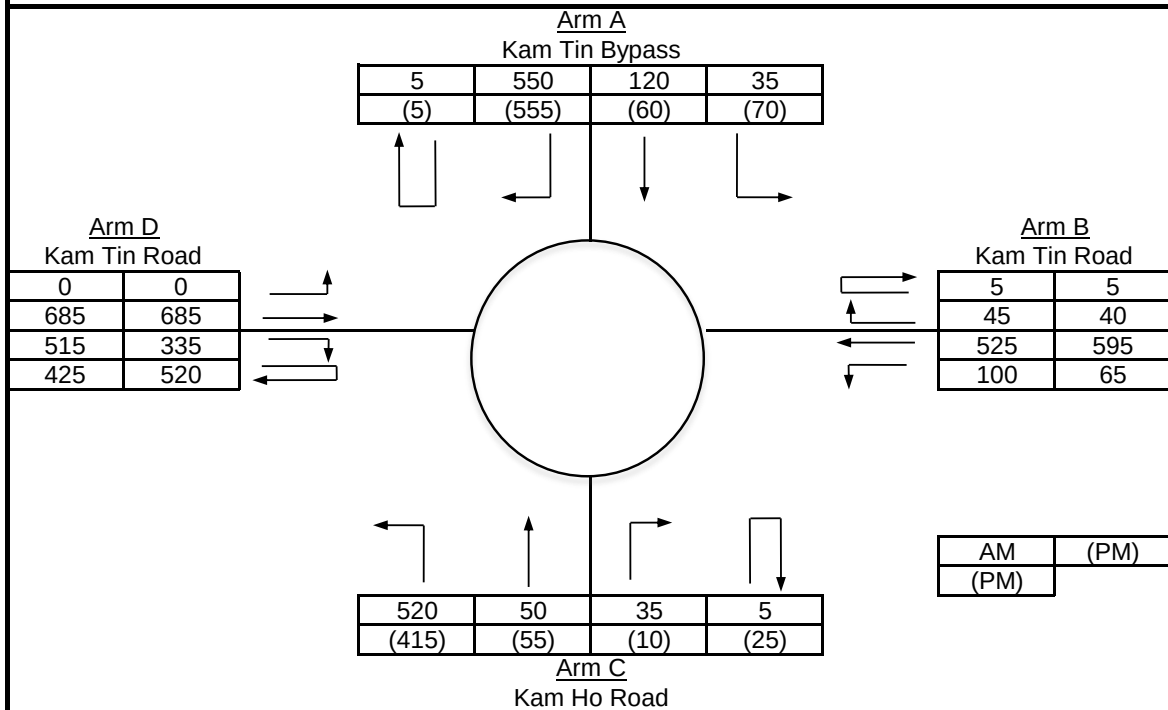
DFC of Critical Approach	=		AM	0.64	
			PM	0.66	

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Junction: (G) Kam Tin Road / Tsing Long Highway Slip Road																			
Description: 2024 OBSERVED TRAFFIC FLOWS																			
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Kam Tin Road	E	→	1	A	3.50	0	0	1	0%	0%	1965	1965	1015	0.516	0.516	902	0.459	0.459	
	E	→	1	A	3.75	0	0	0	0%	0%	2130	2130	1100	0.516		978	0.459		
Kam Tin Road	W	←	2	A	3.50	0	0	0	0%	0%	2105	2105	803	0.381		894	0.425		
	W	←	2	A	4.00	0	0	0	0%	0%	2155	2155	822	0.381		916	0.425		
	W	↙	2	A	5.00	15	0	1	100%	100%	1925	1925	360	0.187		135	0.070		
Tsing Long Highway Slip Road	N	↗	3	B	5.60	25	0	1	100%	100%	2050	2050	195	0.095	0.095	395	0.193	0.193	
	N	→	3	B	3.60	0	30	0	100%	100%	2015	2015	72	0.036		154	0.077		
	N	→	3	B	3.50	0	28	0	100%	100%	75	75	3	0.036		6	0.077		
(*revised saturation flow)																			
*Pedestrian Crossing			4p	A	Min. Crossing Time				=	7 Gm + 7 Fm = 14s									
			5p	B	Min. Crossing Time				=	7 Gm + 7 Fm = 14s									
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						Check Phase			Check Phase				
						2115(1880)→ ↙ ↘ 195(395) 75(160) ← 1625(1810) ↘ 360(135)						εy	0.612		εy	0.652			
												L (sec)	15		L (sec)	15			
												C (sec)	96		C (sec)	96			
												y pract.	0.759		y pract.	0.759			
												R.C. (%)	24%		R.C. (%)	17%			
Stage / Phase Diagrams																			
A				B															
I/G = 7				I/G = 10															

Roundabout Junction Calculation

Junction : (H) Kam Tin Road/ Kam Ho Road Job No.: 23004HK
 Scenario : 2024 OBSERVED TRAFFIC FLOWS



Input Parameters

			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	6.5	3.5	5	7.3
E	=	Entry width (m)	11	11.5	10	11
L	=	Effective length of flare (m)	15	10.5	9.5	13
R	=	Entry radius	42.5	100	20	42.5
D	=	Inscribed circle diameter (m)	88	88	88	88
A	=	Entry angle (degree)	39	23	37.5	29
Q	=	Entry flow (pcu/hr)	AM	710	675	610
			PM	690	705	505
Qc	=	Circulating flow across entry (pcu/hr)	AM	1670	1620	1555
			PM	1580	1500	1720

Output Parameters

			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$	0.48	1.22	0.84	0.46
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1/R - 0.05)$	0.99	1.06	0.97	1.03
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$	8.80	5.83	6.86	9.24
M	=	$\text{Exp}((D - 60) / 10)$	16.44	16.44	16.44	16.44
F	=	$303 \cdot X2$	2665.16	1765.54	2079.41	2798.63
Td	=	$1 + (0.5 / (1 + M))$	1.03	1.03	1.03	1.03
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.60	0.47	0.51	0.62
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1661	1072	1249
			PM	1714	1131	1167
DFC	=	Entry Flow/Capacity = Q / Qe	AM	0.43	0.63	0.49
			PM	0.40	0.62	0.43

DFC of Critical Approach = AM 0.63
PM 0.62

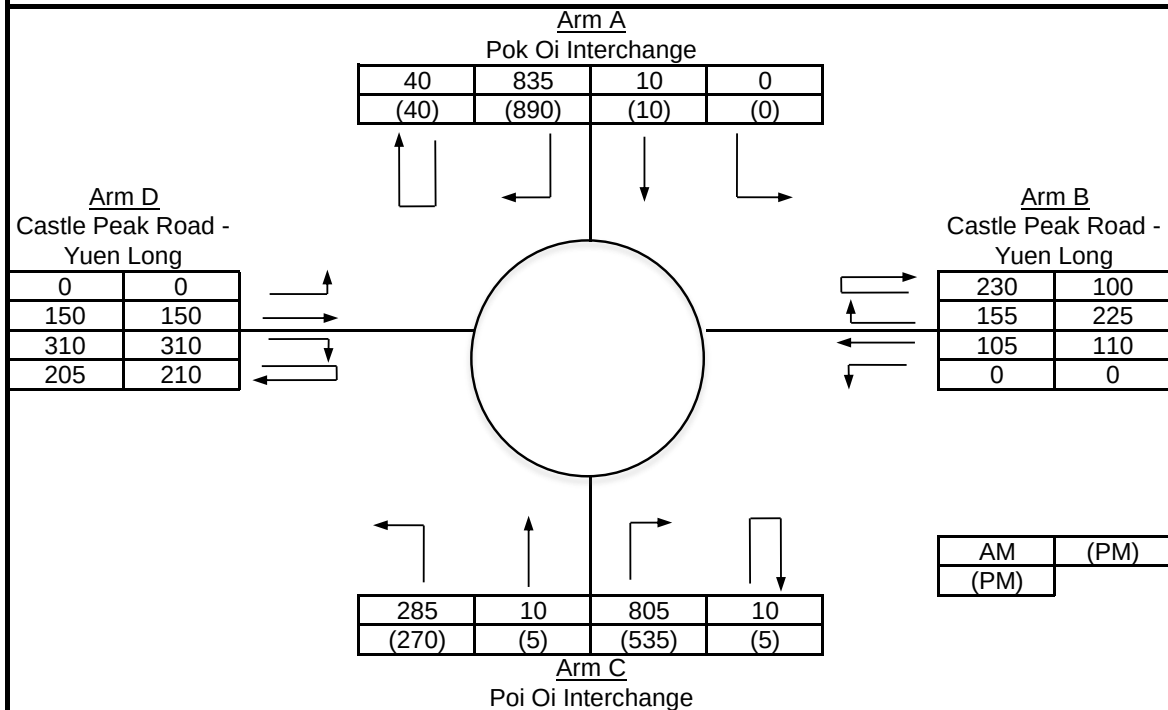
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Roundabout Junction Calculation

Junction :		(I) Kam Ho Road/ Tung Wui Road		Job No.: 23004HK																																					
Scenario :		2024 OBSERVED TRAFFIC FLOWS																																							
Arm D Kam Ho Road <table><tr><td>0</td><td>20</td><td>40</td><td>10</td></tr><tr><td>(0)</td><td>(15)</td><td>(30)</td><td>0(10)</td></tr></table> Arm C Kam Ho Road <table><tr><td>50</td><td>30</td></tr><tr><td>240</td><td>85</td></tr><tr><td>435</td><td>380</td></tr><tr><td>10</td><td>0</td></tr></table> Arm A Tung Wui Road <table><tr><td>25</td><td>15</td></tr><tr><td>5</td><td>0</td></tr><tr><td>170</td><td>135</td></tr><tr><td>120</td><td>120</td></tr></table> Arm B Kam Ho Road <table><tr><td>315</td><td>20</td><td>75</td><td>0</td></tr><tr><td>(250)</td><td>(0)</td><td>(80)</td><td>0(0)</td></tr></table> <table><tr><td>AM</td><td>(PM)</td></tr><tr><td>(PM)</td><td></td></tr></table>						0	20	40	10	(0)	(15)	(30)	0(10)	50	30	240	85	435	380	10	0	25	15	5	0	170	135	120	120	315	20	75	0	(250)	(0)	(80)	0(0)	AM	(PM)	(PM)	
0	20	40	10																																						
(0)	(15)	(30)	0(10)																																						
50	30																																								
240	85																																								
435	380																																								
10	0																																								
25	15																																								
5	0																																								
170	135																																								
120	120																																								
315	20	75	0																																						
(250)	(0)	(80)	0(0)																																						
AM	(PM)																																								
(PM)																																									
Input Parameters		Arm A	Arm B	Arm C	Arm D																																				
V	=	Approach half width (m)	7	6.5	8.5	7																																			
E	=	Entry width (m)	9	7.16	16	8.8																																			
L	=	Effective length of flare (m)	7.6	7.2	10	6																																			
R	=	Entry radius	16	15	24	55																																			
D	=	Inscribed circle diameter (m)	22.8	22.8	22.8	22.8																																			
A	=	Entry angle (degree)	33	80	36	80																																			
Q	=	Entry flow (pcu/hr)	AM	200	410	725	70																																		
			PM	150	330	495	45																																		
Qc	=	Circulating flow across entry (pcu/hr)	AM	505	230	125	785																																		
			PM	425	165	95	560																																		
Output Parameters		Arm A	Arm B	Arm C	Arm D																																				
S	=	Sharpness of flare = 1.6*(E-V)/L	0.42	0.15	1.20	0.48																																			
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.98	0.81	0.99	0.86																																			
X2	=	V+((E-V)/(1+2*S))	8.09	7.01	10.71	7.92																																			
M	=	Exp((D-60)/10)	0.02	0.02	0.02	0.02																																			
F	=	303*X2	2449.97	2124.12	3243.88	2399.27																																			
Td	=	1+(0.5/(1+M))	1.49	1.49	1.49	1.49																																			
Fc	=	0.21*Td*(1+0.2*X2)	0.82	0.75	0.98	0.81																																			
Qe	=	Capacity = K*(F-Fc*Qc)	AM	1991	1581	3082	1514																																		
			PM	2055	1621	3111	1670																																		
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.10	0.26	0.24	0.05																																		
			PM	0.07	0.20	0.16	0.03																																		
DFC of Critical Approach		=	AM	0.26																																					
			PM	0.20																																					
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Roundabout Junction Calculation

Junction : (J) Pok Oi Interchange Job No.: 23004HK
 Scenario : 2024 OBSERVED TRAFFIC FLOWS



Input Parameters

			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	3.5	3.5	3.5	3.5
E	=	Entry width (m)	7	7	7	7.5
L	=	Effective length of flare (m)	30	30	30	20
R	=	Entry radius	25	25	25	50
D	=	Inscribed circle diameter (m)	90	90	90	90
A	=	Entry angle (degree)	40	40	40	60
Q	=	Entry flow (pcu/hr)	AM	0	490	435
			PM	490	435	0
Qc	=	Circulating flow across entry (pcu/hr)	AM	1710	1410	1570
			PM	1310	1465	1575

Output Parameters

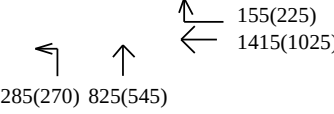
			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.19		0.32
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1/R - 0.05)$		0.98		0.93
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		6.05		5.94
M	=	$\text{Exp}((D - 60) / 10)$		20.09		20.09
F	=	$303 \cdot X2$		1832.71		1799.52
Td	=	$1 + (0.5 / (1 + M))$		1.02		1.02
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.48		0.47
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1134		1121
			PM	1108		1269
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.43		0.59
			PM	0.39		0.53

