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教育事務委員會
2021年1月8日會議跟進事宜

8021EM－於青衣興建職業訓練局航空及航海教育中心

你於2021年1月8日就當日教育事務委員會會議的跟進事宜致教育局局的來函收悉。有關職業訓練局（職訓局）擬於青衣發展航空及航海教育中心（教育中心）的補充資料現載列如下，供委員參閱。

職訓局的航空及航海相關課程的補充資料

2. 目前，職訓局開辦一共20個與航空及航海相關的課程。由於缺乏相應的專門訓練設施，現時有關課程的實務訓練分散於職訓局不同的校舍內舉行，包括香港專業教育學院、青年學院及海事訓練學院的校舍。因應航空及航海業界的人力需求，以及現時

供學生使用的實務訓練設施不足，職訓局建議興建教育中心，為學生提供優質及模擬真實工作環境的訓練體驗，支持本港航空及航海業長遠的人力需求。擬建的教育中心將設置嶄新的培訓設施，如航空工程和航空器系統維修培訓工場，以及海事工程實驗室，以期裝備畢業生考取民航處頒發的航空器維修基本執照，或海事處發出的本地船舶輪機操作員合格證明書，投身相關行業。

3. 在擬建的教育中心投入運作後，有關課程的學員將可集中於位於香港專業教育學院青衣分校的教育中心進行有關的實務訓練，善用其嶄新培訓設施。長遠而言，職訓局亦計劃因應業界的人力需求，考慮開辦適切的新課程[1]。然而，職訓局會通過課程及課堂編配等安排，確保於香港專業教育學院青衣分校的規劃入學人數維持於2020年的水平，即約7 500人。有關與航空及航海相關課程的資料載於**附件一**。

航空及航海業的人力需求及課程畢業生前景

4. 就航空業的未來人力需求方面，香港機場管理局預計在2030年三跑道系統啟用後，於機場區域所提供的直接職位將增至141 000個，較現時增加超過一倍。此外，職訓局在進行行業人力調查後作出的2020年人力更新報告亦指出，飛機維修工程行業於對技術員及技師人手需求甚殷，而其機電工程業的人力更新報告亦指出，2018年下半年至2019年上半年期間的飛機維修工程相關空缺超過100個，反映飛機維修行業對員工增補有相當需求。

5. 雖然航空業受到意料之外的疫情影響，而疫情所帶來的負面影響預計仍將持續一段時間，但職訓局預期待疫情受控後，航空業將會逐步回復正常。根據國際航空運輸協會於2020年7月發表的報告中，航空業的客運量預計將於2024年稍後時間回復至2019年的相若水平，而事實上2020年的貨物空運量亦僅比2019年同期略為下跌約10%，有望更早復甦。職訓局亦預計，由於教育中心的建築需時約三年半，在教育中心完工並投入運作後，將配合屆時全球及本港航空業復蘇，回應業界預期對人力及相應培訓的逼切需求。

[1] 根據職訓局的初步計劃，職訓局會因應當時的實際情況，包括行業發展情況、人力需求等，考慮開辦6個新課程。在此初步計劃下，有關航空及航海相關課程長遠規劃入學人數，亦會由2020/21學年的786增至2025/26學年的約1 500。

6. 在航海業的人力需求方面，職訓局在進行行業人力調查後作出的 2016 年人力調查報告和 2020 年人力更新報告均顯示，航海業的人手老化問題嚴重，業界對具執照的在岸工作海事工程技術員及工程師有極大需求。隨著現職海事工程技術人員於未來 5 至 10 年陸續退休，航海業預計將出現約 1 000 個空缺。事實上，輪機工程師及船舶總管已被列入「優秀人才入境計劃」下的人才清單，可見香港對有關專業人才需求殷切。

7. 就航空及航海相關課程的畢業生前景方面，職訓局的數字顯示，有關畢業生的升學及就業情況理想，反映課程及其學員的質素獲行業及其他專上院校普遍認同。具體而言，在航空相關課程畢業生方面，過去五年，55%畢業生選擇繼續升學，其中 86%獲香港高等教育科技學院、香港理工大學和香港科技大學等本地院校取錄入讀相關學士學位課程。其餘選擇直接就業的畢業生當中，超過 95% 成功入職航空業。至於航海相關課程方面，超過95%的畢業生選擇直接就業，平均就業率約 83%；其餘選擇繼續升學的畢業生則獲本地及海外大學，如香港理工大學和英國普利茅斯大學，取錄入讀相關海事學士學位課程。

8. 為支援畢業生就業，職訓局過去十多年一直舉辦事業啟航計劃，鼓勵學生參觀業內公司、與機構人員進行小組討論，並提供適切的就業輔導服務，讓學生瞭解個人的職業性向和事業目標。在疫情期間，職訓局亦加強有關支援，包括為學生安排線上職業講座，加深學生對未來的職業前景的瞭解。職訓局會繼續有關工作，並會因應疫情及職場的情況作出適當跟進。

境外交流、實習及工作機會

9. 除了於香港授課外，職訓局亦安排其學生到境外參加各類型的交流、實習等活動，例如舉辦大灣區的交流及參觀活動，通過讓學生接觸區內不同機構，擴闊他們的眼界及就業機會。舉例而言，職訓局會協助及鼓勵學生參加每年與廣州民航職業技術學院合辦的飛機維修工程技能比賽、大連海事大學的培訓課程、參觀廣州飛機維修工程有限公司等，加深學生對香港以外的工作環境的認識。雖然有關境外的活動受疫情影響，但職訓局亦積極計劃更多相關活動，例如職訓局正籌劃安排學生參觀澳門的院校和機構，以更深入瞭解大灣區各城市的相關行業發展。

擬建教育中心可能造成的交通影響

10. 職訓局於2020年就項目委聘專業交通顧問進行交通影響評估。儘管教育中心將提供嶄新的培訓設施，為學生提供以往未能提供的實務訓練，但職訓局將透過重新安排課程及課堂等安排，確保未來於香港專業教育學院青衣分校校園上課的學生總數會與目前水平相若。故此，有關項目並不會增加前往該校園的學生人數，亦不會為該區帶來額外的交通流量，而對公共運輸服務的需求亦會維持於現有水平。交通顧問早前亦評估了教育中心運作後對路口容車量和行人的影響，結果指出鄰近所有的主要路口和行人路於繁忙時段的表現均令人滿意，而整體交通影響評估的結果總結出擬建發展不會對交通、行人網絡和公共運輸服務帶來負面影響。詳細交通影響評估載於**附件二**。

教育局局長

（吳肇基 代行）

2021年2月9日

附件一

職訓局現有和計劃開辦的航空及航海相關的課程

現有課程	課程性質	2020/21學年規劃入學人數	2020/21學年實際入學人數	2025/26學年規劃入學人數
航空				
飛機工程(榮譽)工學士(註 1)	職前資助課程	56	38	60
飛機維修工程高級文憑(註 1)	職前資助課程	120	112	125
飛機維修工程高級文憑	在職自資課程	56	不適用(註 2)	60
職專文憑(飛機維修)(註 1)	職前資助課程	50	62	90
職專文憑(飛機維修)	在職自資課程	28	不適用(註 2)	30
航空學高級文憑(註 1)	職前資助課程	60	44	90
航空及電子物流高級文憑	職前資助課程	30	24	80
航空服務及客運管理高級文憑(註 1)	職前資助課程	30	57	100
基礎課程文憑(航空)	在職自資課程	30	4	50
總數		**460**	**341**	**685**
航海				
機械工程學高級文憑(輪機選修科)	職前資助課程	不適用	8	30
海事科技高級文憑(註 1)	職前資助課程	60	43	45
初級全能海員證書	職前資助課程	80	28(註 2)	80
三級(甲板高級船員)(遠洋)適任證書培訓提	在職自資課程	22	19(註 2)	110

現有課程	課程性質	2020/21學年規劃入學人數	2020/21學年實際入學人數	2025/26學年規劃入學人數
升課程 (註 1)				
二/一級(甲板高級船員)(遠洋)適任證書培訓提升課程 (註 1)	在職自資課程	18	6 (註 2)	100
海事業高壓電力科技 (註 1)	在職自資課程	5	2	10
海事資源管理課程	在職自資課程	43	17 (註 2)	50
本地船舶三級輪機操作員(註 1)	在職自資課程	14	不適用 (註 2)	90
本地船舶二級輪機操作員(註 1)	在職自資課程	12	不適用 (註 2)	10
本地船舶三級船長 (註 1)	在職自資課程	58	21 (註 2)	180
本地船舶二級船長 (註 1)	在職自資課程	14	不適用 (註 2)	15
總數		**326**	**144**	**720**

註 1: 將於航空及航海教育中心進行實務訓練

註 2: 2020/21 學年稍後時間繼續收生

計劃開辦的課程	課程性質	2025/26 學年規劃入學人數
航空		
飛機維修技術及實務證書(註)	職前資助課程	28
飛機維修技術及實務證書	在職自資課程	28
航空營運專業文憑	在職自資課程	27
航空管理專業文憑	在職自資課程	27
總數		**110**
航海		
海事及遊艇科技高級文憑(註)	職前資助課程	30
職專文憑(海事)	職前資助課程	20
總數		**50**

註：將於航空及航海教育中心進行實務訓練

附件二

Vocational Training Council Proposed Aviation and Maritime Education Centre Tsing Yi

Traffic Impact Assessment Study
Final Report

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1 INTRODUCTION

1.1 Background

1.1.1 The Vocational Training Council (VTC) intend to redevelop the northern portion of the existing VTC Campus in Tsing Yi ("the VTC TY Campus") for an Aviation and Maritime Education Centre ("the Proposed AMEC") which will provide workshops, laboratories, teaching facilities, staff offices and associated facilities to support the training and manpower development of the aircraft and marine industries.

1.1.2 A Traffic Impact Assessment (TIA) Study had been undertaken in 2017 to assess the potential traffic impact to be induced by the Proposed AMEC and the findings reported in "Technical Study for Aircraft and Marine Engineering Centre at Tsing Yi Campus Traffic Impact Study (November 2017)" concluded that the local road network would be able to cope with the additional AMEC traffic.

1.1.3 Ozzo Technology (HK) Limited have been commissioned to review and update the Traffic Impact Assessment (TIA) Study based on the latest development parameters and taking into account the latest developments in the Study Area.

1.2 Study Objectives

1.2.1 The objectives of the TIA study are as follows:

- To review the existing traffic situation of the surrounding road network;
- To estimate the potential traffic generations/attractions to be induced by the Proposed AMEC;
- To assess the future traffic situation of the surrounding road network;
- To appraise the potential traffic impact of the Proposed AMEC on the surrounding road and pedestrian networks and to recommend improvement proposals, if required.

1.3 Report Structure

1.3.1 Following this introductory chapter, this report is arranged as follow:

- Chapter 2 describes the Proposed AMEC;
- Chapter 3 summarizes the existing traffic condition in the vicinity of the Proposed AMEC;
- Chapter 4 provides traffic forecast in the future design year and presents the traffic assessment results;
- Chapter 5 discusses the results of the pedestrian impact assessment and public transport review; and
- Chapter 6 summarizes the findings and conclusion of this study.