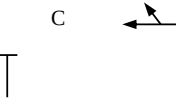
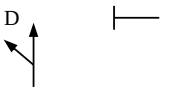
DFC of Critical Approach = AM 0.59
 PM 0.53

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Junction: **(J) Pok Oi Interchange (Yuen Long Highway Slip Road North bound)**
Description: **2024 OBSERVED TRAFFIC FLOWS**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yuen Long Highway Slip Road	N		D	2	5.00	25	0	1	54%	70%	2050	2030	528	0.258	0.258	386	0.190	0.190
	N		D	2	5.00	0	0	0	0%	0%	2255	2255	582	0.258		429	0.190	
Pok Oi Interchange	W		C	1	5.00	0	0	1	0%	0%	2115	2115	764	0.361	0.361	612	0.289	0.289
	W		C	1	5.00	0	25	0	19%	35%	2230	2210	806	0.361		638	0.289	
*Pedestrian Crossing																		

Notes:	Traffic Flow (pcu / hr)	[AM (PM)]	Check Phase		Check Phase	
			εy	0.619	εy	0.479
			L (sec)	12	L (sec)	12
			C (sec)	110	C (sec)	110
			y pract.	0.802	y pract.	0.802
			R.C. (%)	29%	R.C. (%)	67%

Stage / Phase Diagrams				
1		2		
I/G = 5	I/G = 5			

Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road Southbound)

Description: 2024 OBSERVED TRAFFIC FLOWS

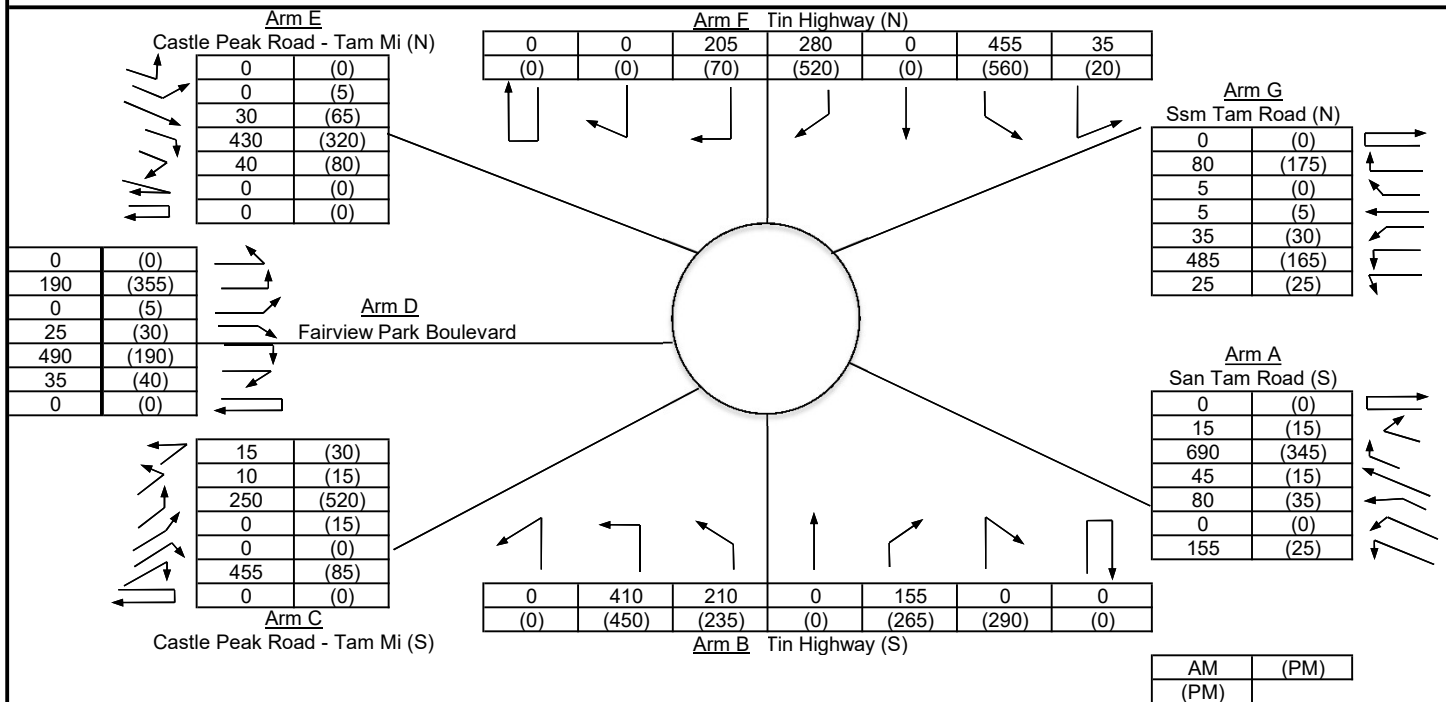
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Pok Oi Interchange	N	→	B	1	5.00	0	0	1	0%	0%	2115	2115	832	0.393	0.394	687	0.325	0.325
	N	↓	B	1	5.00	0	50	0	35%	43%	2230	2225	878	0.394		723	0.325	
Yuen Long Highway Slip Road	W	↘	A	2	5.00	50	0	1	0%	0%	2115	2115	428	0.203	0.203	455	0.215	0.215
	W	↙	A	2	5.00	0	0	0	0%	0%	2255	2255	457	0.203		485	0.215	
*Pedestrian Crossing																		

Notes:	Traffic Flow (pcu / hr)	[AM (PM)]	Check Phase		Check Phase	
	885(940)	0(0)	εy	0.596	εy	0.540
	↓	↳	L (sec)	12	L (sec)	12
1400(1100) →			C (sec)	110	C (sec)	110
310(310) ↘			y pract.	0.802	y pract.	0.802
			R.C. (%)	34%	R.C. (%)	48%

Stage / Phase Diagrams				
1 	2 			
I/G = 5	I/G = 5			

Junction : (A) Fairview Park Interchange Job No.: 23004HK

Scenario : 2038 Reference Traffic Flows (with Planned Improvement)



Input Parameters

		Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	8.5	7.3	6	7	7.3	7.3
E	=	Entry width (m)	9.5	10.5	11	11	10.5	11
L	=	Effective length of flare (m)	15	10	15	10	30	20
R	=	Entry radius	25	20	30	20	20	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140
A	=	Entry angle (degree)	45	35	40	55	45	25
Q	=	Entry flow (pcu/hr)	AM 985	775	730	740	500	975
		PM 435	1240	665	620	470	1170	400
Qc	=	Circulating flow across entry (pcu/hr)	AM 2545	1515	1900	1915	2385	1675
		PM 1305	710	1310	1425	1795	1390	2250

Output Parameters

		Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.11	0.51	0.53	0.64	0.17	0.30
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	0.96	0.98	0.98	0.91	0.95	1.03
X2	=	$V + ((E-V)/(1+2 \cdot S))$	9.32	8.88	8.42	8.75	9.69	9.62
M	=	$\text{Exp}((D-60)/10)$	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	$303 \cdot X2$	2825.23	2690.95	2551.06	2652.58	2934.76	2916.11
Td	=	$1 + (0.5/(1+M))$	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.60	0.58	0.56	0.58	0.62	0.61
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 1239	1776	1453	1412	1387	1938
		PM 1954	2237	1779	1671	1732	2118	1522
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.79	0.44	0.50	0.52	0.36	0.50
		PM 0.22	0.55	0.37	0.37	0.27	0.55	0.26

DFC of Critical Approach = AM 0.79
PM 0.55

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Priority Junction Calculation

Junction :	San Tam Road / Local Road to Long Ha (Junction B)	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows (with Planned Improvement)		

Arm C	San Tam Road
950	420
10	5

Arm A	San Tam Road
800	945
25	20

Arm B	Fung Kat Heung Road
5	30
(15)	(5)

AM	(PM)
(PM)	

The predictive equations of capacity of movement are:

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

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

$$Q\text{-CB} = F(745 - 0.364Y(q\text{-AC} + q\text{-AB}))$$

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

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

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

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

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 14.6	D 0.968
	W-CR 0	E 1.029
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)	1	Y 0.496

Analysis :	Traffic Flow	AM	PM	Capacity	AM	PM
	pcu/hr			pcu/hr		
	q-CA	950	420	Q-BA	358	393
	q-CB	10	5	Q-BC	616	590
	q-AB	25	20	Q-CB	367	351
	q-AC	800	945	Q-CA	N/A	N/A
	q-BA	30	5	Q-BAC	381	524
	q-BC	5	15			
	f	0.143	0.750			

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.03	0.01
	C-A	N/A	N/A
	B-AC	0.09	0.04

Critical DFC	0.09	0.04
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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

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Junction: **San Tam Road / Fung Kat Heung Road (Junction C)**Description: **2038 Reference Traffic Flows (with Planned Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside O/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
San Tam Road	S			2	4.50	13.5	0	1	100%	100%	1860	1860	215	0.116	0.138	205	0.110	0.158
	S			2	3.00	0	0	1	0%	0%	1915	1915	264	0.138		302	0.158	
	S			2	3.25	0	0	0	0%	0%	2080	2080	286	0.138		328	0.158	
San Tam Road	N			1,2	3.50	0	0	1	0%	0%	1965	1965	645	0.328	0.292	520	0.265	0.271
	N			1	3.50	0	13.75	0	100%	100%	1900	1900	555	0.292		515	0.271	
Fung Kat Heung Road	W			3	4.00	23.8	10	0	52% / 48%	5% / 35%	1950	1970	429	0.220	0.220	286	0.145	0.145
	W			3	5.00	18.8	0	1	100%	100%	1960	1960	431	0.220		284	0.145	

*Pedestrian Crossing

Notes:	Traffic Flow (pcu / hr)	[AM (PM)]	Check Phase		Check Phase	
	555(795) ↓ 215(205) └─→ 95(65) ←─┐ 1130(510) ↑ 255(250) └─→ 375(270) └─↓		Ey 0.650 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 25%		Ey 0.574 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 41%	

Stage / Phase Diagrams

1	2	3		
$I/G = 5$	$I/G = 5$	$I/G = 5s$		

Junction: San Tam Road / Access Road (Junction D)																		
Description: 2038 Reference Traffic Flows (with Planned Improvement)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
San Tam Road	S			2	5.00	15	0	1	100%	100%	1925	1925	125	0.065		85	0.044	
	S		2	3.50	0	0	1	0%	0%	1965	1965	266	0.135	0.135	304	0.155	0.155	
	S		2	3.50	0	0	0	0%	0%	2105	2105	284	0.135		326	0.155		
San Tam Road	N			1,2	4.00	0	0	1	0%	0%	2015	2015	645	0.320		520	0.258	
	N		1	4.00	0	15	0	100%	100%	1960	1960	555	0.283	0.283	515	0.263	0.263	
Access Road	W			3	3.50	28.5	11.25	0	50% / 50%	4% / 36%	1925	1945	414	0.215	0.215	276	0.142	0.142
	W		3	6.00	22.5	0	1	100%	100%	2075	2075	446	0.215		294	0.142		
*Pedestrian Crossing																		
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						Check Phase			Check Phase			
						550(630) 125(85) 645(520) 555(515)						εy 0.633 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 28%			εy 0.559 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 45%			
Stage / Phase Diagrams																		
1			2						3									
I/G = 5			I/G = 5						I/G = 5s									

Roundabout Junction Calculation

Junction :	(E) Castle Peak Road - Tam Mi/ San Tam Road	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows (with Planned Improvement)		

Arm A
San Tam Road

5	0	1125	0
(5)	(0)	(985)	(0)

Arm B
Castle Peak Road -
Tam Mi

10	10
135	75
15	5

Arm D
Castle Peak Road -
Tam Mi

0	0
5	5
1290	1255
5	5

Arm C
San Tam Road

1070	1210	120	5
(840)	(1055)	(235)	(5)

AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	10	8	8.6	10
E	=	Entry width (m)	12	10	11	12
L	=	Effective length of flare (m)	15	12	1	13
R	=	Entry radius	70	70	20	42.5
D	=	Inscribed circle diameter (m)	88	88	88	88
A	=	Entry angle (degree)	39	30	37.5	29
Q	=	Entry flow (pcu/hr)	AM 1130 PM 990	AM 160 PM 90	AM 2405 PM 2135	AM 1300 PM 1265
Qc	=	Circulating flow across entry (pcu/hr)	AM 1435 PM 1515	AM 2430 PM 2255	AM 170 PM 100	AM 1485 PM 1385

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6*(E-V)/L$	0.21	0.27	3.84	0.25
K	=	$1-0.00347*(A-30)-0.978*(1/R-0.05)$	1.00	1.03	0.97	1.03
X2	=	$V+((E-V)/(1+2*S))$	11.40	9.30	8.88	11.34
M	=	$Exp((D-60)/10)$	16.44	16.44	16.44	16.44
F	=	$303*X2$	3454.77	2819.22	2689.58	3436.08
Td	=	$1+(0.5/(1+M))$	1.03	1.03	1.03	1.03
Fc	=	$0.21*Td*(1+0.2*X2)$	0.71	0.62	0.60	0.71
Qe	=	Capacity = $K*(F-Fc*Qc)$	AM 2447 PM 2390	AM 1363 PM 1475	AM 2520 PM 2561	AM 2458 PM 2531
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.46 PM 0.41	AM 0.12 PM 0.06	AM 0.95 PM 0.83	AM 0.53 PM 0.50

DFC of Critical Approach	=	AM	0.95		
		PM	0.83		

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Roundabout Junction Calculation

Junction :	(F) Au Tau Interchange	Job No.: 23004HK
Scenario :	2038 Reference Traffic Flows (with Planned Improvement)	

Arm A
Castle Peak Road - Yuen Long

0	(0)
2175	(1985)
370	(250)

Arm C
Castle Peak Road - Tam Mei

120	265	0
(65)	(230)	(0)

Arm B
Kam Tin Road

75	(90)
1105	(1095)
0	(0)

AM	(PM)
(PM)	

Input Parameters				Arm A	Arm B	Arm C
V	=	Approach half width (m)		12	7	7
E	=	Entry width (m)		15	7.5	10
L	=	Effective length of flare (m)		30	5	13
R	=	Entry radius		100	100	50
D	=	Inscribed circle diameter (m)		65	65	65
A	=	Entry angle (degree)		20	30	45
Q	=	Entry flow (pcu/hr)	AM	2545	1180	385
			PM	2235	1185	295
Qc	=	Circulating flow across entry (pcu/hr)	AM	1300	755	2620
			PM	1250	545	2325

Output Parameters				Arm A	Arm B	Arm C
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.16	0.16	0.37
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1/R - 0.05)$		1.07	1.04	0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		14.27	7.38	8.73
M	=	$\text{Exp}((D - 60) / 10)$		1.65	1.65	1.65
F	=	$303 \cdot X2$		4324.64	2235.77	2643.88
Td	=	$1 + (0.5 / (1 + M))$		1.19	1.19	1.19
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.96	0.62	0.69
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	3301	1838	829
			PM	3352	1973	1027
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.77	0.64	0.46
			PM	0.67	0.60	0.29

DFC of Critical Approach	=		AM	0.77	
			PM	0.67	

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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

CTA Consultants Ltd.

Junction: Tsing Long Highway Slip Road / Kam Tin Road (Junction G)																			
Description: 2038 Reference Traffic Flows (with Planned Improvement)																			
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Kam Tin Road	E	→	1	A	3.50	0	0	1	0%	0%	1965	1965	920	0.468	0.468	853	0.434	0.434	
	E	→	1	A	3.50	0	0	0	0%	0%	2105	2105	985	0.468		914	0.434		
	E	→	1	A	3.50	0	0	0	0%	0%	2105	2105	985	0.468		914	0.434		
Kam Tin Road	W	←	2	A	3.75	0	0	0	0%	0%	2130	2130	1458	0.684		1178	0.553		
	W	←	2	A	3.75	0	0	0	0%	0%	2130	2130	1458	0.684		1178	0.553		
	W	↙	2	A,B	5.00	15	0	1	100%	100%	1925	1925	790	0.410		345	0.179		
Tsing Long Highway Slip Road	N	↖	3	B	3.60	20	0	1	100%	100%	1835	1835	369	0.201	0.201	378	0.206	0.206	
	N	↖	3	B	3.60	25	0	0	100%	100%	1995	1995	401	0.201		412	0.206		
	N	→	3	B	3.60	0	30	0	100%	100%	2015	2015	151	0.075		103	0.051		
	N	→	3	B	3.50	0	28	0	100%	100%	2000	2000	149	0.075		102	0.051		
*Pedestrian Crossing			4p	A	Min. Crossing Time		=	7 Gm + 7 Fm = 14s											
			5p	B	Min. Crossing Time		=	7 Gm + 7 Fm = 14s											
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						A.M. Check Phase			P.M. Check Phase				
						2890(2680)→ ↙ ↘ 770(790) 300(205) ← 2915(2355) ↓ 790(345)						E _y 0.669			E _y 0.640				
												L (sec) 10			L (sec) 10				
												C (sec) 120			C (sec) 120				
												y pract. 0.825			y pract. 0.825				
												R.C. (%) 23%			R.C. (%) 29%				
Stage / Phase Diagrams																			
A				B															
I/G = 5				I/G = 7															

Roundabout Junction Calculation

Junction :	(H) Kam Tin Road/ Kam Ho Road	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows (with Planned Improvement)		

Arm A
Kam Tin Bypass

5	570	125	30
(5)	(370)	(55)	(65)

Arm D
Kam Tin Road

0	0
1000	860
570	545
880	750

Arm B
Kam Tin Road

5	5
35	35
1195	965
105	65

Arm C
Kam Ho Road

0	55	35	5
(0)	(60)	(10)	(25)

AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D	
V	=	Approach half width (m)	6.5	7.3	9	7.3	
E	=	Entry width (m)	11	11.5	10	11	
L	=	Effective length of flare (m)	15	12	1	13	
R	=	Entry radius	42.5	70	20	42.5	
D	=	Inscribed circle diameter (m)	88	88	88	88	
A	=	Entry angle (degree)	39	30	37.5	29	
Q	=	Entry flow (pcu/hr)	AM	730	1340	95	2450
			PM	495	1070	95	2155
Qc	=	Circulating flow across entry (pcu/hr)	AM	2495	2155	2690	140
			PM	2195	1750	2130	140

Output Parameters			Arm A	Arm B	Arm C	Arm D	
S	=	Sharpness of flare = $1.6*(E-V)/L$	0.48	0.56	1.60	0.46	
K	=	$1-0.00347*(A-30)-0.978*(1/R-0.05)$	0.99	1.03	0.97	1.03	
X2	=	$V+((E-V)/(1+2*S))$	8.80	9.28	9.24	9.24	
M	=	$Exp((D-60)/10)$	16.44	16.44	16.44	16.44	
F	=	$303*X2$	2665.16	2812.18	2799.14	2798.63	
Td	=	$1+(0.5/(1+M))$	1.03	1.03	1.03	1.03	
Fc	=	$0.21*Td*(1+0.2*X2)$	0.60	0.62	0.62	0.62	
Qe	=	Capacity = $K*(F-Fc*Qc)$	AM	1172	1534	1115	2792
			PM	1350	1793	1450	2792
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.62	0.87	0.09	0.88
			PM	0.37	0.60	0.07	0.77

DFC of Critical Approach	=	AM	0.88		
		PM	0.77		

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Roundabout Junction Calculation

Junction :	(I) Kam Ho Road/ Tung Wui Road	Job No.: 23004HK
Scenario :	2038 Reference Traffic Flows (with Planned Improvement)	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	8	6	8.5	7
E	=	Entry width (m)	8.5	6.5	16	8.8
L	=	Effective length of flare (m)	5	5	10	6
R	=	Entry radius	15	10	24	55
D	=	Inscribed circle diameter (m)	15	15	15	15
A	=	Entry angle (degree)	80	80	36	80
Q	=	Entry flow (pcu/hr)	AM: 220 PM: 165	800 360	955 725	605 200
Qc	=	Circulating flow across entry (pcu/hr)	AM: 730 PM: 610	360 265	190 105	875 610

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.16	0.16	1.20	0.48
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	0.81	0.78	0.99	0.86
X2	=	$V + ((E-V)/(1+2 \cdot S))$	8.38	6.38	10.71	7.92
M	=	$\text{Exp}((D-60)/10)$	0.01	0.01	0.01	0.01
F	=	$303 \cdot X2$	2538.77	1932.77	3243.88	2399.27
Td	=	$1 + (0.5/(1+M))$	1.49	1.49	1.49	1.49
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.84	0.71	0.99	0.81
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM: 1560 PM: 1642	1303 1356	3018 3101	1449 1633
DFC	=	Entry Flow/Capacity = Q/Qe	AM: 0.14 PM: 0.10	0.61 0.27	0.32 0.23	0.42 0.12

DFC of Critical Approach	=	AM	0.61
		PM	0.27

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Roundabout Junction Calculation

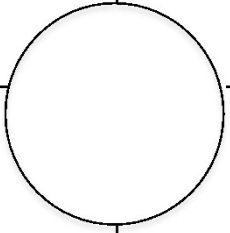
Junction :	(J) Pok Oi Interchange	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows		

Arm A
Pok Oi Interchange

0	1005	0	0
(0)	(1325)	(10)	(0)

Arm B
Castle Peak Road -
Yuen Long

210	55
25	65
35	60
0	0



Arm D
Castle Peak Road -
Yuen Long

0	0
105	55
415	315
40	10

Arm C
Pok Oi Interchange

285	0	1660	0
(300)	(0)	(1265)	(0)

AM	(PM)
(PM)	

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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

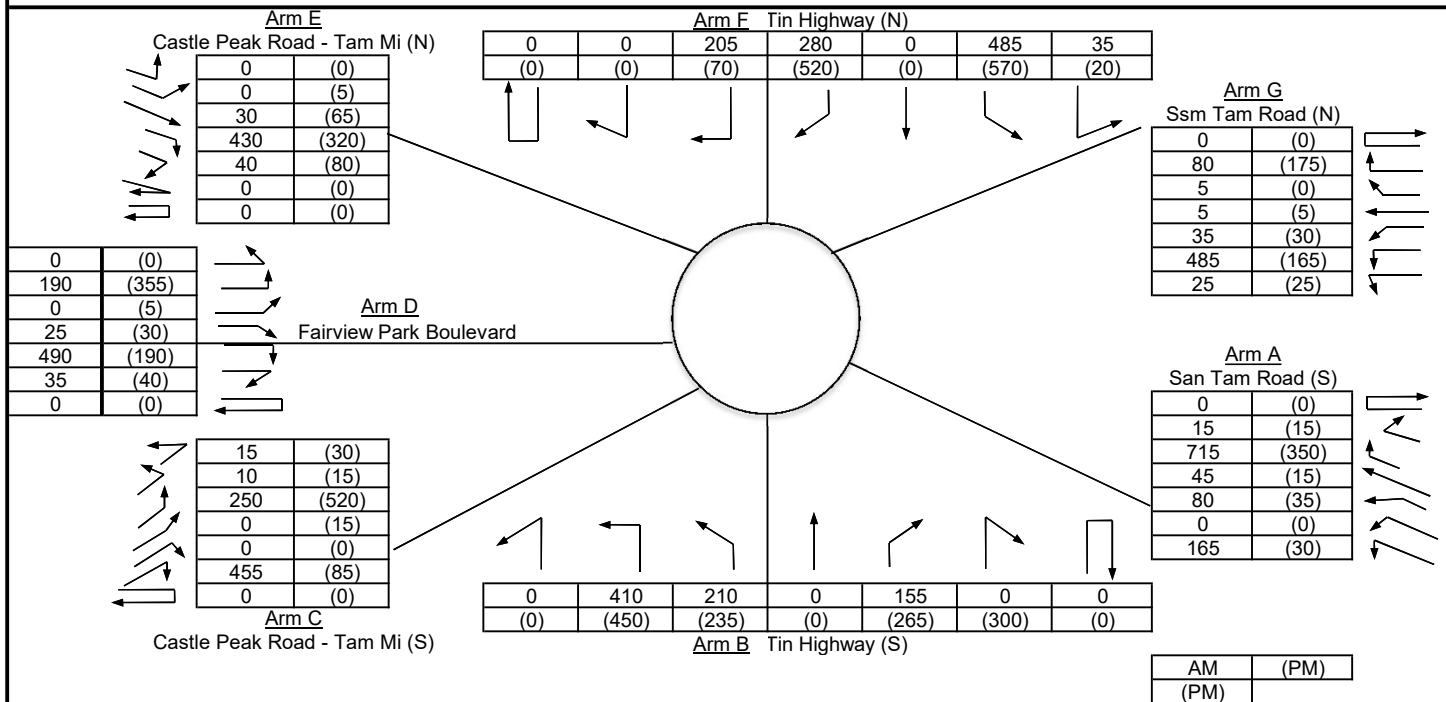
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Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road North bound)																		
Description: 2038 Reference Traffic Flows																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yuen Long Highway Slip Road	N		D	2	5.00	25	0	1	31%	40%	2075	2065	933	0.449	0.449	748	0.362	0.362
	N		D	2	5.00	0	0	0	0%	0%	2255	2255	1012	0.449		817	0.362	
Pok Oi Interchange	W		C	1	5.00	0	0	1	0%	0%	2115	2115	637	0.301	0.301	919	0.435	0.435
	W		C	1	5.00	0	25	0	4%	7%	2250	2245	678	0.301		976	0.435	
*Pedestrian Crossing																		

Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road Southbound)																		
Description: 2038 Reference Traffic Flows																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Pok Oi Interchange	N	→	B	1	5.00	0	0	1	0%	0%	2115	2115	1182	0.559	0.559	711	0.336	0.337
	N	↘	B	1	5.00	0	50	0	33%	42%	2235	2225	1248	0.558		749	0.337	
Yuen Long Highway Slip Road	W	↕	A	2	5.00	50	0	1	0%	0%	2115	2115	486	0.230	0.230	646	0.305	0.305
	W	↕	A	2	5.00	0	0	0	0%	0%	2255	2255	519	0.230		689	0.305	
*Pedestrian Crossing																		

Junction : (A) Fairview Park Interchange Job No.: 23004HK

Scenario : 2038 Design Traffic Flows (with Planned Improvement)



Input Parameters

		Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	8.5	7.3	6	7	7.3	7.3
E	=	Entry width (m)	9.5	10.5	11	11	10.5	11
L	=	Effective length of flare (m)	15	10	15	10	30	20
R	=	Entry radius	25	20	30	20	20	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140
A	=	Entry angle (degree)	45	35	40	55	45	25
Q	=	Entry flow (pcu/hr)	AM 1020	775	730	740	500	1005
		PM 445	1250	665	620	470	1180	400
Qc	=	Circulating flow across entry (pcu/hr)	AM 2545	1540	1925	1940	2410	1675
		PM 1305	710	1320	1435	1805	1400	2270