2 THE PROPOSED AMEC

2.1 Site Location and Study Area

2.1.1 **Figure 2-1** shows the location of the Proposed AMEC within the existing VTC Campus. At present, the VTC TY Campus comprises mainly of Hong Kong Institute of Vocational Education (Tsing Yi), Technological and Higher Education Institute of Hong Kong and Hall of Residence. As shown in the figure, the Proposed AMEC will be situated at the existing tennis courts situated at the northern portion of the VTC TY Campus.

2.1.2 **Figure 2-1** also shows the proposed Study Area for this TIA Study and which includes the key junctions in the vicinity of the Project Site.

2.2 The Proposed Development Schedule

2.2.1 Similar to the existing facilities in the VTC TY Campus, the proposed AMEC will provide workshops, laboratories, teaching facilities and associated facilities to support the training and manpower development of the aircraft and marine industries.

2.2.2 **Table 2-1** summarizes the number of student places and staff in the existing VTC Campus and with the new provisions upon completion of the Proposed AMEC.

Table 2-1 Numbers of Student and Staff Places at Existing and Future VTC Campus

	2020 VTC TY Campus(1)	VTC TY Campus with new AMEC
Full-Time Student Places	5,087	No change
Part-Time Student Places	2,567	No change
Full-Time Staff	629	No change
Part-Time Staff	318	No change
Overall Total	8,601	8,601

2.2.3 In 2020, there are a total of 7,654 student places (5,087 full-time and 2,567 part-time) and 947 staff members (629 full-time and 318 part-time) in the existing VTC TY Campus. The new AMEC can provide practical training to 1,000 students in each academic year. The numbers of these 1,000 students have been included in the overall total of 8,601 as indicated above because they come from the related programmes offered at the existing TY Campus.

2.3 Access Arrangements

2.3.1 **Figure 2-2** shows the vehicular and pedestrian access arrangements at the VTC TY Campus after the completion of the Proposed AMEC. In general, all the existing vehicular and pedestrian accesses at VTC TY Campus will be maintained.

2.4 Internal Transport Facilities

2.4.1 As the Proposed AMEC consists mainly of workshops and laboratories, the demand for car parking and loading/ unloading will be very small and can be shared with the existing facilities available in the existing VTC TY Campus. Hence, no parking and loading/unloading facility will be provided within the Proposed AMEC.

3 EXISTING TRAFFIC CONDITIONS

3.1 Existing Road Network

3.1.1 **Figure 2-1** shows the existing road network in the Study Area.

3.1.2 The Proposed AMEC can be accessed via Sai Shan Road which is a local road, in single-2 lane carriageway standards, providing accesses to nearby developments along the road. Sai Shan Road connects with Tsing Yi Road, a District Distributor road in dual-2 lane carriageway standards, which is a major north-south corridor in Tsing Yi Island.

3.1.3 The section of Tsing Yi Road in the vicinity of VTC TY Campus connects with Ching Hong Road, a Local Distributor road, to provide access to/from the west. Tsing Yi Road also links with Tsing Yi Bridge/ Kwai Tsing Road connecting Tsing Yi Island with Kwai Chung district and urban Kowloon.

3.2 Existing Public Transport Services

3.2.1 The area is well served by public transport services with both franchised bus and Green Minibus services. **Table 3-1** summarized the public transport services in the area and **Figure 3-1** shows the locations of the bus/GMB stops serving the area.

3.2.2 In addition, shuttle bus services providing connecting services between VTC TY Campus and MTR Kwai Fong Station and Tai Wai Station are available for VTC students and staff.

Table 3-1 Existing Public Transport Services in the Study Area

Route No.	Termination Points		Frequency (Mins)
Franchised Bus Services			
KMB 41	Tsing Yi (Cheung Ching Estate)	Kowloon City Ferry	Daily service every 25-35 mins
KMB 42	Tsing Yi (Cheung Hong Estate)	Shun Lee	Daily service every 15-25 mins
KMB 42A	Tsing Yi (Cheung Hang Estate)	Jordan (West Kowloon Station)	Daily service every 4-15 mins
KMB 43	Tsing Yi (Cheung Hong Estate)	Tsuen Wan West Station	Daily service every 8-20 mins
KMB 43A	Tsing Yi (Cheung Wang Estate)	Shek Lei (Tai Loong Street)	Daily service every 6-15 min
KMB 43C	Tsing Yi (Cheung Hong Estate)	Island Harbourview	Daily service every 12- 15 mins during AM and PM peak periods
KMB 43D	Tsing Yi (Cheung Wang Estate)	Kwai Shing	Two departures daily during AM peak hour
KMB 43M	Kwai Fong Station	Cheung Ching Circular)	Daily service every 12-20 mins

Route No.	Termination Points		Frequency (Mins)
KMB 241X	Tsing Yi (Cheung Ching Estate)	Ho Man Tin (Oi Man Estate)	One departure daily during AM peak hour
KMB 242X	Tsing Yi (Cheung Hang Estate)	Tsim Sha Tsui	Two departures daily during AM peak hour
KMB 243M	Tsing Yi (Mayfair Garden)	Tsuen Wan (Discovery Park)	Daily service every 10-15 mins
KMB 243P	Tsing Yi (Mayfair Garden)	Tsuen Wan (Discovery Park)	Two departures daily during AM peak hour
KMB 249M	Tsing Yi Station	Mayfair Garden (Circular)	Daily service every 7-15 mins
KMB 249X	Tsing Yi Station	Pok Hong	Daily service every 20-30 mins
XHT 948	Causeway Bay(Tin Hau)	Tsing Yi (Cheung On Estate)	Daily service every 8-30 mins
XHT 948A	Tsing Yi (Cheung On Estate)	Causeway Bay (Tin Hau)	Daily service every 5-20 mins during AM peak period
XHT 948B	Greenfield Garden	Causeway Bay (Tin Hau)	Two departures daily during AM peak hour
XHT 948X	Tsing Yi (Cheung Wang Estate)	Causeway Bay (Tin Hau)	Four departures daily during AM peak hour
LW A32	Kwai Chung Estate	Airport (Ground Transportation Centre)	Daily service every 20-30 mins
LW E32	Kwai Fong (South)	Asiaworld Expo	Daily service every 10-20 mins
GMB Services			
GMB 88C	Mayfair Gardens	Kwai Fong Station	Daily service every 6-12 mins
GMB 88D	Tivoli Garden	Kwai Fong Station	Daily service every 4-6 mins
GMB 88F	Rambler Crest	Tsing Yi Station	Daily service every 6-18 mins
GMB 88G	Rambler Crest	Kwai Fong Station	Daily service every 6-15 mins
GMB 88M	HK Untied Dockyards	Kwai Fong Station	Daily service every 6-15 mins
GMB 405	Cheung Hang Estate	Cho Yiu Chuen	Daily service every 10-20 mins during AM and PM peak periods
VTC Shuttle Bus Service			
-	VTC Tsing Yi Campus	MTR Kwai Fong Station	10 – 15 min
-	VTC Tsing Yi Campus	MTR Tai Wai Station	30 – 60 min

3.3 Existing Peak Hour Traffic Flows

3.3.1 Due to the outbreak of COVID-19 disease in 2020, the traffic conditions in the HKSAR territories are significantly affected as a result of the government preventive and control measures such as school break, suspension of school activities, home office practice, restriction or compulsory quarantine for people entering Hong Kong etc. Hence, reference is made to the traffic count data obtained in 2017[1], which were observed under normal traffic conditions and school activities, for subsequent analysis.

[1] "Technical Study for Aircraft and Marine Engineering Centre at Tsing Yi Campus Traffic Impact Study (November 2017)"

3.3.2 The traffic count surveys were undertaken at the key links and junctions in the Study Area of the Project Site during the AM and PM peak periods on a typical weekday in September 2017. **Figure 3-2** shows the locations of the surveyed key links and junctions. The AM and PM peak hours are identified to occur at 08:30 - 09:30 and 17:30 - 18:30 respectively and the 2017 observed peak hour traffic flows on the road network in the vicinity of the Project Site are shown in **Figure 3-3**.

3.3.3 The 2017 peak hour traffic flows are then adjusted to derive the 2020 traffic flows taking into account the historical traffic data in the vicinity of the Site as indicated in **Table 3-2**.

Table 3-2 Average Annual Daily Traffic from Annual Traffic Census

Station	Road	Between		2013	2014	2015	2016	2017	2018	Average Growth Rate p.a.
5653	Ching Hong Rd	Chung Mei Rd	Tsing Yi Rd	11,290	11,390	13,200	11,560	11,770	11,950	1.14%
				--	0.89%	15.89%	-12.42%	1.82%	1.53%	
6219	Kwai Tsing Rd & Tsing Yi S Bridge	Tsing Yi Rd	Kwai Tai Rd Interchange	47,000	44,770	46,950	41,880	40,920	42,080	-2.19%
				--	-4.74%	4.87%	-10.80%	-2.29%	2.83%	
5232	Tsing Yi Rd	Tsing Yi Heung Sze Wui Rd	Ching Hong Rd	18,980	20,560	20,950	21,530	21,920	19,550	0.59%
				--	8.32%	1.90%	2.77%	1.81%	-10.81%	
5852	Tsing Yi Heung Sze Wui Rd	Fung Shue Wo Rd Roundabout	Tsing Yi Rd	31,770	32,040	32,640	33,300	32,890	33,380	0.99%
				--	0.85%	1.87%	2.02%	-1.23%	1.49%	
5439	Tsing Yi Rd	Ching Hong Rd	Tsing Nam St	6,890	7,080	7,170	7,370	7,500	7,620	2.03%
				--	2.76%	1.27%	2.79%	1.76%	1.60%	
6113	Tsing Yi Rd	Tsing Yi Rd near Dow Chemical	Tsing Yi Hong Wan Rd	10,920	11,020	11,220	11,540	12,870	11,720	1.42%
				--%	0.92%	1.81%	2.85%	11.53%	-8.94%	
6112	Tsing Yi Hong Wan Rd	Tsing Yi Rd	Tsing Sheung Rd	18,770	18,930	19,280	19,820	20,750	25,970	6.71%
				--	0.85%	1.85%	2.80%	4.69%	25.16%	
Total				**145,620**	**145,790**	**151,410**	**147,000**	**148,620**	**152,270**	**0.90%**
				--	**0.12%**	**3.85%**	**-2.91%**	**1.10%**	**2.46%**	

Source: 2013-2018 Annual Traffic Census (ATC) Reports published by Transport Department

3.3.4 As indicated in the **Table 3-2**, an overall traffic growth of 0.9% per annum was recorded over the period of 2013-2018. However, to provide conservative estimates, it is proposed to apply the higher growth rate of +2.46% p.a. (i.e. the growth rate from 2017 to 2018) for deriving the 2020 peak hour Flows. By applying the annual growth rate (+2.46%) to the 2017 observed peak hour flows, the derived 2020 Peak Hour Traffic Flows are shown in **Figure 3-4**.

3.3.5 For reference, the peak hour performance of the key junctions based on the Derived 2020 peak hour flows are calculated and presented in **Table 3-3** with detailed calculation sheets presented in **Appendix A**.