Output Parameters

		Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.11	0.51	0.53	0.64	0.17	0.30
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	0.96	0.98	0.98	0.91	0.95	1.03
X2	=	$V + ((E-V)/(1+2 \cdot S))$	9.32	8.88	8.42	8.75	9.69	9.62
M	=	$\text{Exp}((D-60)/10)$	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	$303 \cdot X2$	2825.23	2690.95	2551.06	2652.58	2934.76	2916.11
Td	=	$1 + (0.5/(1+M))$	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.60	0.58	0.56	0.58	0.62	0.61
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 1239	1762	1439	1399	1373	1938
		PM 1954	2237	1774	1665	1726	2112	1510
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.82	0.44	0.51	0.53	0.36	0.52
		PM 0.23	0.56	0.37	0.37	0.27	0.56	0.26

DFC of Critical Approach = AM 0.82
PM 0.56

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Priority Junction Calculation

Junction :	San Tam Road / Local Road to Long Ha (Junction B)	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (with Planned Improvement)		

Arm C	San Tam Road
990	435
10	5

Arm A	San Tam Road
830	970
25	20

Arm B	Fung Kat Heung Road
5	30
(15)	(5)

AM	(PM)
(PM)	

The predictive equations of capacity of movement are:

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

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

$$Q\text{-CB} = F(745 - 0.364Y(q\text{-AC} + q\text{-AB}))$$

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

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

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

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

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	14.6	D 0.968
W-CR	0	E 1.029
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)	1	Y 0.496
V-rBA	50	
V-IBA	50	
V-rBC	50	
V-rCB	50	
w-BA	4.7	
w-BC	4.7	
w-CB	0	

Analysis :	Traffic Flow	AM	PM	Capacity	AM	PM
	pcu/hr			pcu/hr		
q-CA	990	435	Q-BA	349	387	
q-CB	10	5	Q-BC	611	585	
q-AB	25	20	Q-CB	363	348	
q-AC	830	970	Q-CA	N/A	N/A	(If C-B blocked C-A)
q-BA	30	5	Q-BAC	371	519	(If Minor Road Share LT&RT)
q-BC	5	15				
f	0.143	0.750				

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.03	0.01
	C-A	N/A	N/A
	B-AC	0.09	0.04

Critical DFC	0.09	0.04
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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

CTA Consultants Ltd.

Junction: **San Tam Road / Fung Kat Heung Road (Junction C)**Description: **2038 Design Traffic Flows (with Planned Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
San Tam Road	S			2	4.50	13.5	0	1	100%	100%	1860	1860	245	0.132		230	0.124	
	S			2	3.00	0	0	1	0%	0%	1915	1915	264	0.138	0.138	302	0.158	0.158
	S			2	3.25	0	0	0	0%	0%	2080	2080	286	0.138		328	0.158	
San Tam Road	N			1,2	3.50	0	0	1	0%	0%	1965	1965	645	0.328		520	0.265	
	N			1	3.50	0	13.75	0	100%	100%	1900	1900	585	0.308	0.308	545	0.287	0.287
Fung Kat Heung Road	W			3	4.00	23.8	10	0	56% / 44%	6% / 34%	1955	1975	462	0.236	0.236	298	0.151	0.151
	W			3	5.00	18.8	0	1	100%	100%	1960	1960	463	0.236		297	0.151	

*Pedestrian Crossing

Notes:	Traffic Flow (pcu / hr)	[AM (PM)]	Check Phase	Check Phase
	555(795) 1130(510) 245(230) 255(250) 135(80) 375(270)		E _y 0.682 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 19%	E _y 0.596 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 36%

Stage / Phase Diagrams

				
$I/G = 5$	$I/G = 5$	$I/G = 5s$		

Junction: San Tam Road / Access Road (Junction D)																		
Description: 2038 Design Traffic Flows (with Planned Improvement)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
San Tam Road	S			2	5.00	15	0	1	100%	100%	1925	1925	125	0.065		85	0.044	
	S		2	3.50	0	0	1	0%	0%	1965	1965	266	0.135	0.135	304	0.155	0.155	
	S		2	3.50	0	0	0	0%	0%	2105	2105	284	0.135		326	0.155		
San Tam Road	N			1,2	4.00	0	0	1	0%	0%	2015	2015	645	0.320		520	0.258	
	N		1	4.00	0	15	0	100%	100%	1960	1960	585	0.298	0.298	545	0.278	0.278	
Access Road	W			3	3.50	28.5	11.25	0	54% / 46%	5% / 35%	1930	1950	446	0.231	0.231	288	0.148	0.148
	W		3	6.00	22.5	0	1	100%	100%	2075	2075	479	0.231		307	0.148		
*Pedestrian Crossing																		
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						Check Phase			Check Phase			
						550(630) 125(85) 645(520) 585(545)						εy 0.665 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 22%			εy 0.581 L (sec) 12 C (sec) 120 y pract. 0.810 R.C. (%) 39%			
Stage / Phase Diagrams																		
1			2						3									
I/G = 5			I/G = 5						I/G = 5s									

Roundabout Junction Calculation

Junction :	(E) Castle Peak Road - Tam Mi/ San Tam Road	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (with Planned Improvement)		

Arm A
San Tam Road

5	0	1190	0
(5)	(0)	(1010)	(0)

Arm B
Castle Peak Road -
Tam Mi

10	10
135	75
15	5

Arm D
Castle Peak Road -
Tam Mi

0	0
5	5
1290	1255
5	5

Arm C
San Tam Road

1070	1240	120	5
(840)	(1085)	(235)	(5)

AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	10	8	8.6	10
E	=	Entry width (m)	12	10	11	12
L	=	Effective length of flare (m)	15	12	1	13
R	=	Entry radius	70	70	20	42.5
D	=	Inscribed circle diameter (m)	88	88	88	88
A	=	Entry angle (degree)	39	30	37.5	29
Q	=	Entry flow (pcu/hr)	AM 1195 PM 1015	AM 160 PM 90	AM 2435 PM 2165	AM 1300 PM 1265
Qc	=	Circulating flow across entry (pcu/hr)	AM 1435 PM 1515	AM 2495 PM 2280	AM 170 PM 100	AM 1515 PM 1415

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.21	0.27	3.84	0.25
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	1.00	1.03	0.97	1.03
X2	=	$V + ((E-V)/(1+2 \cdot S))$	11.40	9.30	8.88	11.34
M	=	$\text{Exp}((D-60)/10)$	16.44	16.44	16.44	16.44
F	=	$303 \cdot X2$	3454.77	2819.22	2689.58	3436.08
Td	=	$1 + (0.5/(1+M))$	1.03	1.03	1.03	1.03
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.71	0.62	0.60	0.71
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 2447 PM 2390	AM 1322 PM 1459	AM 2520 PM 2561	AM 2436 PM 2509
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.49 PM 0.42	AM 0.12 PM 0.06	AM 0.97 PM 0.85	AM 0.53 PM 0.50

DFC of Critical Approach	=	AM	0.97		
		PM	0.85		

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Roundabout Junction Calculation

Junction :	(F) Au Tau Interchange	Job No.: 23004HK
Scenario :	2038 Design Traffic Flows (with Planned Improvement)	

Arm A
Castle Peak Road - Yuen Long

0	(0)
2175	(1985)
370	(250)

Arm C
Castle Peak Road - Tam Mei

120	265	0
(65)	(230)	(0)

Arm B
Kam Tin Road

80	(90)
1105	(1095)
0	(0)

AM	(PM)
(PM)	

Input Parameters				Arm A	Arm B	Arm C
V	=	Approach half width (m)		12	7	7
E	=	Entry width (m)		15	7.5	10
L	=	Effective length of flare (m)		30	5	13
R	=	Entry radius		100	100	50
D	=	Inscribed circle diameter (m)		65	65	65
A	=	Entry angle (degree)		20	30	45
Q	=	Entry flow (pcu/hr)	AM	2545	1185	385
			PM	2235	1185	295
Qc	=	Circulating flow across entry (pcu/hr)	AM	1305	755	2625
			PM	1250	545	2325

Output Parameters				Arm A	Arm B	Arm C
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.16	0.16	0.37
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1/R - 0.05)$		1.07	1.04	0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		14.27	7.38	8.73
M	=	$\text{Exp}((D - 60) / 10)$		1.65	1.65	1.65
F	=	$303 \cdot X2$		4324.64	2235.77	2643.88
Td	=	$1 + (0.5 / (1 + M))$		1.19	1.19	1.19
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.96	0.62	0.69
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	3295	1838	826
			PM	3352	1973	1027
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.77	0.64	0.47
			PM	0.67	0.60	0.29

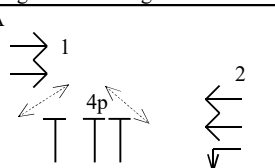
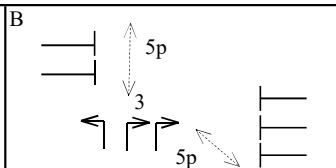
DFC of Critical Approach	=		AM	0.77	
			PM	0.67	

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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

CTA Consultants Ltd.

Junction: Tsing Long Highway Slip Road / Kam Tin Road (Junction G)																			
Description: 2038 Design Traffic Flows (with Planned Improvement)																			
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Kam Tin Road	E →	1	A	3.50	0	0	1	0%	0%	1965	1965	921	0.469	0.469	854	0.435	0.435		
	E →	1	A	3.50	0	0	0	0%	0%	2105	2105	987	0.469		915	0.435			
	E →	1	A	3.50	0	0	0	0%	0%	2105	2105	987	0.469		915	0.435			
Kam Tin Road	W ←	2	A	3.75	0	0	0	0%	0%	2130	2130	1458	0.684		1178	0.553			
	W ←	2	A	3.75	0	0	0	0%	0%	2130	2130	1458	0.684		1178	0.553			
	W ↓	2	A,B	5.00	15	0	1	100%	100%	1925	1925	790	0.410		345	0.179			
Tsing Long Highway Slip Road	N ←	3	B	3.60	20	0	1	100%	100%	1835	1835	369	0.201	0.201	378	0.206	0.206		
	N ←	3	B	3.60	25	0	0	100%	100%	1995	1995	401	0.201		412	0.206			
	N →	3	B	3.60	0	30	0	100%	100%	2015	2015	151	0.075		103	0.051			
	N →	3	B	3.50	0	28	0	100%	100%	2000	2000	149	0.075		102	0.051			
*Pedestrian Crossing			4p	A	Min. Crossing Time			=	7 Gm + 7 Fm = 14s										
			5p	B	Min. Crossing Time			=	7 Gm + 7 Fm = 14s										
Notes:					Traffic Flow (pcu / hr) [AM (PM)]						A.M. Check Phase			P.M. Check Phase					
					2895(2685) → ← 770(790) 300(205) → ← 2915(2355) ↓ 790(345)						E _y 0.670 L (sec) 10 C (sec) 120 y pract. 0.825 R.C. (%) 23%			E _y 0.641 L (sec) 10 C (sec) 120 y pract. 0.825 R.C. (%) 29%					
Stage / Phase Diagrams																			
A				B															
																			
I/G = 5				I/G = 7															

Roundabout Junction Calculation

Junction :	(H) Kam Tin Road/ Kam Ho Road	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (with Planned Improvement)		

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	6.5	7.3	9	7.3
E	=	Entry width (m)	11	11.5	10	11
L	=	Effective length of flare (m)	15	12	1	13
R	=	Entry radius	42.5	70	20	42.5
D	=	Inscribed circle diameter (m)	88	88	88	88
A	=	Entry angle (degree)	39	30	37.5	29
Q	=	Entry flow (pcu/hr)	AM 730 PM 495	1340 1070	95 95	2455 2155
Qc	=	Circulating flow across entry (pcu/hr)	AM 2500 PM 2195	2160 1750	2690 2130	140 140

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6*(E-V)/L$	0.48	0.56	1.60	0.46
K	=	$1-0.00347*(A-30)-0.978*(1/R-0.05)$	0.99	1.03	0.97	1.03
X2	=	$V+((E-V)/(1+2*S))$	8.80	9.28	9.24	9.24
M	=	$Exp((D-60)/10)$	16.44	16.44	16.44	16.44
F	=	$303*X2$	2665.16	2812.18	2799.14	2798.63
Td	=	$1+(0.5/(1+M))$	1.03	1.03	1.03	1.03
Fc	=	$0.21*Td*(1+0.2*X2)$	0.60	0.62	0.62	0.62
Qe	=	Capacity = $K*(F-Fc*Qc)$	AM 1169 PM 1350	1531 1793	1115 1450	2792 2792
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.62 PM 0.37	0.88 0.60	0.09 0.07	0.88 0.77

DFC of Critical Approach	=	AM	0.88		
		PM	0.77		

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Roundabout Junction Calculation

Junction :	(I) Kam Ho Road/ Tung Wui Road	Job No.: 23004HK
Scenario :	2038 Design Traffic Flows (with Planned Improvement)	

Arm D
Kam Ho Road

5	125	140	335
(5)	(85)	(110)	445(335)

↑ ← ↓ →

Arm C
Kam Ho Road

245	225
260	100
450	400
10	10

→ ←

Arm A
Tung Wui Road

25	15
5	0
190	150
125	95

← →

Arm B
Kam Ho Road

645	25	130	0
(275)	(0)	(85)	0(0)

← ↑ → ↓

Input Parameters			Arm A	Arm B	Arm C	Arm D	
V	=	Approach half width (m)	8	6	8.5	7	
E	=	Entry width (m)	8.5	6.5	16	8.8	
L	=	Effective length of flare (m)	5	5	10	6	
R	=	Entry radius	15	10	24	55	
D	=	Inscribed circle diameter (m)	15	15	15	15	
A	=	Entry angle (degree)	80	80	36	80	
Q	=	Entry flow (pcu/hr)	AM	220	800	955	605
			PM	165	360	725	200
Qc	=	Circulating flow across entry (pcu/hr)	AM	730	360	190	875
			PM	610	265	105	610

Output Parameters			Arm A	Arm B	Arm C	Arm D	
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.16	0.16	1.20	0.48	
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	0.81	0.78	0.99	0.86	
X2	=	$V + ((E-V)/(1+2 \cdot S))$	8.38	6.38	10.71	7.92	
M	=	$\text{Exp}((D-60)/10)$	0.01	0.01	0.01	0.01	
F	=	$303 \cdot X2$	2538.77	1932.77	3243.88	2399.27	
Td	=	$1 + (0.5/(1+M))$	1.49	1.49	1.49	1.49	
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.84	0.71	0.99	0.81	
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1560	1303	3018	1449
			PM	1642	1356	3101	1633
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.14	0.61	0.32	0.42
			PM	0.10	0.27	0.23	0.12

DFC of Critical Approach	=	AM	0.61
		PM	0.27

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Roundabout Junction Calculation

Junction :	(J) Pok Oi Interchange	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows		

Arm A
Pok Oi Interchange

0	1005	0	0
(0)	(1325)	(10)	(0)

Arm B
Castle Peak Road -
Yuen Long

210	55
25	65
35	60
0	0

Arm D
Castle Peak Road -
Yuen Long

0	0
105	55
415	315
40	10

Arm C
Poi Oi Interchange

285	0	1675	0
(300)	(0)	(1280)	(0)

AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D	
V	=	Approach half width (m)	3.5	3.5	3.5	3.5	
E	=	Entry width (m)	7	7	7	7.5	
L	=	Effective length of flare (m)	30	30	30	20	
R	=	Entry radius	25	25	25	50	
D	=	Inscribed circle diameter (m)	90	90	90	90	
A	=	Entry angle (degree)	40	40	40	60	
Q	=	Entry flow (pcu/hr)	AM	0	270	180	560
			PM	270	180	0	380
Qc	=	Circulating flow across entry (pcu/hr)	AM	2445	1460	1315	1910
			PM	1715	1660	1515	1400

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$		0.19		0.32
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$		0.98		0.93
X2	=	$V + ((E-V)/(1+2 \cdot S))$		6.05		5.94
M	=	$\text{Exp}((D-60)/10)$		20.09		20.09
F	=	$303 \cdot X2$		1832.71		1799.52
Td	=	$1 + (0.5/(1+M))$		1.02		1.02
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.48		0.47
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1111		834
			PM	1018		1056
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.24		0.67
			PM	0.18		0.36

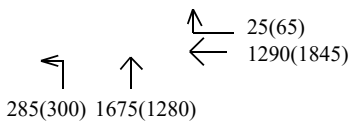
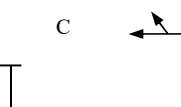
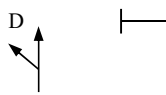
DFC of Critical Approach	=	AM	0.67		
		PM	0.36		

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TRAFFIC SIGNALS CALCULATION

Job No: 23004HK

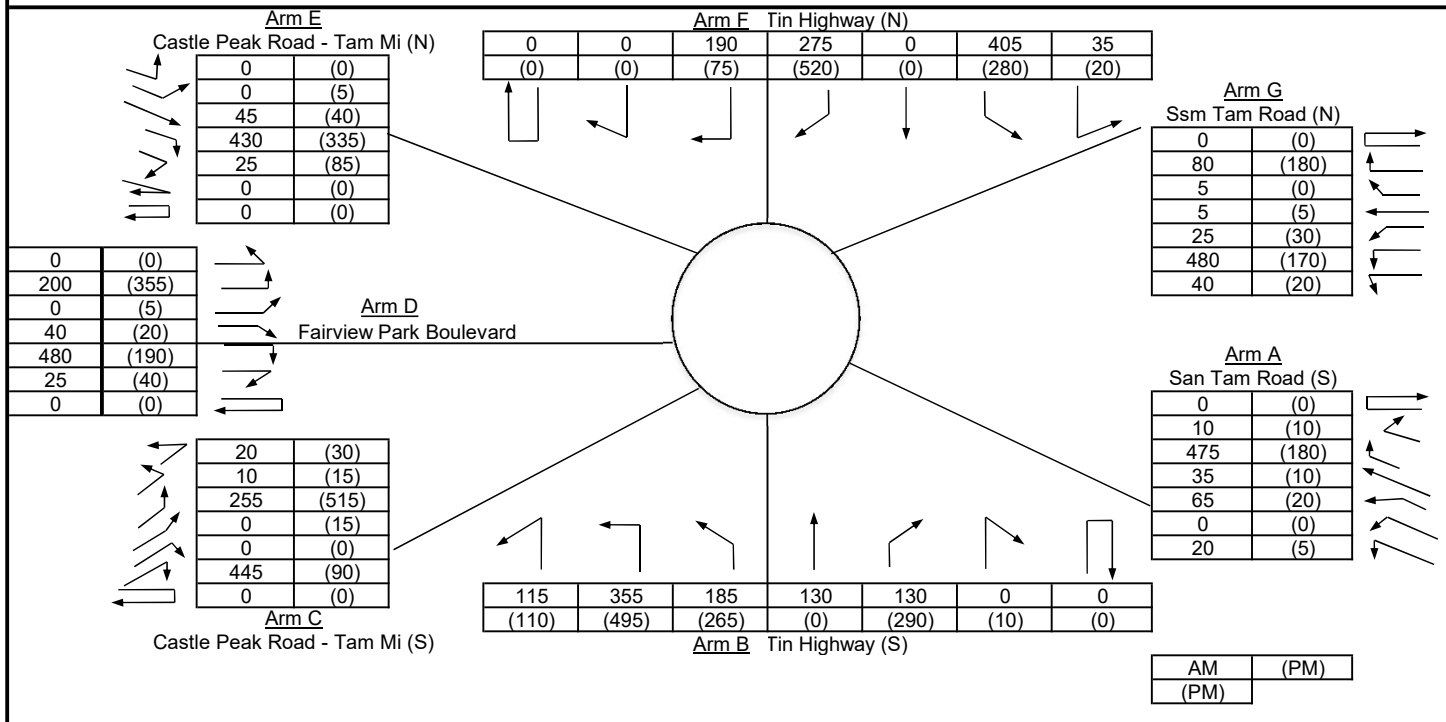
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Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road North bound)																		
Description: 2038 Design Traffic Flows																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yuen Long Highway Slip Road	N		D	2	5.00	25	0	1	30%	40%	2075	2065	940	0.453	0.453	755	0.366	0.366
	N		D	2	5.00	0	0	0	0%	0%	2255	2255	1020	0.452		825	0.366	
Pok Oi Interchange	W		C	1	5.00	0	0	1	0%	0%	2115	2115	637	0.301	0.301	926	0.438	0.438
	W		C	1	5.00	0	25	0	4%	7%	2250	2245	678	0.301		984	0.438	
*Pedestrian Crossing																		
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						Check Phase			Check Phase			
												E _y 0.754 L (sec) 12 C (sec) 110 y pract. 0.802 R.C. (%) 6%			E _y 0.804 L (sec) 12 C (sec) 110 y pract. 0.802 R.C. (%) 0%			
Stage / Phase Diagrams																		
1			2															
																		
I/G = 5			I/G = 5															

Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road Southbound)																		
Description: 2038 Design Traffic Flows																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Pok Oi Interchange	N	→	B	1	5.00	0	0	1	0%	0%	2115	2115	1189	0.562	0.562	711	0.336	0.337
	N	↘	B	1	5.00	0	50	0	33%	42%	2235	2225	1256	0.562		749	0.337	
Yuen Long Highway Slip Road	W	↕	A	2	5.00	50	0	1	0%	0%	2115	2115	486	0.230	0.230	646	0.305	0.305
	W	↙	A	2	5.00	0	0	0	0%	0%	2255	2255	519	0.230		689	0.305	
*Pedestrian Crossing																		

Junction : (A) Fairview Park Interchange Job No.: 23004HK

Scenario : 2038 Reference Traffic Flows (without Sha Po Public Housing Development)



Input Parameters

Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	60	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	AM 605	915	730	745	500	905	635
			PM 225	1170	665	610	465	895	405
Qc	=	Circulating flow across entry (pcu/hr)	AM 2465	1215	1665	1760	2270	1630	2360
			PM 1335	720	1135	1200	1530	1125	1685

Output Parameters

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharpness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.96	0.88	0.94	0.91	0.93	0.96	0.91
X2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	AM 737	1443	883	1447	753	1217	824
			PM 1259	1672	1103	1738	1076	1458	1129
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.82	0.63	0.83	0.51	0.66	0.74	0.77
			PM 0.18	0.70	0.60	0.35	0.43	0.61	0.36

DFC of Critical Approach = AM 0.83
PM 0.70

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Priority Junction Calculation

Junction :	San Tam Road / Local Road to Long Ha (Junction B)	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows (without Sha Po Public Housing Development)		

Arm C San Tam Road

570	215
10	5

Arm A San Tam Road

770	505
25	20

Arm B Fung Kat Heung Road

5	30
(15)	(5)

AM	(PM)
(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	8	V-rBA	50	w-BA	3.8	D	0.893
	W-CR	0	V-IBA	50	w-BC	3.8	E	0.950
	C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	0	F	0.616
	Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.724

Analysis :	Traffic Flow	AM	PM	Capacity	AM	PM
	pcu/hr			pcu/hr		
	q-CA	570	215	Q-BA	289	406
	q-CB	10	5	Q-BC	513	579
	q-AB	25	20	Q-CB	330	373
	q-AC	770	505	Q-CA	1745	1776
	q-BA	30	5	Q-BAC	308	523
	q-BC	5	15			
	f	0.143	0.750			

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.03	0.01
	C-A	0.33	0.12
	B-AC	0.11	0.04

Critical DFC	0.33	0.12
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Priority Junction Calculation

Junction :	San Tam Road / Fung Kat Heung Road (Junction C)	Job No.:	23004HK
Scenario :	2038 Reference Traffic Flows (without Sha Po Public Housing Development)		

Arm C San Tam Road

970	515
35	10

Arm A San Tam Road

935	705
40	45

Arm B Fung Kat Heung Road

70	60
(55)	(55)

AM	(PM)
(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	7.5	V-rBA	50	w-BA	3.6	D	0.877
	W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
	C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	0	F	0.616
	Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.741

Analysis :	Traffic Flow		AM	PM		Capacity		AM	PM
	pcu/hr					pcu/hr			
	q-CA		970	515		Q-BA		169	299
	q-CB		35	10		Q-BC		456	513
	q-AB		40	45		Q-CB		297	334
	q-AC		935	705		Q-CA		1588	1746
	q-BA		60	55		Q-BAC		255	378
	q-BC		70	55					
	f		0.538	0.500					

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

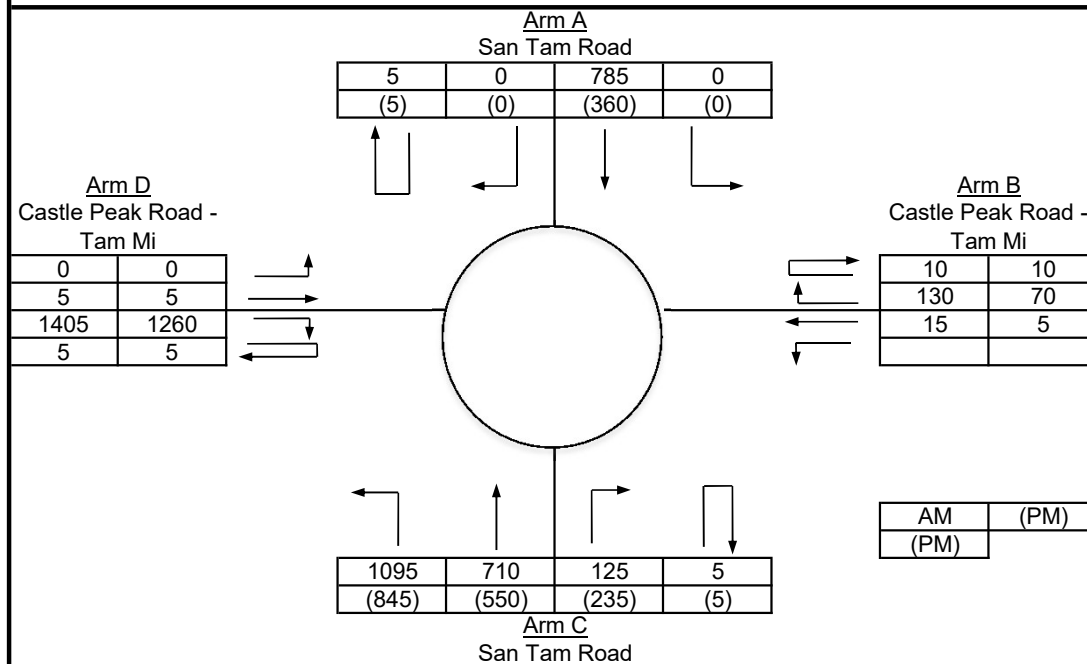
Results :	Ratio of Flow-to-Capacity		
		AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.12	0.03
	C-A	0.61	0.29
	B-AC	0.51	0.29

Critical DFC	0.61	0.29
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Roundabout Junction Calculation