Table 3-3 Peak Hour Junction Performances based on Derived 2020 Traffic Flows

Jn. ID.	Location	Type	Capacity Index(1)	AM Peak	PM Peak
J1	Tsing Yi Road / Sai Shan Road	Priority	DFC	0.57	0.49
J2	Tsing Yi Road / Ching Hong Road	Roundabout	DFC	0.47	0.43
J3	Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	Roundabout	DFC	0.56	0.50
J4	Tsing Yi Interchange	Roundabout	DFC	0.67	0.61
J5	Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	Roundabout	DFC	0.45	0.45

Notes: (1) The Capacity Index for Priority Junction and roundabout is Design Flow to Capacity Ratio (DFC)
- A DFC value less than 0.85 indicates that the junction is operating within acceptable level and a DFC greater than 1.0 indicates that the junction is overloaded.

4 FUTURE TRAFFIC SITUATION

4.1 Design Year

4.1.1 The planned operation year of the Proposed AMEC is 2025, hence, the "Design Year" for this TIA study is set as 2028, i.e. 3 years after the operation year.

4.2 Methodology

4.2.1 In forecasting the future traffic flows on the road network in the Study Area, references are made to the following sources of information which include:

- The forecast population and employment from the 2016-based Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department; and
- Planned and committed developments in the Study Area.

4.2.2 The following steps are undertaken to derive the 2028 Peak Hour Reference Flows (i.e. without the Proposed AMEC) and Design Flows (i.e. with the Proposed AMEC):

2028 Background Flows =	2020 Traffic Flows x annual growth factors
2028 Reference Flows =	2028 Background Flows + additional traffic generated by planned/committed developments
2028 Design Flows =	2028 Reference Flows

4.2.3 As mentioned in Section 2.2 and Table 2-1, it is noted that the Proposed AMEC will not increase the total number of students / staff in the VTC TY Campus and hence would not induce additional traffic and pedestrian flows upon operation of the Proposed AMEC development. As a result, the 2028 Design Flows (i.e. with the AMEC) would be the same as the 2028 Reference Flows (without the AMEC development) as the latter scenario has already included the traffic flows generated by the existing VTC TY Campus.

4.2.4 The traffic impact of the VTC TY Campus with the Proposed AMEC is then assessed based on the 2028 Peak Hour Design Traffic Flows.

4.3 2028 Background Traffic Flows

4.3.1 To estimate the 2028 Background Traffic Flows, reference is made to the 2016-based Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department. **Table 4-1** presents the population and employment data in Kwai Tsing District for 2016, 2021 and 2026.

Table 4-1 2016-Based TPEDM in Kwai Tsing District

Category	2016	2021	2026	Annual Growth Rate	
				2016-2021	2021-2026
Population	184,150	181,350	186,700	-0.31%	0.58%
Employment Places	37,500	39,150	39,250	0.86%	0.05%

Source: 2016, 2021 & 2026 population and employment places are extracted from 2016-based TPEDM published by Planning Department (Dec 2019).

4.3.2 As shown in the table, the predicted population and employment growth in Kwai Tsing District is approximately +0.58% and +0.05% per annum respectively from 2021 to 2026. To provide conservative estimates, it is proposed to adopt the higher annual growth rate of +0.58% for estimating the 2028 Background Traffic Flows. By applying the proposed growth rate (+0.58% p.a.) to the 2020 peak hour flows, the forecast 2028 Background Traffic Flows are calculated and presented in **Figure 4-1**.

4.4 2028 Reference / Design Traffic Flows

4.4.1 According to the published information from Town Planning Board, there are three planned/committed developments in the vicinity of the Project Site and these are:

- Hong Kong Housing Authority – Public Housing Development at Ching Hong Road North, Tsing Yi [Planned Completion Year: 2023-2028 by phases]
- Hong Kong Housing Authority – Public Housing Development at Tsing Hung Road, Tsing Yi [Planned Completion Year: 2022/23]
- Proposed Residential Development at Tsing Yi Town Lot No. 190 [Planned Completion Year: 2022].

4.4.2 The locations of the above developments are shown in **Figure 4-2**.

4.4.3 The additional peak hour traffic to be generated by the new developments are estimated based on the respective trip rates in TPDM as indicated in **Table 4-2** and the resulting peak hour trip generations are shown in **Table 4-3**.

Table 4-2 Peak Hour Trip Rates for Planned/ Committed Developments

Development Density / OZP Zoning	unit	AM Peak Hour		PM Peak Hour	
		Out	In	Out	In
Subsidised Housing: Public Rental Average Flat Size 40m²	pcu/hr/flat	0.0432	0.0326	0.0237	0.0301
Retail / Shopping Complex (Office + Retail)	pcu/hr/100m²	0.2296	0.2434	0.3100	0.3563
Private Housing: High-Density / R(A) Average Flat Size 60m²	pcu/hr/flat	0.0718	0.0425	0.0286	0.0370

Source: TPDM Vol.1 Chapter 3, Annex D, Table 1 and Table 2

Table 4-3 Estimated Peak Hour Trip Generations by Planned/ Committed Developments

Location	Land Use	AM Peak Hour		PM Peak Hour	
		Out	In	Out	In
Public Housing Development at Ching Hong Road North, Tsing Yi(1)	Public Rental Housing (3,200 flats)	138	104	76	96
	Retail (2,000 m² GFA)	5	5	6	7
Public Housing Development at Tsing Hung Road, Tsing Yi(1)	Public Rental Housing (2,868 flats)	124	93	68	86
	Retail (1,600m² GFA)	4	4	5	6
Proposed Residential Development at Tsing Yi Town Lot No. 190(2)	Private Housing (766 flats)	56	33	22	29
	Total	**327**	**239**	**177**	**224**

Source: (1) Development parameters from Housing Department Planning Brief published by Planning Department (Jan 2020)
(2) Development parameter published by Lands Department (Apr 2019)

4.4.4 The additional development flows in **Table 4-4** are then added to the 2028 Peak Hour Background Traffic (**Figure 4-1**) to derive the 2028 Peak Hour Reference Traffic Flows.

4.4.5 As mentioned in Paragraph 4.2.2 and 4.2.3, the 2028 Design Flows would be the same as the Reference Flows since no additional traffic would be generated by the Proposed AMEC. The resulting 2028 Design Flows are shown in **Figure 4-3**.

4.5 2028 Junction Capacity Assessments

4.5.1 Based on the 2028 Design Flows, junction capacity assessments are undertaken and the results are presented in **Table 4-4** with detailed calculation sheets provided in **Appendix B**.

Table 4-4 2028 Peak Hour Performance at Key Junctions

Jn. ID.	Location	Type	Capacity Index(1)	AM Peak	PM Peak
J1	Tsing Yi Road / Sai Shan Road	Priority	DFC	0.67	0.56
J2	Tsing Yi Road / Ching Hong Road	Roundabout	DFC	0.54	0.49
J3	Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	Roundabout	DFC	0.69	0.56
J4	Tsing Yi Interchange	Roundabout	DFC	0.76	0.67
J5	Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	Roundabout	DFC	0.49	0.49

Notes: (1) The Capacity Index for Priority Junction and roundabout is Design Flow to Capacity Ratio (DFC)
- A DFC value less than 0.85 indicates that the junction is operating within acceptable level and a DFC greater than 1.0 indicates that the junction is overloaded.

4.5.2 The results show that the key junctions in the Study Area would operate within capacity during both the AM and PM peak hours in 2028 for the Design scenario (i.e. with Proposed AMEC). The proposed AMEC development would not create adverse traffic impact because the proposed development would not induce additional traffic.

5 PEDESTRIAN IMPACT ASSESSMENT AND PUBLIC TRANSPORT REVIEW

5.1 Pedestrian Impact Assessment

5.1.1 Similar to vehicular traffic, as the overall nos. of students/ staff will not be increased, the peak hour pedestrian trips observed at the existing VTC TY campus in 2017 are adopted for assessing the level of services (LOS) of various pedestrian facilities within the campus with the Proposed AMEC. **Table 5-1** shows the observed peak-15 minutes pedestrian flows at the main pedestrian links near the Proposed AMEC and the locations of the concerned pedestrian links are shown in **Figure 2-2**.

Table 5-1 Observed Peak-15 Minute Pedestrian Trips at VTC TY Campus

ID	Location	AM Peak 15-min Flows			PM Peak 15-min Flows		
		Out	In	Total	Out	In	Total
P1	Covered Staircase	1	206	207	512	34	546
P2	Main Access to VTC Campus	0	104	104	83	33	116
P3	Access to Indoor Carpark	1	25	26	23	5	28
P4	Access to Internal Access Road	6	8	14	22	4	26
Total		**8**	**343**	**351**	**640**	**76**	**716**

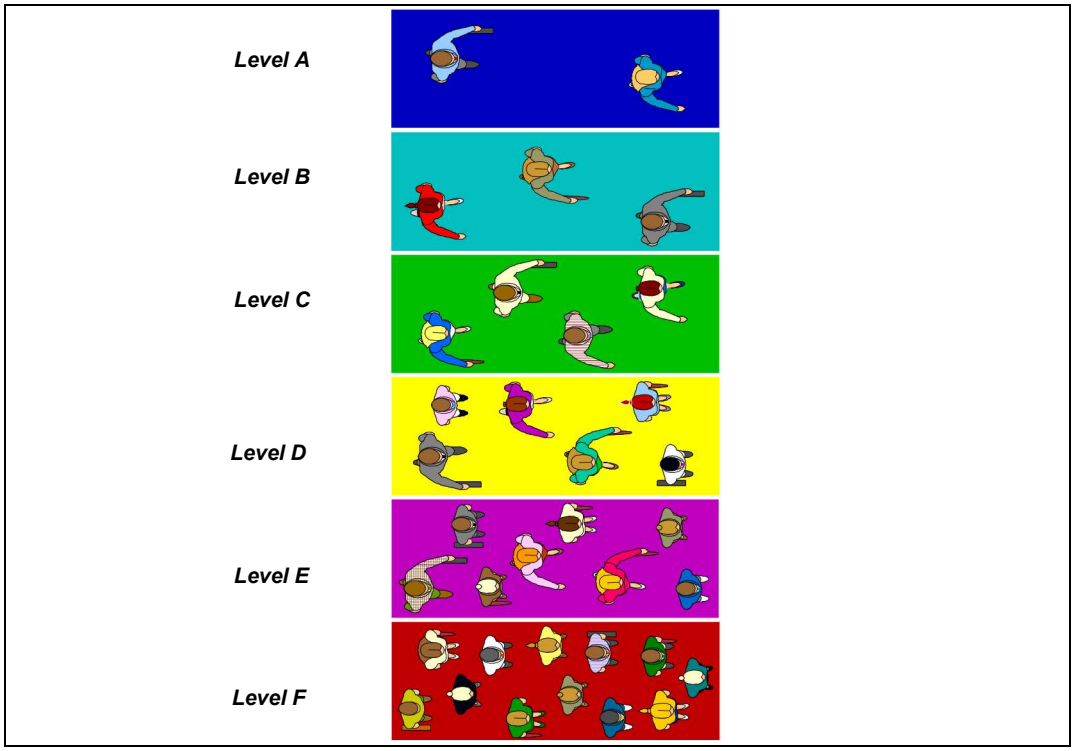
Source: Technical Study for Aircraft and Marine Engineering Centre at Tsing Yi Campus Traffic Impact Study (November 2017), Table 6.1
Notes: (1) refer to Figure 2-2 for locations of pedestrian links.

5.1.2 The performances of footpaths P2, P3 and P4 are assessed based on the Level of Service (LOS) method in accordance with the Transport Planning and Design Manual (Chapter 10.4.2, Volume 6). The definitions of different level of LOS on footpaths are described in **Table 5-2** and shown graphically in **Exihit-1**.