Junction : (E) Castle Peak Road - Tam Mi/ San Tam Road Job No.: 23004HK
 Scenario : 2038 Reference Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)



Input Parameters

			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	10	8	8.6	10
E	=	Entry width (m)	12	10	11	12
L	=	Effective length of flare (m)	15	12	1	13
R	=	Entry radius	70	70	20	42.5
D	=	Inscribed circle diameter (m)	88	88	88	88
A	=	Entry angle (degree)	39	30	37.5	29
Q	=	Entry flow (pcu/hr)	AM 790	155	1935	1415
			PM 365	85	1635	1270
Qc	=	Circulating flow across entry (pcu/hr)	AM 1555	2205	165	985
			PM 1520	1635	95	875

Output Parameters

			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$	0.21	0.27	3.84	0.25
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$	1.00	1.03	0.97	1.03
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$	11.40	9.30	8.88	11.34
M	=	$\text{Exp}((D - 60) / 10)$	16.44	16.44	16.44	16.44
F	=	$303 \cdot X2$	3454.77	2819.22	2689.58	3436.08
Td	=	$1 + (0.5 / (1 + M))$	1.03	1.03	1.03	1.03
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.71	0.62	0.60	0.71
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 2362	1507	2523	2821
			PM 2386	1872	2564	2901
DFC	=	Entry Flow/Capacity = Q / Qe	AM 0.33	0.10	0.77	0.50
			PM 0.15	0.05	0.64	0.44

DFC of Critical Approach = AM 0.77
PM 0.64

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Roundabout Junction Calculation

Junction :	(F) Au Tau Interchange	Job No.: 23004HK
Scenario :	2038 Reference Traffic Flows (without Sha Po Public Housing Development) (with Pla	

Arm A
Castle Peak Road - Yuen Long

0	(0)
1900	(1990)
315	(250)

Arm C
Castle Peak Road - Tam Mei

120	200	0
(65)	(170)	(0)

Arm B
Kam Tin Road

75	(75)
970	(1010)
0	(0)

AM	(PM)
(PM)	

Input Parameters				Arm A	Arm B	Arm C
V	=	Approach half width (m)		7.3	7	7
E	=	Entry width (m)		10.5	7.5	10
L	=	Effective length of flare (m)		30	5	13
R	=	Entry radius		100	100	50
D	=	Inscribed circle diameter (m)		65	65	65
A	=	Entry angle (degree)		20	30	45
Q	=	Entry flow (pcu/hr)	AM	2215	1045	320
			PM	2240	1085	235
Qc	=	Circulating flow across entry (pcu/hr)	AM	1165	635	2290
			PM	1150	485	2315

Output Parameters				Arm A	Arm B	Arm C
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.17	0.16	0.37
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$		1.07	1.04	0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		9.69	7.38	8.73
M	=	$\text{Exp}((D - 60) / 10)$		1.65	1.65	1.65
F	=	$303 \cdot X2$		2934.76	2235.77	2643.88
Td	=	$1 + (0.5 / (1 + M))$		1.19	1.19	1.19
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.73	0.62	0.69
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	2234	1915	1050
			PM	2246	2012	1033
DFC	=	Entry Flow/Capacity = Q / Qe	AM	0.99	0.55	0.30
			PM	1.00	0.54	0.23

DFC of Critical Approach	=	AM	0.99	
		PM	1.00	

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TRAFFIC SIGNALS CALCULATION

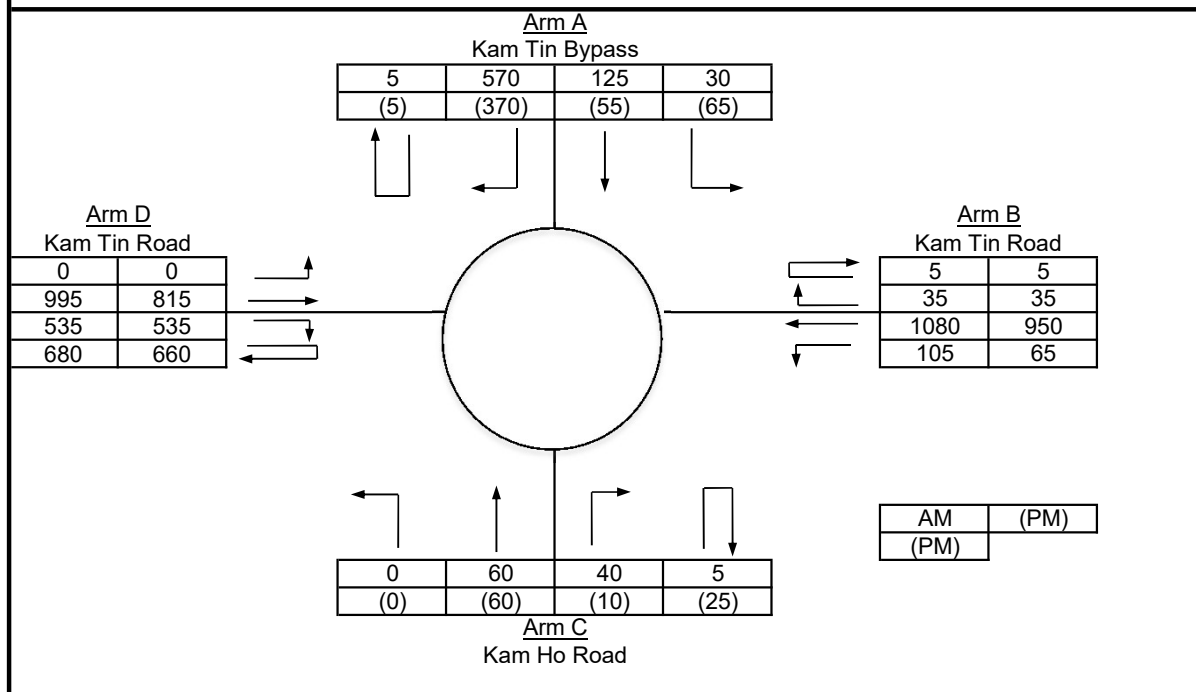
Job No: 23004HK

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Junction: Tsing Long Highway Slip Road / Kam Tin Road (Junction G)																		
Description: 2038 Reference Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Kam Tin Road	E →	1	A	3.50	0	0	1	0%	0%	1965	1965	888	0.452	0.452	804	0.409	0.409	
	E →	1	A	3.50	0	0	0	0%	0%	2105	2105	951	0.452		861	0.409		
	E →	1	A	3.50	0	0	0	0%	0%	2105	2105	951	0.452		861	0.409		
Kam Tin Road	W ←	2	A	3.75	0	0	0	0%	0%	2130	2130	1340	0.629		1148	0.539		
	W ←	2	A	3.75	0	0	0	0%	0%	2130	2130	1340	0.629		1148	0.539		
	W ↓	2	A,B	5.00	15	0	1	100%	100%	1925	1925	680	0.353		265	0.138		
Tsing Long Highway Slip Road	N ←	3	B	3.60	20	0	1	100%	100%	1835	1835	367	0.200	0.200	369	0.201	0.201	
	N ←	3	B	3.60	25	0	0	100%	100%	1995	1995	398	0.200		401	0.201		
	N →	3	B	3.60	0	30	0	100%	100%	2015	2015	78	0.039		100	0.050		
	N →	3	B	3.50	0	28	0	100%	100%	2000	2000	77	0.039		100	0.050		
*Pedestrian Crossing			4p	A	Min. Crossing Time		=	7 Gm + 7 Fm = 14s										
			5p	B	Min. Crossing Time		=	7 Gm + 7 Fm = 14s										
Notes:					Traffic Flow (pcu / hr) [AM (PM)]							A.M. Check Phase			P.M. Check Phase			
					2790(2525)→ ← 765(770) 155(200) → ← 2680(2295) ↓ 680(265)							E_y 0.652 L (sec) 10 C (sec) 120 y pract. 0.825 R.C. (%) 27%			E_y 0.610 L (sec) 10 C (sec) 120 y pract. 0.825 R.C. (%) 35%			
Stage / Phase Diagrams																		
A → 1 ↗ 4p ← 2				B ↕ 5p ↗ 3 ↘ 5p														
I/G = 5				I/G = 7														

Roundabout Junction Calculation

Junction : (H) Kam Tin Road/ Kam Ho Road Job No.: 23004HK
 Scenario : 2038 Reference Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)



Input Parameters		Arm A	Arm B	Arm C	Arm D
V	= Approach half width (m)	6.5	7.3	9	7.3
E	= Entry width (m)	11	11.5	10	11
L	= Effective length of flare (m)	15	12	1	13
R	= Entry radius	42.5	70	20	42.5
D	= Inscribed circle diameter (m)	88	88	88	88
A	= Entry angle (degree)	39	30	37.5	29
Q	= Entry flow (pcu/hr)	AM 730 PM 495	1225 1055	105 95	2210 2010
Qc	= Circulating flow across entry (pcu/hr)	AM 2260 PM 2050	1920 1650	2375 2025	150 140

Output Parameters		Arm A	Arm B	Arm C	Arm D
S	= Sharpness of flare = $1.6 \cdot (E-V)/L$	0.48	0.56	1.60	0.46
K	= $1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R-0.05)$	0.99	1.03	0.97	1.03
X2	= $V + ((E-V)/(1+2 \cdot S))$	8.80	9.28	9.24	9.24
M	= $\text{Exp}((D-60)/10)$	16.44	16.44	16.44	16.44
F	= $303 \cdot X2$	2665.16	2812.18	2799.14	2798.63
Td	= $1 + (0.5/(1+M))$	1.03	1.03	1.03	1.03
Fc	= $0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.60	0.62	0.62	0.62
Qe	= Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 1311 PM 1436	1684 1857	1303 1513	2786 2792
DFC	= Entry Flow/Capacity = Q/Qe	AM 0.56 PM 0.34	0.73 0.57	0.08 0.06	0.79 0.72

DFC of Critical Approach = AM 0.79
PM 0.72

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Roundabout Junction Calculation

Junction :	(I) Kam Ho Road/ Tung Wui Road	Job No.: 23004HK
Scenario :	2038 Reference Traffic Flows (without Sha Po Public Housing Development) (with Planned Imp	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	8	6	8.5	7
E	=	Entry width (m)	8.5	6.5	16	8.8
L	=	Effective length of flare (m)	5	5	10	6
R	=	Entry radius	15	10	24	55
D	=	Inscribed circle diameter (m)	15	15	15	15
A	=	Entry angle (degree)	80	80	36	80
Q	=	Entry flow (pcu/hr)	AM: 220 PM: 165	800 345	955 725	605 200
Qc	=	Circulating flow across entry (pcu/hr)	AM: 730 PM: 610	360 265	190 105	875 610

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$	0.16	0.16	1.20	0.48
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$	0.81	0.78	0.99	0.86
X2	=	$V + ((E-V)/(1+2 \cdot S))$	8.38	6.38	10.71	7.92
M	=	$\text{Exp}((D-60)/10)$	0.01	0.01	0.01	0.01
F	=	$303 \cdot X2$	2538.77	1932.77	3243.88	2399.27
Td	=	$1 + (0.5/(1+M))$	1.49	1.49	1.49	1.49
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.84	0.71	0.99	0.81
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM: 1560 PM: 1642	1303 1356	3018 3101	1449 1633
DFC	=	Entry Flow/Capacity = Q/Qe	AM: 0.14 PM: 0.10	0.61 0.25	0.32 0.23	0.42 0.12

DFC of Critical Approach	=	AM	0.61		
		PM	0.25		

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Roundabout Junction Calculation

Junction :	(J) Pok Oi Interchange	Job No.: 23004HK
Scenario :	2038 Reference Traffic Flows (without Sha Po Public Housing Development)	

Arm A
Pok Oi Interchange

0	1060	0	0
(0)	(1425)	(15)	(0)

Arm D
Castle Peak Road -
Yuen Long

0	0
115	55
390	355
55	10

Arm B
Castle Peak Road -
Yuen Long

180	45
25	65
35	55
0	0

Arm C
Poi Oi Interchange

280	0	1500	0
(305)	(0)	(1150)	(0)

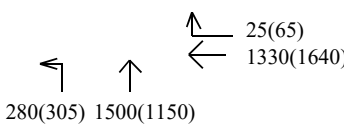
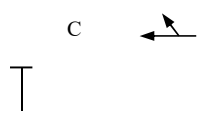
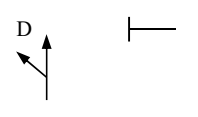
AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	3.5	3.5	3.5	3.5
E	=	Entry width (m)	7	7	7	7.5
L	=	Effective length of flare (m)	30	30	30	20
R	=	Entry radius	25	25	25	50
D	=	Inscribed circle diameter (m)	90	90	90	90
A	=	Entry angle (degree)	40	40	40	60
Q	=	Entry flow (pcu/hr)	AM	0	240	165
			PM	240	165	0
Qc	=	Circulating flow across entry (pcu/hr)	AM	2240	1505	1355
			PM	1615	1805	1600

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6*(E-V)/L$		0.19		0.32
K	=	$1-0.00347*(A-30)-0.978*(1/R-0.05)$		0.98		0.93
X2	=	$V+((E-V)/(1+2*S))$		6.05		5.94
M	=	$Exp((D-60)/10)$		20.09		20.09
F	=	$303*X2$		1832.71		1799.52
Td	=	$1+(0.5/(1+M))$		1.02		1.02
Fc	=	$0.21*Td*(1+0.2*X2)$		0.48		0.47
Qe	=	Capacity = $K*(F-Fc*Qc)$	AM	1090		923
			PM	951		1117
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.22		0.61
			PM	0.17		0.38