Table 5-2 Description of Level-of-Service (LOS) on Footpaths

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

Exhibit-1 Graphical Presentation of Level of Service (LOS)



5.1.3 The performance of stairs P1 is assessed with reference to the guidelines in Highway Capacity Manual 2010 and as described in **Table 5-3**.

Table 5-3 Description of Level-of-Service (LOS) for Stairs

LOS	Flow Rate (ped/min/m)	Description
A	≤ 16	Sufficient area is provided to freely select locomotion speed, and to bypass other slower-moving pedestrians. No serious difficulties would be experienced with reverse traffic flows.
B	16 – 20	Lower range of area occupancy, some difficulties would be experienced in passing slower pedestrians. Reverse flows would cause minor traffic conflicts.
C	20 – 26	Locomotion speeds would be restricted slightly, due to an inability to pass slower-moving pedestrians. Minor reverse traffic flows would encounter some difficulties.
D	26 – 36	Locomotion speeds are restricted for the majority of persons, due to the limited open tread space and an inability to bypass slower-moving pedestrians. Reverse flows would encounter significant difficulties and traffic conflict.
E	36 – 49	Virtually all persons would have their normal locomotion speeds reduced, because of the minimum tread length, space and inability to bypass others, intermittent stoppages are likely to occur. Reverse traffic flows would experience serious conflict.
F	> 49	Completed breakdown in traffic flow, with many stoppages.

5.1.4 The LOS of P1, P2, P3 and P4 for the future VTC Campus with the Proposed AMEC are assessed and the results are indicated in **Table 5-4**.

Table 5-4 Level of Services (LOS) Assessment Results

Location[2]	Effective Width[1]	AM Peak Hour			PM Peak hour		
		Peak 15-min 2-way Flow	Flow Rate (ped/min/m)	LOS	Peak 15-min 2-way Flow	Flow Rate (ped/min/m)	LOS
P1	4.3	207	3.2	A	546	8.5	A
P2	3.3	104	2.1	A	116	2.3	A
P3	3.0	26	0.6	A	28	0.6	A
P4	0.6	14	1.6	A	26	2.9	A

Notes: (1) Effective width = Actual width minus 1.0m shy zone
(2) Refer to Figure 2-2 for location of pedestrian link

5.1.5 The results indicate that LOS A could be achieved at all the concerned footpaths for both the AM and PM peak hours, i.e. indicating that the pedestrian links have sufficient capacity to accommodate the pedestrian flows with the Proposed AMEC.

5.2 Public Transport Review

5.2.1 At present, around 65% of the students adopt public transport services, including franchised bus and minibus services, to access the VTC TY Campus. Since the Proposed AMEC will not generate additional students, the demand for public transport services after the operation of the Proposed AMEC would be similar to the existing situation, i.e. no additional public transport services would be required.

6 SUMMARY AND CONCLUSIONS

6.1 Summary

6.1.1 The Vocational Training Council (VTC) intend to redevelop the northern portion of the existing VTC campus in Tsing Yi for an Aviation and Maritime Education Centre (AMEC) which will provide workshops, laboratories, teaching facilities, staff offices and associated facilities to provide practical training for 1000 nos. of students who come from the related programmes offered at the TY Campus in each academic year, i.e. the Proposed AMEC will not generate additional students/ staff.

6.1.2 Ozzo Technology (HK) Limited are commissioned to undertake this Traffic Impact Assessment (TIA) Study to assess the traffic impact on the nearby road network after the completion of the Proposed AMEC in 2025.

6.1.3 The Project Site is well served by public transport, including franchised bus, GMB services and VTC shuttle bus services. Due to the abnormal traffic conditions in the territory as a result of the outbreak of coronavirus diseases, reference is made to traffic and pedestrian data obtained in 2017, in which school activities are normal, as the basis for estimating the future traffic.

6.1.4 The planned completion for the Proposed Development is 2025 and hence the “Design Year” for this study is set as 2028, i.e. 3 years after the completion year. The 2028 Background Traffic Flows are estimated taking into account the historical trend of traffic growth in the area and the forecast development intensity in the area.

6.1.5 The peak hour trips to be generated by the planned and committed developments are added to the 2028 Peak Hour Background Flows to derive the 2028 Peak Hour Reference Flows (i.e. without the Proposed Development). Since the Proposed AMEC will not increase the no. of students/staff in the VTC TY Campus, no additional traffic would therefore be generated by the Proposed AMEC, the 2028 Peak Hour Design Flows (i.e. with the Proposed Development) will be the same as the 2028 Reference Flows.

6.1.6 Junction Capacity assessments are undertaken based on the 2028 Peak Hour Design Flows (i.e. with the Proposed AMEC). The assessment results indicate that all the key junctions in the vicinity of the proposed development would perform satisfactorily during the AM and PM peak periods.

6.1.7 Pedestrian impact assessments are also undertaken to assess the performance of the stairs and footpaths at the accesses to VTC campus. The results of the assessments indicate that the concerned stairs and footpaths would perform satisfactorily with sufficient spare capacity during the peak hour with the operation of the Proposed AMEC.

6.1.8 Since the Proposed AMEC will not generate additional students, the demand for public transport services after the operation of the Proposed AMEC would be similar to the existing situation, i.e. no additional public transport services would be required.

6.2 Conclusions

6.2.1 In view of the traffic impact assessment results, it is concluded that the Proposed AMEC Development would not create adverse impact on the surrounding road network and public transport services.

Figures

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Scale 1:5000

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

Site Location and Study Area

VTC

Project No. 81882

Dwg No. Figure 2-1

Rev. -

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P4
P3
P1
P2
Tsing Sha Highway
TSING SHA HIGHWAY
Tsing Yi Road
TSING YI ROAD
Sai Sham Road
TSING HUNG ROAD
Hong Kong Institute of Vocational Education (Tsing Yi)
Technological and Higher Education Institute of Hong Kong
VTC Ching Yi Halls of Residence
Assembly Hall
Basketball Court
Tennis Court
Mayfair Gardens
SAI SHAN
WIP Jan 2019
WIP Mar 2019
0 15 30 45 60

Legend:

- VTC Campus
- Proposed Aviation and Maritime Education Centre (AMEC)
- Vehicular Access
- Pedestrian Access

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Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

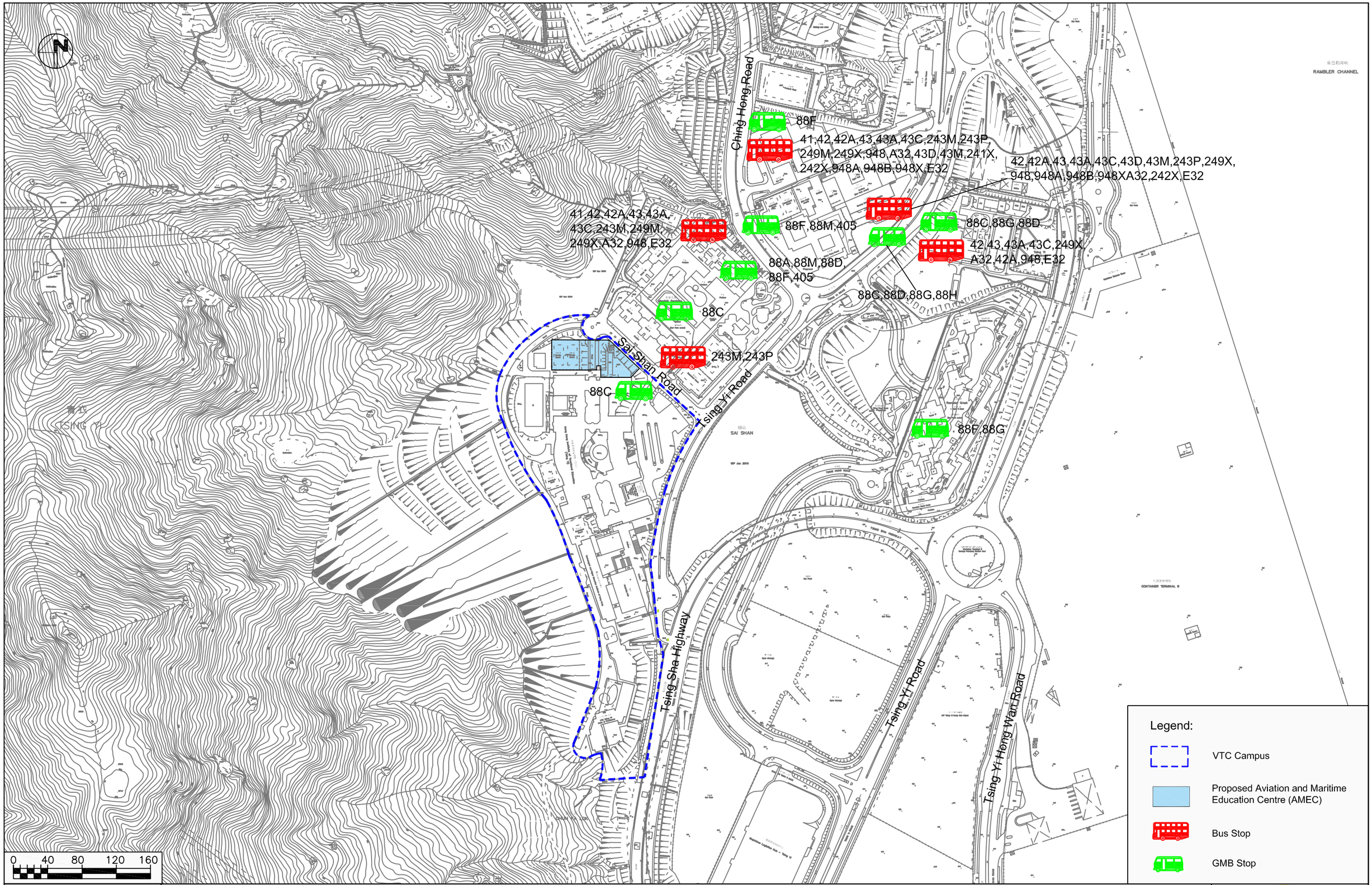
Existing Vehicular and Pedestrian Access Arrangement

VTC

Project No. 81882

Rev. -

Dwg No. Figure 2-2



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Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

Existing Public Transport Inventory

VTC

Project No. 81882

Dwg No. Figure 3-1

Rev. -

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

Locations of The Surveyed Junctions

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VTC

Project No. 81882

Dwg No. Figure 3-2

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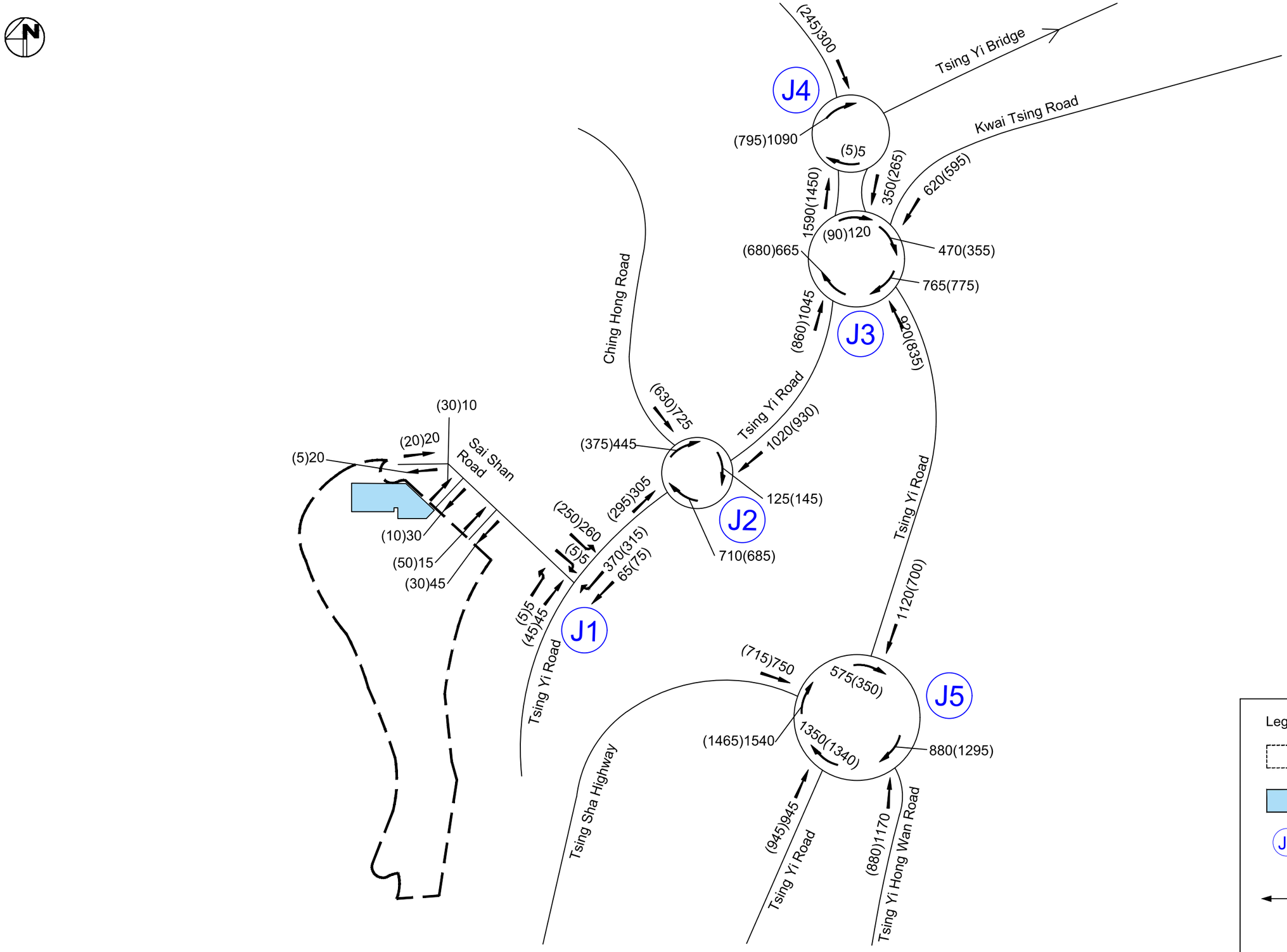

Legend:

- VTC Campus
- Proposed Aviation and Maritime Education Centre (AMEC)
- J1 — Surveyed Junction
- 123(123) — AM Peak Hour Traffic Flows / PM Peak Hour Traffic Flows