DFC of Critical Approach	=	AM	0.61
		PM	0.38

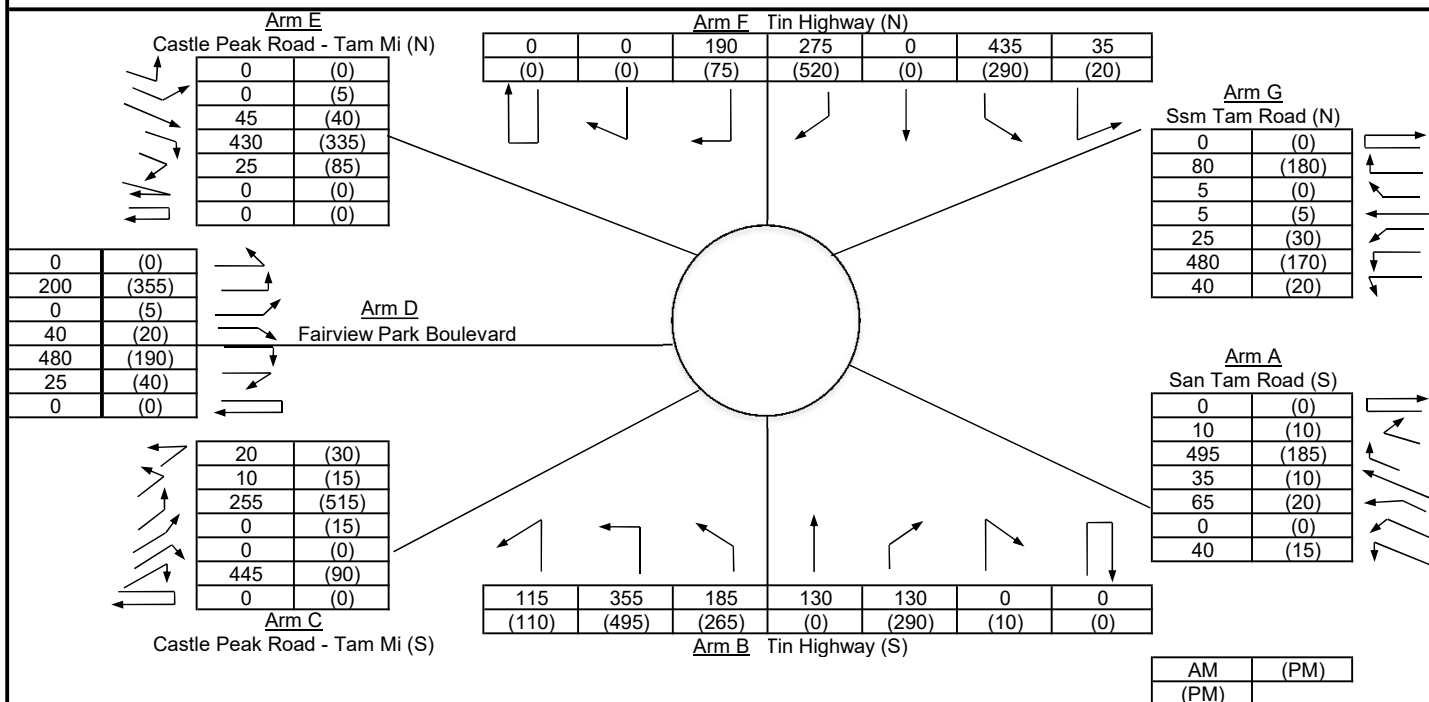
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Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road North bound) Description: 2038 Reference Traffic Flows (without Sha Po Public Housing Development)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yuen Long Highway Slip Road	N		D	2	5.00	25	0	1	33%	44%	2075	2060	853	0.411	0.411	695	0.337	0.337
	N		D	2	5.00	0	0	0	0%	0%	2255	2255	927	0.411		760	0.337	
Pok Oi Interchange	W		C	1	5.00	0	0	1	0%	0%	2115	2115	657	0.310	0.310	827	0.391	0.391
	W		C	1	5.00	0	25	0	4%	7%	2250	2245	698	0.310		878	0.391	
*Pedestrian Crossing																		
Notes:						Traffic Flow (pcu / hr) [AM (PM)]						Check Phase			Check Phase			
												εy 0.722 L (sec) 12 C (sec) 110 y pract. 0.802 R.C. (%) 11%			εy 0.728 L (sec) 12 C (sec) 110 y pract. 0.802 R.C. (%) 10%			
Stage / Phase Diagrams																		
1			2															
																		
I/G = 5			I/G = 5															

Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road Southbound)																		
Description: 2038 Reference Traffic Flows (without Sha Po Public Housing Development)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Pok Oi Interchange	N	→	B	1	5.00	0	0	1	0%	0%	2115	2115	1090	0.515	0.516	734	0.347	0.347
	N	↘	B	1	5.00	0	50	0	34%	46%	2230	2225	1150	0.516		771	0.347	
Yuen Long Highway Slip Road	W	↕	A	2	5.00	50	0	1	0%	0%	2115	2115	513	0.243	0.243	697	0.330	0.330
	W	↘	A	2	5.00	0	0	0	0%	0%	2255	2255	547	0.243		743	0.330	
*Pedestrian Crossing																		

Junction : (A) Fairview Park Interchange Job No.: 23004HK

Scenario : 2038 Design Traffic Flows (without Sha Po Public Housing Development)



Input Parameters

Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	60	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	AM 645	915	730	745	500	935	635
			PM 240	1170	665	610	465	905	405
Qc	=	Circulating flow across entry (pcu/hr)	AM 2465	1235	1685	1780	2290	1630	2390
			PM 1335	720	1135	1200	1530	1125	1695

Output Parameters

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharpness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.96	0.88	0.94	0.91	0.93	0.96	0.91
X2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	AM 737	1434	875	1437	744	1217	810
			PM 1259	1672	1103	1738	1076	1458	1125
DFC	=	Entry Flow/Capacity = Q/Qe	AM 0.88	0.64	0.83	0.52	0.67	0.77	0.78
			PM 0.19	0.70	0.60	0.35	0.43	0.62	0.36

DFC of Critical Approach = AM 0.88
PM 0.70

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Priority Junction Calculation

Junction :	San Tam Road / Local Road to Long Ha (Junction B)	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (without Sha Po Public Housing Development)		

Arm C	San Tam Road
615	230
10	5

Arm A	San Tam Road
800	515
25	20

Arm B	Fung Kat Heung Road
5	30
(15)	(5)

AM	(PM)
(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	8	D 0.893
W-CR	0	E 0.950
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	F 0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	Y 0.724
V-rBA	50	
V-IBA	50	
V-rBC	50	
V-rCB	50	
w-BA	3.8	
w-BC	3.8	
w-CB	0	

Analysis :	Traffic Flow	AM	PM	Capacity	AM	PM
	pcu/hr			pcu/hr		
	q-CA	615	230	Q-BA	275	401
	q-CB	10	5	Q-BC	505	577
	q-AB	25	20	Q-CB	325	372
	q-AC	800	515	Q-CA	1745	1776
	q-BA	30	5	Q-BAC	294	520
	q-BC	5	15			
	f	0.143	0.750			

(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.03	0.01
	C-A	0.35	0.13
	B-AC	0.12	0.04

Critical DFC	0.35	0.13
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Priority Junction Calculation

Junction :	San Tam Road / Fung Kat Heung Road (Junction C)	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (without Sha Po Public Housing Development)		

Arm C San Tam Road	
970	515
65	50

Arm A San Tam Road	
935	705
70	55

Arm B Fung Kat Heung Road	
130	105
(80)	(70)

AM	(PM)
(PM)	

The predictive equations of capacity of movement are:

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

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

$$Q\text{-CB} = F(745 - 0.364Y(q\text{-AC} + q\text{-AB}))$$

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

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

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

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

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	7.5	V-rBA	50	w-BA	3.6	D	0.877
	W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)		1	V-rBC	50	w-CB	0	F	0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)		1	V-rCB	50			Y	0.741

Analysis :	Traffic Flow	AM	PM	Capacity	AM	PM
	pcu/hr			pcu/hr		
	q-CA	970	515	Q-BA	156	284
	q-CB	65	50	Q-BC	453	512
	q-AB	70	55	Q-CB	292	332
	q-AC	935	705	Q-CA	1399	1529
	q-BA	105	70	Q-BAC	244	373
	q-BC	130	80			
	f	0.553	0.533			

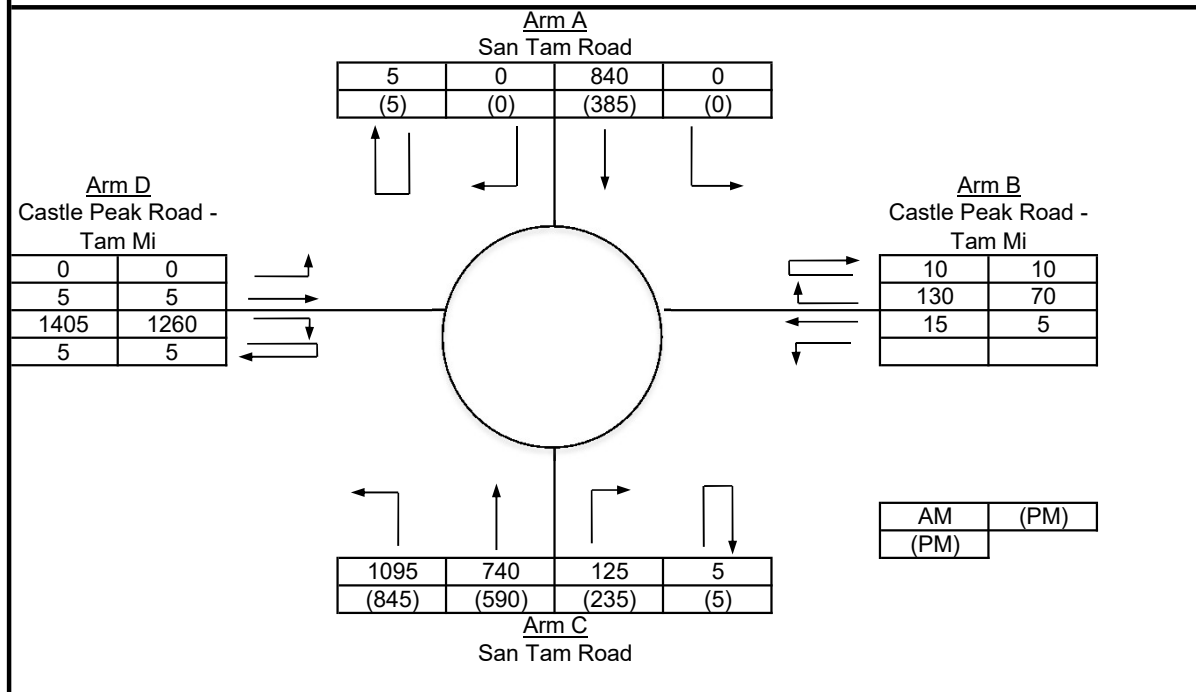
(If C-B blocked C-A)
(If Minor Road Share LT&RT)

Results :	Ratio of Flow-to-Capacity	AM	PM
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.22	0.15
	C-A	0.69	0.34
	B-AC	0.96	0.40

Critical DFC	0.96	0.40
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Roundabout Junction Calculation

Junction : (E) Castle Peak Road - Tam Mi/ San Tam Road Job No.: 23004HK
 Scenario : 2038 Design Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)



Input Parameters			Arm A	Arm B	Arm C	Arm D	
V	=	Approach half width (m)	10	8	8.6	10	
E	=	Entry width (m)	12	10	11	12	
L	=	Effective length of flare (m)	15	12	1	13	
R	=	Entry radius	70	70	20	42.5	
D	=	Inscribed circle diameter (m)	88	88	88	88	
A	=	Entry angle (degree)	39	30	37.5	29	
Q	=	Entry flow (pcu/hr)	AM	845	155	1965	1415
			PM	390	85	1675	1270
Qc	=	Circulating flow across entry (pcu/hr)	AM	1555	2260	165	1015
			PM	1520	1660	95	915

Output Parameters			Arm A	Arm B	Arm C	Arm D	
S	=	Sharpness of flare = 1.6*(E-V)/L	0.21	0.27	3.84	0.25	
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.00	1.03	0.97	1.03	
X2	=	V+((E-V)/(1+2*S))	11.40	9.30	8.88	11.34	
M	=	Exp((D-60)/10)	16.44	16.44	16.44	16.44	
F	=	303*X2	3454.77	2819.22	2689.58	3436.08	
Td	=	1+(0.5/(1+M))	1.03	1.03	1.03	1.03	
Fc	=	0.21*Td*(1+0.2*X2)	0.71	0.62	0.60	0.71	
Qe	=	Capacity = K*(F-Fc*Qc)	AM	2362	1472	2523	2799
			PM	2386	1856	2564	2872
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.36	0.11	0.78	0.51
			PM	0.16	0.05	0.65	0.44

DFC of Critical Approach = AM 0.78
PM 0.65

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Roundabout Junction Calculation

Junction :	(F) Au Tau Interchange	Job No.: 23004HK
Scenario :	2038 Design Traffic Flows (without Sha Po Public Housing Development) (with Planne	

Arm A
Castle Peak Road - Yuen Long

0	(0)
1900	(1990)
315	(250)

Arm C
Castle Peak Road - Tam Mei

120	200	0
(65)	(170)	(0)

Arm B
Kam Tin Road

80	(90)
970	(1010)
0	(0)