Note: Traffic Flows at Junction in PCU values
Minor Road not shown for Clarity

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Scale N.T.S

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

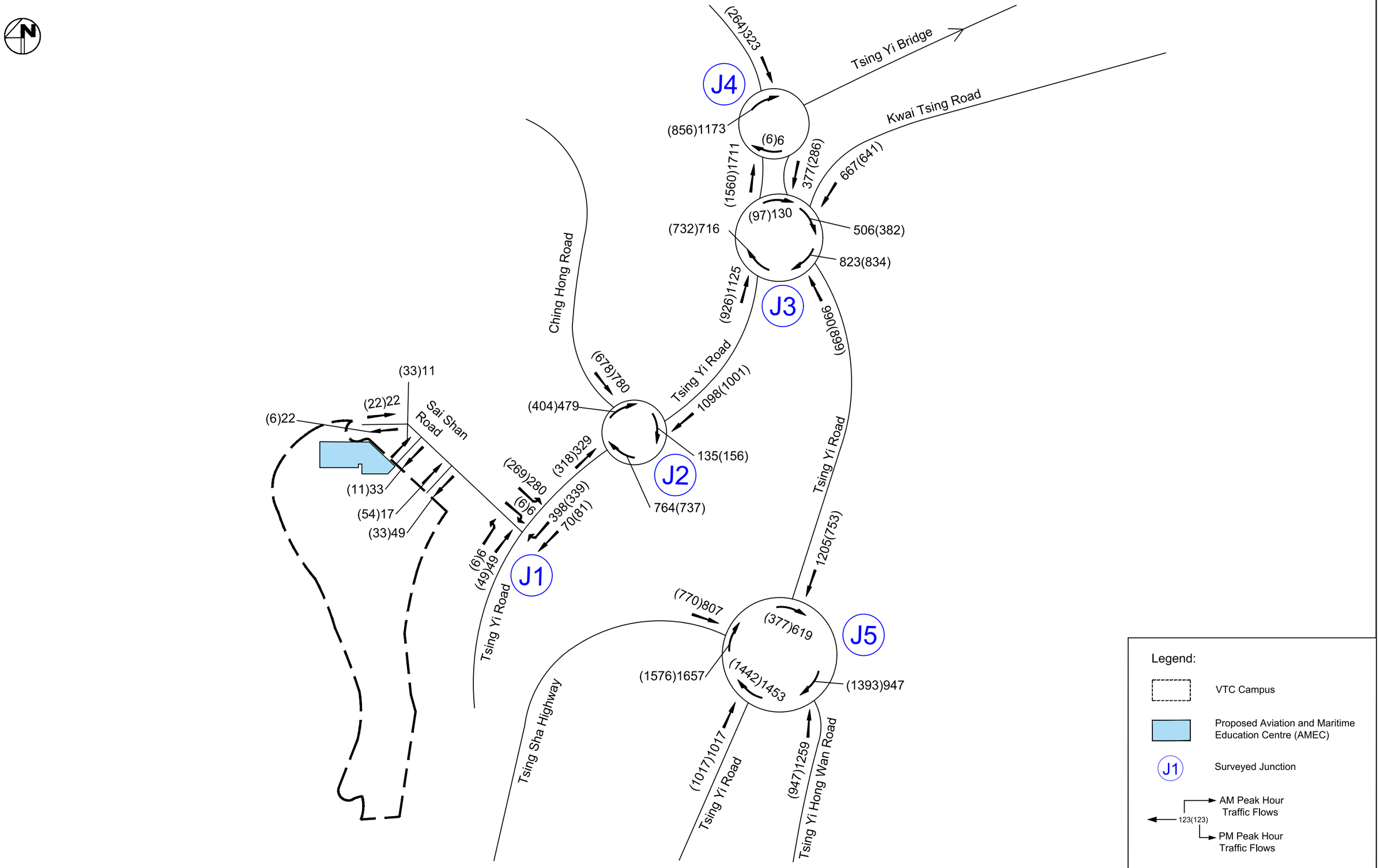
2017 Observed Peak Hour Traffic Flows

VTC

Project No. 81882

Rev. A

Dwg No. Figure 3-3



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Scale N.T.S

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

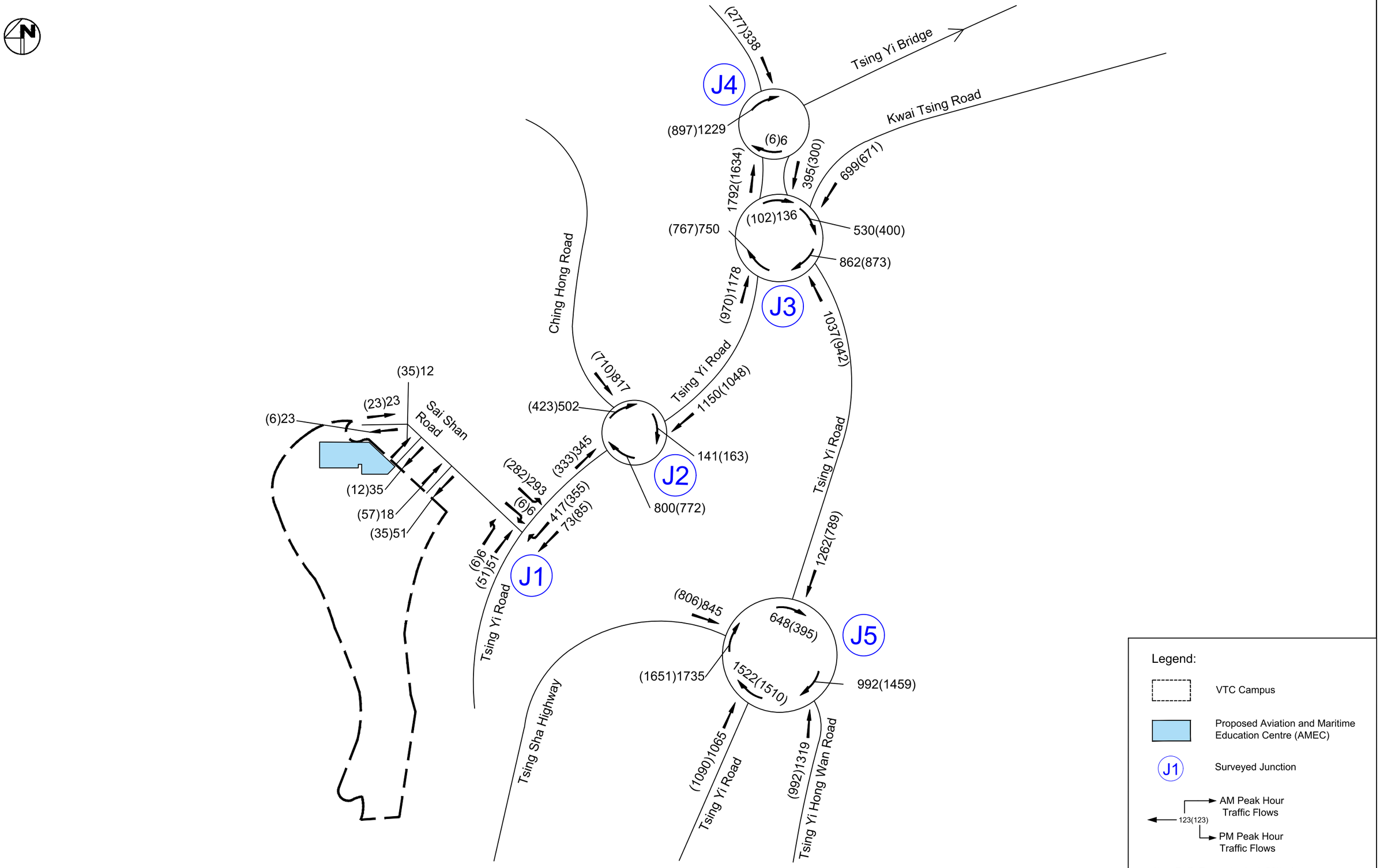
2020 Derived Peak Hour Traffic Flows

VTC

Project No. 81882

Rev. -

Dwg No. Figure 3-4



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Scale N.T.S

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

2028 Background Peak Hour Traffic Flows

VTC

Project No. 81882

Rev. A

Dwg No. Figure 4-1

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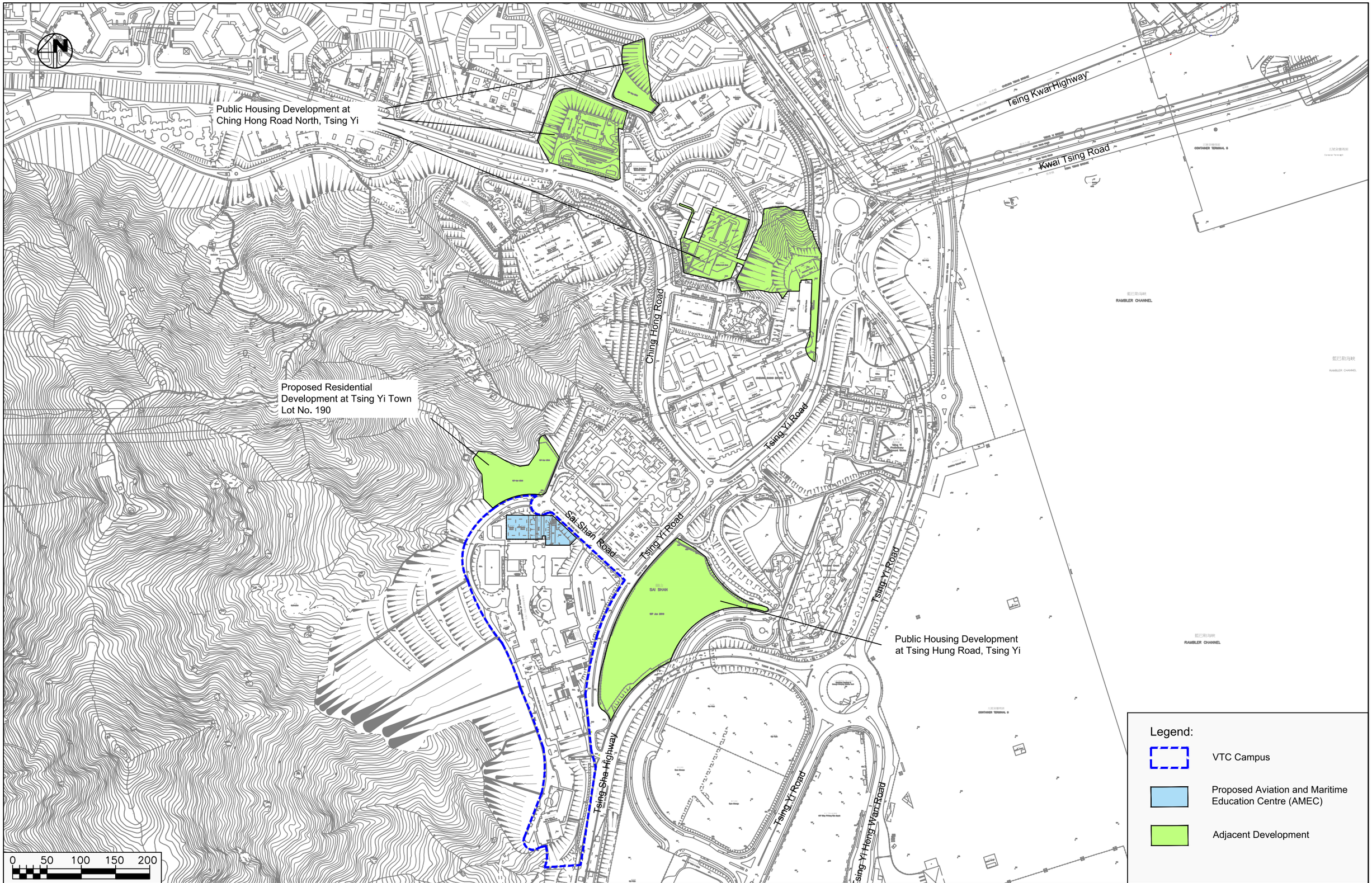

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Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

Location of Planned / Committed Developments

VTC

Project No. 81882

Dwg No. Figure 4-2

Rev. -

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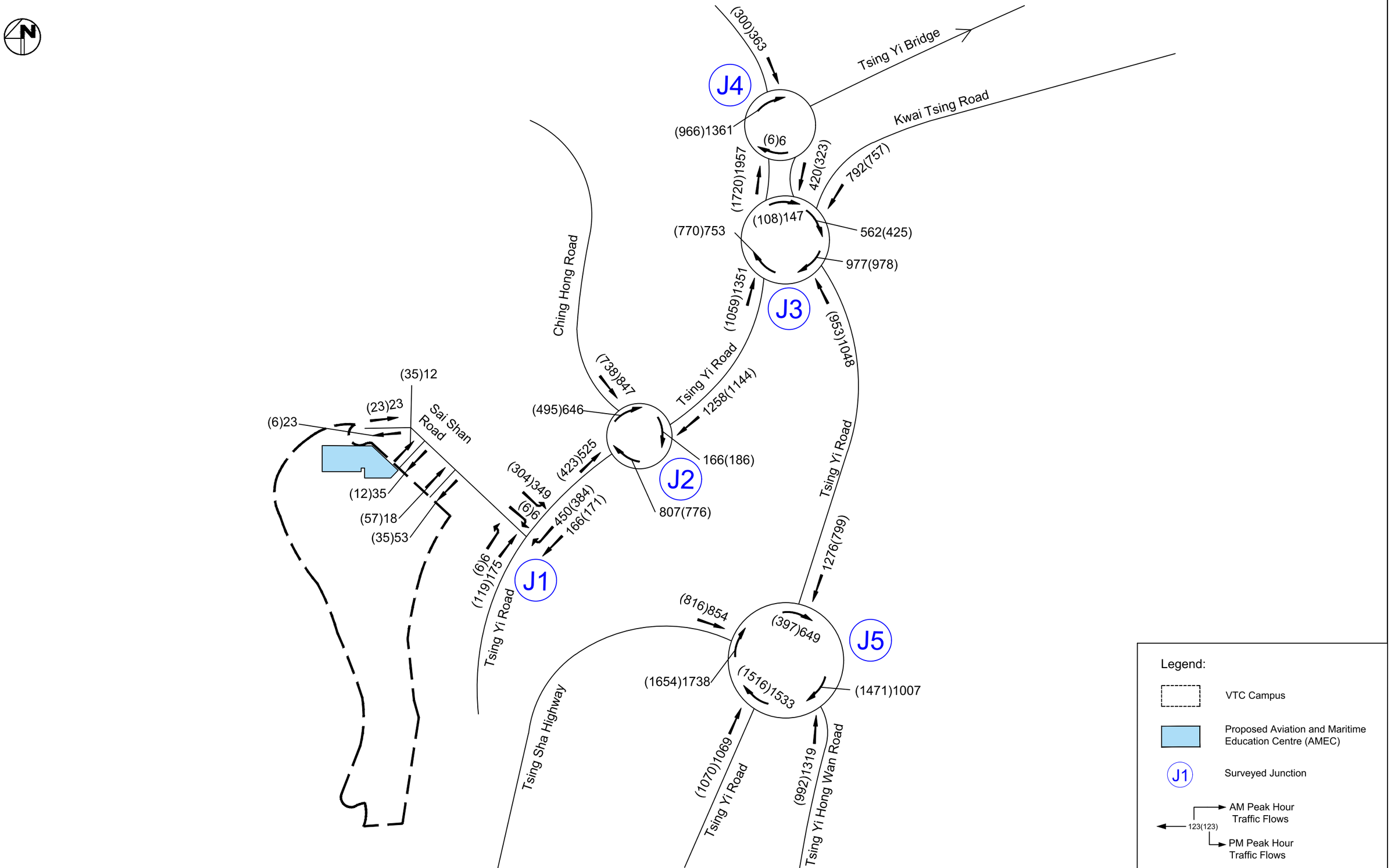

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Scale N.T.S

Traffic Impact Assessment Study for Aviation and Maritime Education Centre at VTC Campus (Tsing Yi)

2028 Design Peak Hour Traffic Flows

VTC

Project No. 81882

Dwg No. Figure 4-3

Rev. A

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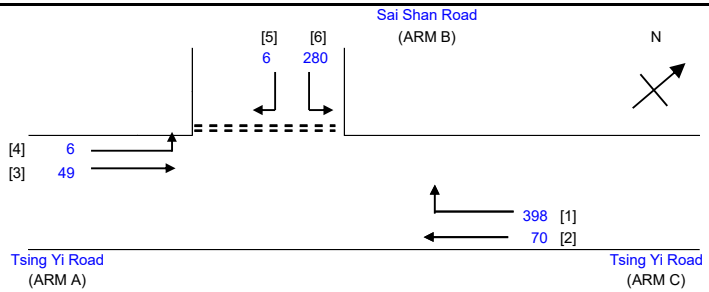
Appendix A

2020 Junction Calculation Sheets

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J1: Tsing Yi Road / Sai Shan Road	**2020AM**	FILENAME :	CHECKED BY:	MM
2020 Derived AM Peak Hour Traffic Flow		J1 TsingYiRd_SaiShaRd_P.xls	REVIEWED BY:	OC



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	14.4	(metres)
W cr	=	2	(metres)
q a-b	=	6	(pcu/hr)
q a-c	=	49	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.7	(metres)
Vr c-b	=	53.5	(metres)
q c-a	=	70	(pcu/hr)
q c-b	=	398	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.6	(metres)
W b-c	=	3.6	(metres)
Vl b-a	=	95.3	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	6	(pcu/hr)
q b-c	=	280	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9449497
E	=	0.9770154
F	=	0.9423142
Y	=	0.502855
F for (Qb-ac)	=	0.979021

THE CAPACITY OF MOVEMENT :

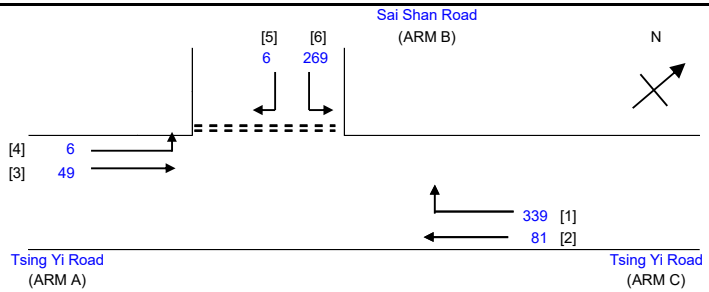
Q b-a	=	504	
Q b-c	=	719	
Q c-b	=	693	
Q b-ac	=	712.6	
TOTAL FLOW	=	803	(PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0119
DFC c-b	=	0.5743

CRITICAL DFC = 0.57

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION		INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi	PROJECT NO.: 81882	PREPARED BY:	LL
J1: Tsing Yi Road / Sai Shan Road	**2020PM**	CHECKED BY:	MM
2020 Derived PM Peak Hour Traffic Flow	FILENAME : J1 TsingYiRd_SaiShaRd_P.xls	REVIEWED BY:	OC



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	14.4	(metres)
W cr	=	2	(metres)
q a-b	=	6	(pcu/hr)
q a-c	=	49	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.7	(metres)
Vr c-b	=	53.5	(metres)
q c-a	=	81	(pcu/hr)
q c-b	=	339	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.6	(metres)
W b-c	=	3.6	(metres)
Vl b-a	=	95.3	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	6	(pcu/hr)
q b-c	=	269	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9449497
E	=	0.9770154
F	=	0.9423142
Y	=	0.502855
F for (Qb-ac)	=	0.9781818

THE CAPACITY OF MOVEMENT :

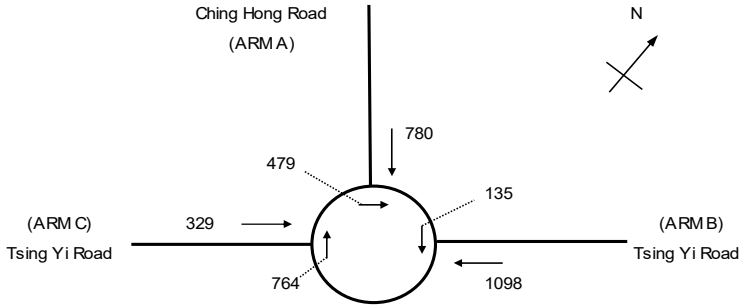
Q b-a	=	517	
Q b-c	=	719	
Q c-b	=	693	
Q b-ac	=	712.9	
TOTAL FLOW	=	744	(PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0116
DFC c-b	=	0.4892

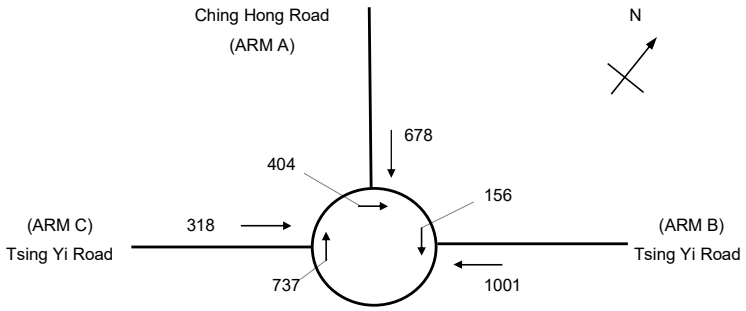
CRITICAL DFC = 0.49

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J2: Tsing Yi Road / Ching Hong Road Roundabout	2020AM	FILENAME :	CHECKED BY:	MM
2020 Derived AM Peak Hour Traffic Flow		J2 TsingYiRd_ChingHongRd_R.xls	REVIEWED BY:	OC



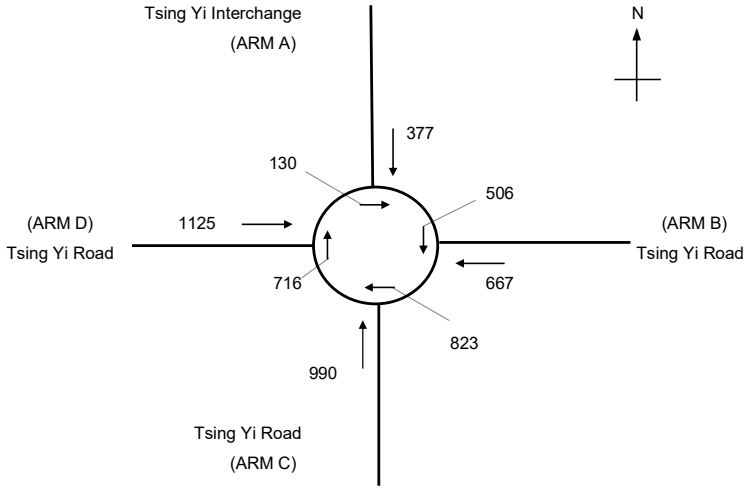
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.0	7.2	5.0	0.0			
E	=	Entry width (m)	7.6	8.7	9.2	0.0			
L	=	Effective length of flare (m)	3.4	5.8	14.7	0.0			
R	=	Entry radius (m)	23.1	24.3	24.1	0.0			
D	=	Inscribed circle diameter (m)	30.0	30.0	30.0	0.0			
A	=	Entry angle (degree)	10.0	28.0	20.0	0.0			
Q	=	Entry flow (pcu/h)	780	1098	329	0			
Qc	=	Circulating flow across entry (pcu/h)	479	135	764	0			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.42	0.45	0.00			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.08	1.02	1.04	0.00			
X2	=	V + ((E-V)/(1+2S))	7.39	8.02	7.22	0.00			
M	=	EXP((D-60)/10)	0	0	0	0			
F	=	303*X2	2240	2429	2188	0			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48	0.00			
Fc	=	0.21*Td(1+0.2*X2)	0.77	0.81	0.76	0.00			
Qe	=	K(F-Fc*Qc)	2014	2357	1678	0	Total In Sum =	2207	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.39	0.47	0.20	0.00	DFC of Critical Approach =	0.47	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J2: Tsing Yi Road / Ching Hong Road Roundabout	2020PM	FILENAME :	CHECKED BY:	MM
2020 Derived PM Peak Hour Traffic Flow		J2 TsingYiRd_ChingHongRd_R.xls	REVIEWED BY:	OC



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.0	7.2	5.0	0.0			
E	=	Entry width (m)	7.6	8.7	9.2	0.0			
L	=	Effective length of flare (m)	3.4	5.8	14.7	0.0			
R	=	Entry radius (m)	23.1	24.3	24.1	0.0			
D	=	Inscribed circle diameter (m)	30.0	30.0	30.0	0.0			
A	=	Entry angle (degree)	10.0	28.0	20.0	0.0			
Q	=	Entry flow (pcu/h)	678	1001	318	0			
Qc	=	Circulating flow across entry (pcu/h)	404	156	737	0			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.42	0.45	0.00			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.08	1.02	1.04	0.00			
X2	=	V + ((E-V)/(1+2S))	7.39	8.02	7.22	0.00			
M	=	EXP((D-60)/10)	0	0	0	0			
F	=	303*X2	2240	2429	2188	0			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48	0.00			
Fc	=	0.21*Td(1+0.2*X2)	0.77	0.81	0.76	0.00			
Qe	=	K(F-Fc*Qc)	2076	2340	1699	0	Total In Sum =	1997	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.43	0.19	0.00	DFC of Critical Approach =	0.43	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J3: Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	**2020AM**	FILENAME :	CHECKED BY:	MM
2020 Derived AM Peak Hour Traffic Flow		J3 TsingYiRd_TsingYi INT_R.xls	REVIEWED BY:	OC

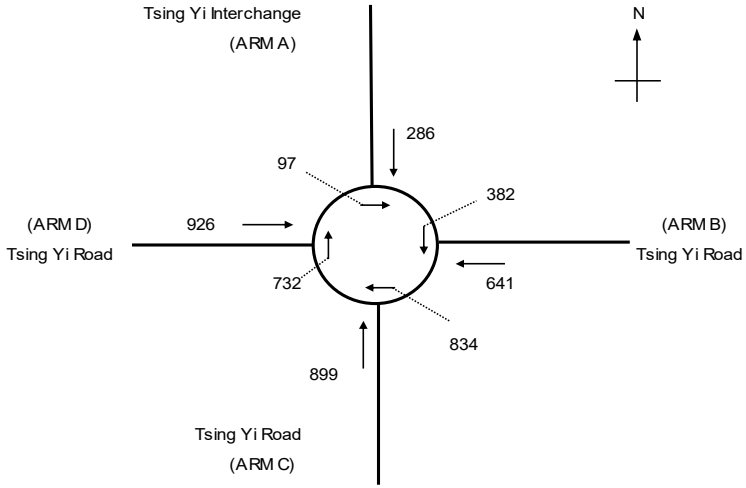


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.5	7.2	7.8	7.5
E	=	Entry width (m)	10.3	10.1	11.4	9.3
L	=	Effective length of flare (m)	5.9	5.0	6.2	3.2
R	=	Entry radius (m)	21.5	43.4	10.2	33.7
D	=	Inscribed circle diameter (m)	60.0	60.0	60.0	60.0
A	=	Entry angle (degree)	34.0	32.0	60.0	33.0
Q	=	Entry flow (pcu/h)	377	667	990	1125
Qc	=	Circulating flow across entry (pcu/h)	130	506	823	716
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.77	0.93	0.93	0.92
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.02	0.85	1.01
X2	=	V + ((E-V)/(1+2S))	8.58	8.23	9.02	8.15
M	=	EXP((D-60)/10)	1	1	1	1
F	=	303*X2	2600	2494	2733	2469
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.71	0.69	0.74	0.69
Qe	=	K(F-Fc*Qc)	2481	2184	1807	1994
DFC	=	Design flow/Capacity = Q/Qe	0.15	0.31	0.55	0.56

Total In Sum = 3159 PCU

DFC of Critical Approach = 0.56

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J3: Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	**2020PM**	FILENAME :	CHECKED BY:	MM
2020 Derived PM Peak Hour Traffic Flow		J3 TsingYiRd_TsingYi INT_R.xls	REVIEWED BY:	OC

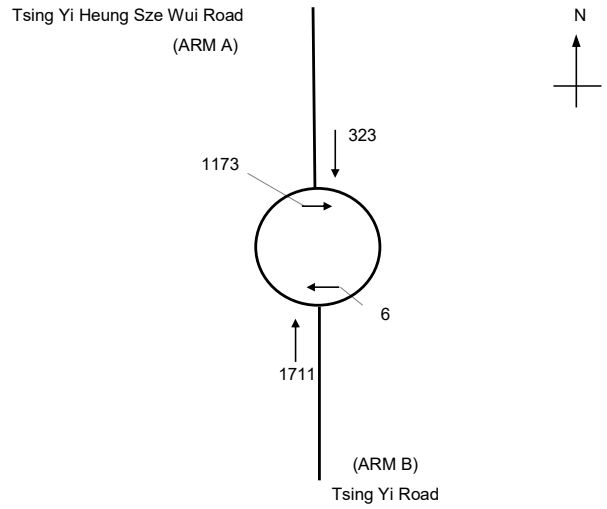


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.5	7.2	7.8	7.5
E	=	Entry width (m)	10.3	10.1	11.4	9.3
L	=	Effective length of flare (m)	5.9	5.0	6.2	3.2
R	=	Entry radius (m)	21.5	43.4	10.2	33.7
D	=	Inscribed circle diameter (m)	60.0	60.0	60.0	60.0
A	=	Entry angle (degree)	34.0	32.0	60.0	33.0
Q	=	Entry flow (pcu/h)	286	641	899	926
Qc	=	Circulating flow across entry (pcu/h)	97	382	834	732
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.77	0.93	0.93	0.92
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.02	0.85	1.01
X2	=	V + ((E-V)/(1+2S))	8.58	8.23	9.02	8.15
M	=	EXP((D-60)/10)	1	1	1	1
F	=	303*X2	2600	2494	2733	2469
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.71	0.69	0.74	0.69
Qe	=	K(F-Fc*Qc)	2504	2272	1800	1983
DFC	=	Design flow/Capacity = Q/Qe	0.11	0.28	0.50	0.47

Total In Sum = 2752 PCU

DFC of Critical Approach = 0.50

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J4: Tsing Yi Interchange	**2020AM**	FILENAME :	CHECKED BY:	MM
2020 Derived AM Peak Hour Traffic Flow		TsingYiRd_TsingYiHeungSzeWuiRd_R.xls	REVIEWED BY:	OC