AM	(PM)
(PM)	

Input Parameters				Arm A	Arm B	Arm C
V	=	Approach half width (m)		7.3	7	7
E	=	Entry width (m)		10.5	7.5	10
L	=	Effective length of flare (m)		30	5	13
R	=	Entry radius		100	100	50
D	=	Inscribed circle diameter (m)		65	65	65
A	=	Entry angle (degree)		20	30	45
Q	=	Entry flow (pcu/hr)	AM	2215	1050	320
			PM	2240	1100	235
Qc	=	Circulating flow across entry (pcu/hr)	AM	1170	635	2295
			PM	1165	485	2330

Output Parameters				Arm A	Arm B	Arm C
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$		0.17	0.16	0.37
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$		1.07	1.04	0.98
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$		9.69	7.38	8.73
M	=	$\text{Exp}((D - 60) / 10)$		1.65	1.65	1.65
F	=	$303 \cdot X2$		2934.76	2235.77	2643.88
Td	=	$1 + (0.5 / (1 + M))$		1.19	1.19	1.19
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.73	0.62	0.69
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	2230	1915	1047
			PM	2234	2012	1023
DFC	=	Entry Flow/Capacity = Q / Qe	AM	0.99	0.55	0.31
			PM	1.00	0.55	0.23

DFC of Critical Approach	=	AM	0.99
		PM	1.00

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TRAFFIC SIGNALS CALCULATION

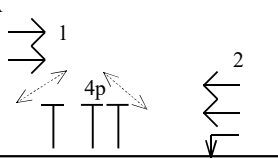
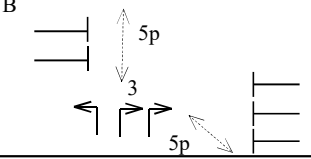
Job No: 23004HK

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Junction: **Tsing Long Highway Slip Road / Kam Tin Road (Junction G)**Description: **2038 Design Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)**

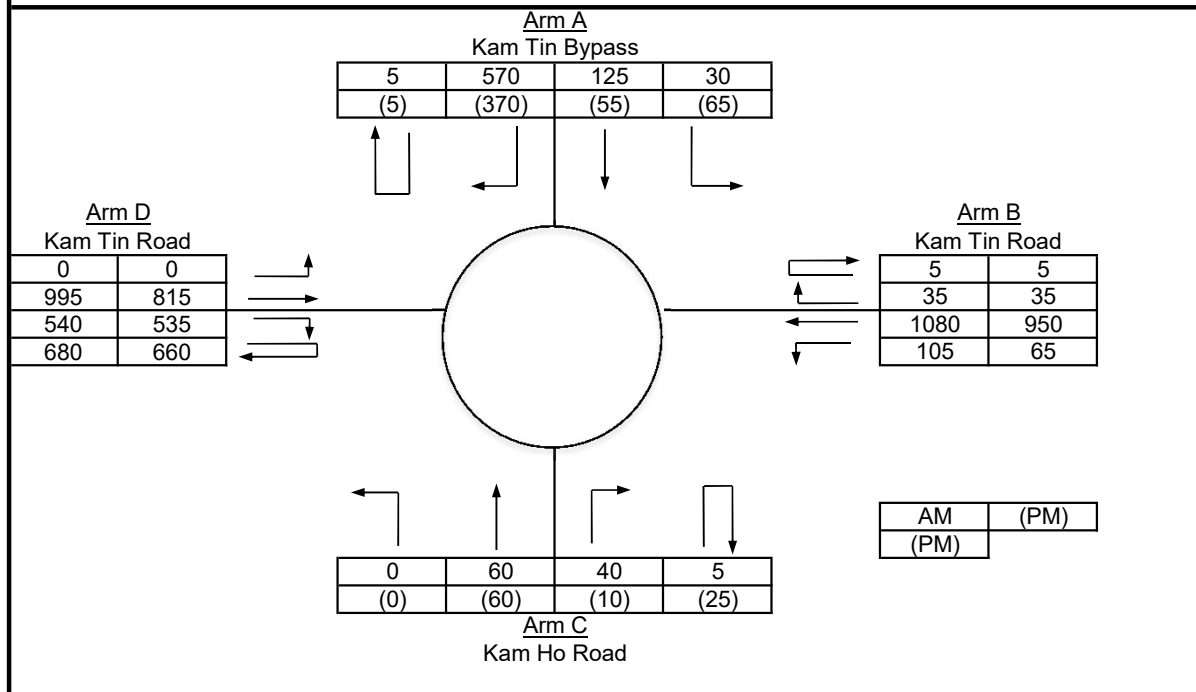
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Kam Tin Road	E	→	1	A	3.50	0	0	1	0%	0%	1965	1965	889	0.453	0.453	804	0.409	0.409
	E	→	1	A	3.50	0	0	0	0%	0%	2105	2105	953	0.453		861	0.409	
	E	→	1	A	3.50	0	0	0	0%	0%	2105	2105	953	0.453		861	0.409	
Kam Tin Road	W	←	2	A	3.75	0	0	0	0%	0%	2130	2130	1340	0.629		1148	0.539	
	W	←	2	A	3.75	0	0	0	0%	0%	2130	2130	1340	0.629		1148	0.539	
	W	↓	2	A,B	5.00	15	0	1	100%	100%	1925	1925	680	0.353		265	0.138	
Tsing Long Highway Slip Road	N	←	3	B	3.60	20	0	1	100%	100%	1835	1835	367	0.200	0.200	374	0.204	0.204
	N	←	3	B	3.60	25	0	0	100%	100%	1995	1995	398	0.200		406	0.204	
	N	→	3	B	3.60	0	30	0	100%	100%	2015	2015	78	0.039		100	0.050	
	N	→	3	B	3.50	0	28	0	100%	100%	2000	2000	77	0.039		100	0.050	
*Pedestrian Crossing			4p	A	Min. Crossing Time				=	7 Gm + 7 Fm = 14s								
			5p	B	Min. Crossing Time				=	7 Gm + 7 Fm = 14s								

Notes:	Traffic Flow (pcu / hr)	[AM (PM)]	A.M. Check Phase	P.M. Check Phase
	2795(2525) →		εy 0.652	εy 0.613
	← 765(780) 155(200) →		L (sec) 10	L (sec) 10
			C (sec) 120	C (sec) 120
			y pract. 0.825	y pract. 0.825
		← 2680(2295) ↓ 680(265)	R.C. (%) 26%	R.C. (%) 35%

Stage / Phase Diagrams				
A	B			
				
I/G = 5	I/G = 7			

Roundabout Junction Calculation

Junction : (H) Kam Tin Road/ Kam Ho Road Job No.: 23004HK
 Scenario : 2038 Design Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)



Input Parameters		Arm A	Arm B	Arm C	Arm D
V	= Approach half width (m)	6.5	7.3	9	7.3
E	= Entry width (m)	11	11.5	10	11
L	= Effective length of flare (m)	15	12	1	13
R	= Entry radius	42.5	70	20	42.5
D	= Inscribed circle diameter (m)	88	88	88	88
A	= Entry angle (degree)	39	30	37.5	29
Q	= Entry flow (pcu/hr)	AM	730	1225	105
		PM	495	1055	95
Qc	= Circulating flow across entry (pcu/hr)	AM	2265	1925	2375
		PM	2050	1650	2025

Output Parameters		Arm A	Arm B	Arm C	Arm D
S	= Sharpness of flare = $1.6 \cdot (E - V) / L$	0.48	0.56	1.60	0.46
K	= $1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$	0.99	1.03	0.97	1.03
X2	= $V + ((E - V) / (1 + 2 \cdot S))$	8.80	9.28	9.24	9.24
M	= $\exp((D - 60) / 10)$	16.44	16.44	16.44	16.44
F	= $303 \cdot X2$	2665.16	2812.18	2799.14	2798.63
Td	= $1 + (0.5 / (1 + M))$	1.03	1.03	1.03	1.03
Fc	= $0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.60	0.62	0.62	0.62
Qe	= Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1308	1681	1303
		PM	1436	1857	1513
DFC	= Entry Flow/Capacity = Q / Qe	AM	0.56	0.73	0.08
		PM	0.34	0.57	0.06

DFC of Critical Approach = AM 0.80
PM 0.72

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Roundabout Junction Calculation

Junction :	(I) Kam Ho Road/ Tung Wui Road	Job No.: 23004HK
Scenario :	2038 Design Traffic Flows (without Sha Po Public Housing Development) (with Planned Improvement)	

Input Parameters			Arm A	Arm B	Arm C	Arm D
V	=	Approach half width (m)	8	6	8.5	7
E	=	Entry width (m)	8.5	6.5	16	8.8
L	=	Effective length of flare (m)	5	5	10	6
R	=	Entry radius	15	10	24	55
D	=	Inscribed circle diameter (m)	15	15	15	15
A	=	Entry angle (degree)	80	80	36	80
Q	=	Entry flow (pcu/hr)	AM 220 PM 165	800 345	955 725	605 200
Qc	=	Circulating flow across entry (pcu/hr)	AM 730 PM 610	360 265	190 105	875 610

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E - V) / L$	0.16	0.16	1.20	0.48
K	=	$1 - 0.00347 \cdot (A - 30) - 0.978 \cdot (1 / R - 0.05)$	0.81	0.78	0.99	0.86
X2	=	$V + ((E - V) / (1 + 2 \cdot S))$	8.38	6.38	10.71	7.92
M	=	$\text{Exp}((D - 60) / 10)$	0.01	0.01	0.01	0.01
F	=	$303 \cdot X2$	2538.77	1932.77	3243.88	2399.27
Td	=	$1 + (0.5 / (1 + M))$	1.49	1.49	1.49	1.49
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.84	0.71	0.99	0.81
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM 1560 PM 1642	1303 1356	3018 3101	1449 1633
DFC	=	Entry Flow/Capacity = Q / Qe	AM 0.14 PM 0.10	0.61 0.25	0.32 0.23	0.42 0.12

DFC of Critical Approach	=	AM	0.61
		PM	0.25

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Roundabout Junction Calculation

Junction :	(J) Pok Oi Interchange	Job No.:	23004HK
Scenario :	2038 Design Traffic Flows (without Sha Po Public Housing Development)		

Arm A
Pok Oi Interchange

0	1060	0	0
(0)	(1425)	(15)	(0)

Arm B
Castle Peak Road -
Yuen Long

185	45
25	65
35	55
0	0

Arm D
Castle Peak Road -
Yuen Long

0	0
115	55
390	355
55	10

Arm C
Poi Oi Interchange

280	0	1515	0
(305)	(0)	(1165)	(0)

AM	(PM)
(PM)	

Input Parameters			Arm A	Arm B	Arm C	Arm D	
V	=	Approach half width (m)	3.5	3.5	3.5	3.5	
E	=	Entry width (m)	7	7	7	7.5	
L	=	Effective length of flare (m)	30	30	30	20	
R	=	Entry radius	25	25	25	50	
D	=	Inscribed circle diameter (m)	90	90	90	90	
A	=	Entry angle (degree)	40	40	40	60	
Q	=	Entry flow (pcu/hr)	AM	0	245	165	560
			PM	245	165	0	420
Qc	=	Circulating flow across entry (pcu/hr)	AM	2260	1505	1360	1725
			PM	1630	1805	1600	1275

Output Parameters			Arm A	Arm B	Arm C	Arm D
S	=	Sharpness of flare = $1.6 \cdot (E-V)/L$		0.19		0.32
K	=	$1 - 0.00347 \cdot (A-30) - 0.978 \cdot (1/R - 0.05)$		0.98		0.93
X2	=	$V + ((E-V)/(1+2 \cdot S))$		6.05		5.94
M	=	$\text{Exp}((D-60)/10)$		20.09		20.09
F	=	$303 \cdot X2$		1832.71		1799.52
Td	=	$1 + (0.5/(1+M))$		1.02		1.02
Fc	=	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$		0.48		0.47
Qe	=	Capacity = $K \cdot (F - Fc \cdot Qc)$	AM	1090		914
			PM	951		1110
DFC	=	Entry Flow/Capacity = Q/Qe	AM	0.22		0.61
			PM	0.17		0.38

DFC of Critical Approach	=	AM	0.61
		PM	0.38

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Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road North bound)																		
Description: 2038 Design Traffic Flows (without Sha Po Public Housing Development)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yuen Long Highway Slip Road	N		D	2	5.00	25	0	1	33%	43%	2075	2060	860	0.414	0.415	702	0.341	0.341
	N		D	2	5.00	0	0	0	0%	0%	2255	2255	935	0.415		768	0.341	
Pok Oi Interchange	W		C	1	5.00	0	0	1	0%	0%	2115	2115	659	0.312	0.312	837	0.396	0.396
	W		C	1	5.00	0	25	0	4%	7%	2250	2245	701	0.312		888	0.396	
*Pedestrian Crossing																		

Junction: (J) Pok Oi Interchange (Yuen Long Highway Slip Road Southbound)																		
Description: 2038 Design Traffic Flows (without Sha Po Public Housing Development)																		
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Pok Oi Interchange	N	→	B	1	5.00	0	0	1	0%	0%	2115	2115	1099	0.520	0.520	734	0.347	0.347
	N	↘	B	1	5.00	0	50	0	34%	46%	2230	2225	1161	0.520		771	0.347	
Yuen Long Highway Slip Road	W	↕	A	2	5.00	50	0	1	0%	0%	2115	2115	513	0.243	0.243	697	0.330	0.330
	W	↘	A	2	5.00	0	0	0	0%	0%	2255	2255	547	0.243		743	0.330	
*Pedestrian Crossing																		