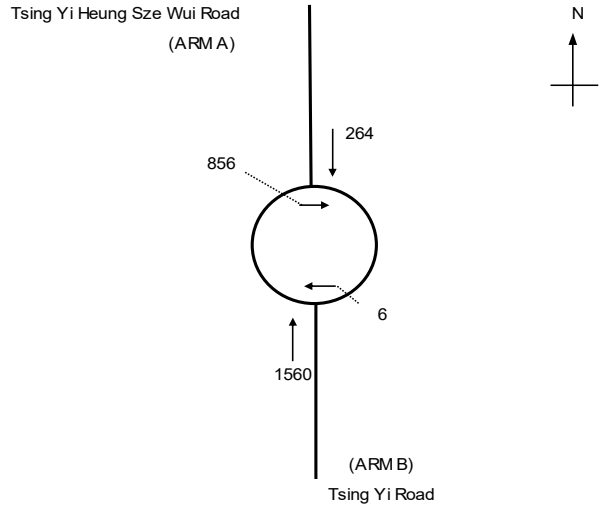


ARM			A	B
INPUT PARAMETERS:				
V	=	Approach half width (m)	5.8	7.4
E	=	Entry width (m)	9.2	8.7
L	=	Effective length of flare (m)	4.8	7.1
R	=	Entry radius (m)	18.1	44.5
D	=	Inscribed circle diameter (m)	60.0	60.0
A	=	Entry angle (degree)	45.0	29.0
Q	=	Entry flow (pcu/h)	323	1711
Qc	=	Circulating flow across entry (pcu/h)	1173	6
OUTPUT PARAMETERS:				
S	=	Sharpness of flare = 1.6(E-V)/L	1.14	0.30
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.94	1.03
X2	=	V + ((E-V)/(1+2S))	6.87	8.23
M	=	EXP((D-60)/10)	1	1
F	=	303*X2	2081	2494
Td	=	1+(0.5/(1+M))	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.69
Qe	=	K(F-Fc*Qc)	1273	2565
DFC	=	Design flow/Capacity = Q/Qe	0.25	0.67

Total In Sum = 2034 PCU

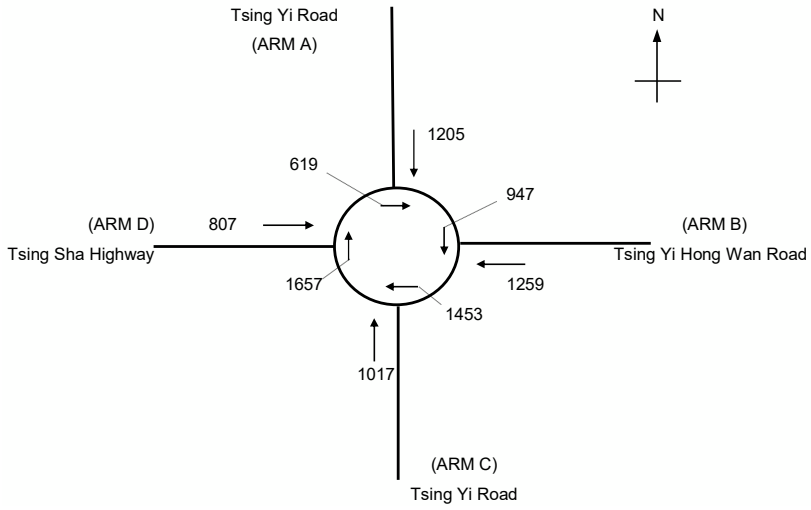
DFC of Critical Approach = 0.67

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J4: Tsing Yi Interchange	**2020PM**	FILENAME :	CHECKED BY:	MM
2020 Derived PM Peak Hour Traffic Flow		TsingYiRd_TsingYiHeungSzeWuiRd_R.xls	REVIEWED BY:	OC



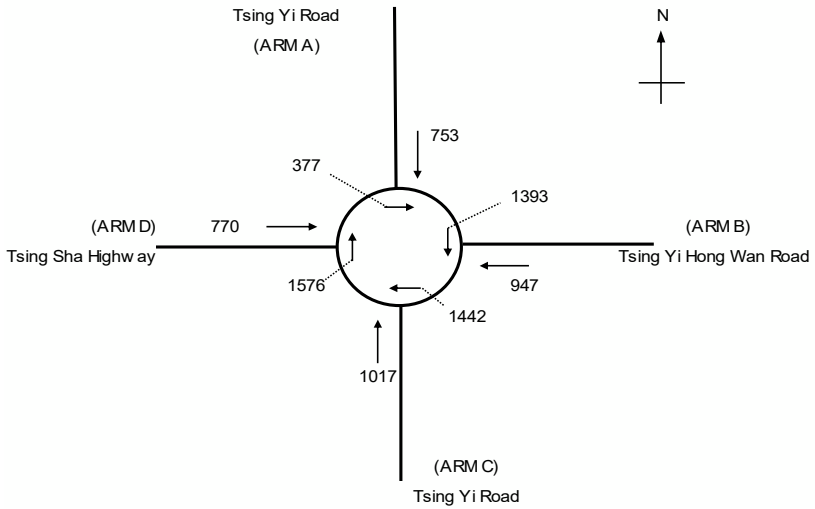
ARM			A	B			
INPUT PARAMETERS:							
V	=	Approach half width (m)	5.8	7.4			
E	=	Entry width (m)	9.2	8.7			
L	=	Effective length of flare (m)	4.8	7.1			
R	=	Entry radius (m)	18.1	44.5			
D	=	Inscribed circle diameter (m)	60.0	60.0			
A	=	Entry angle (degree)	45.0	29.0			
Q	=	Entry flow (pcu/h)	264	1560			
Qc	=	Circulating flow across entry (pcu/h)	856	6			
OUTPUT PARAMETERS:							
S	=	Sharpness of flare = 1.6(E-V)/L	1.14	0.30			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.94	1.03			
X2	=	V + ((E-V)/(1+2S))	6.87	8.23			
M	=	EXP((D-60)/10)	1	1			
F	=	303*X2	2081	2494			
Td	=	1+(0.5/(1+M))	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.69			
Qe	=	K(F-Fc*Qc)	1460	2565	Total In Sum =	1824	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.61	DFC of Critical Approach =	0.61	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J5: Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	**2020AM**	FILENAME :	CHECKED BY:	MM
2020 Derived AM Peak Hour Traffic Flow		/ay_TsingYiRd_TsingYiHongWanRd_R.xls	REVIEWED BY:	OC



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	11.1	9.1	8.0	11.4			
E	=	Entry width (m)	15.1	13.9	13.2	12.4			
L	=	Effective length of flare (m)	27.6	9.9	9.3	9.8			
R	=	Entry radius (m)	45.9	29.5	77.1	73.4			
D	=	Inscribed circle diameter (m)	100.0	100.0	100.0	100.0			
A	=	Entry angle (degree)	18.0	14.0	16.0	12.0			
Q	=	Entry flow (pcu/h)	1205	1259	1017	807			
Qc	=	Circulating flow across entry (pcu/h)	619	947	1453	1657			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.23	0.78	0.91	0.16			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.07	1.07	1.08	1.10			
X2	=	V + ((E-V)/(1+2S))	13.82	10.94	9.82	12.18			
M	=	EXP((D-60)/10)	55	55	55	55			
F	=	303*X2	4188	3314	2976	3692			
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01			
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.68	0.63	0.73			
Qe	=	K(F-Fc*Qc)	3950	2865	2239	2729	Total In Sum =	4288	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.31	0.44	0.45	0.30	DFC of Critical Approach =	0.45	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J5: Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	**2020PM**	FILENAME :	CHECKED BY:	MM
2020 Derived PM Peak Hour Traffic Flow		/ay_TsingYiRd_TsingYiHongWanRd_R.xls	REVIEWED BY:	OC

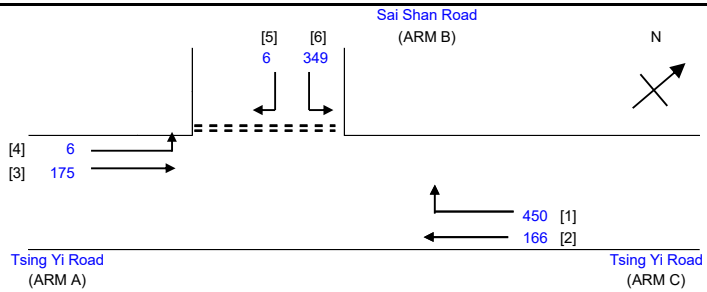


ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	11.1	9.1	8.0	11.4			
E	=	Entry width (m)	15.1	13.9	13.2	12.4			
L	=	Effective length of flare (m)	27.6	9.9	9.3	9.8			
R	=	Entry radius (m)	45.9	29.5	77.1	73.4			
D	=	Inscribed circle diameter (m)	100.0	100.0	100.0	100.0			
A	=	Entry angle (degree)	18.0	14.0	16.0	12.0			
Q	=	Entry flow (pcu/h)	753	947	1017	770			
Qc	=	Circulating flow across entry (pcu/h)	377	1393	1442	1576			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.23	0.78	0.91	0.16			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.07	1.07	1.08	1.10			
X2	=	V + ((E-V)/(1+2S))	13.82	10.94	9.82	12.18			
M	=	EXP((D-60)/10)	55	55	55	55			
F	=	303*X2	4188	3314	2976	3692			
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01			
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.68	0.63	0.73			
Qe	=	K(F-Fc*Qc)	4156	2542	2246	2793	Total In Sum =	3487	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.18	0.37	0.45	0.28	DFC of Critical Approach =	0.45	

Appendix B

2028 Junction Calculation Sheets

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J1: Tsing Yi Road / Sai Shan Road	**2028 Des_AM**	FILENAME :	CHECKED BY:	MM
2028 Design AM Peak Hour Traffic Flow		J1 TsingYiRd_SaiShaRd_P.xls	REVIEWED BY:	OC



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	14.4	(metres)
W cr	=	2	(metres)
q a-b	=	6.284	(pcu/hr)
q a-c	=	175.3	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.7	(metres)
Vr c-b	=	53.5	(metres)
q c-a	=	166.3	(pcu/hr)
q c-b	=	449.8	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.6	(metres)
W b-c	=	3.6	(metres)
Vl b-a	=	95.3	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	6.284	(pcu/hr)
q b-c	=	349.3	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9449497
E	=	0.9770154
F	=	0.9423142
Y	=	0.502855
F for (Qb-ac)	=	0.9823253

THE CAPACITY OF MOVEMENT :

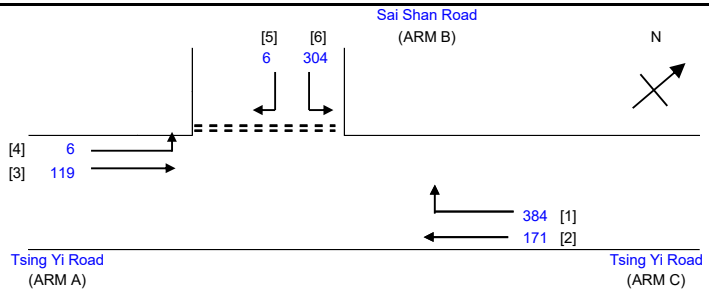
Q b-a	=	459
Q b-c	=	696
Q c-b	=	671
Q b-ac	=	689.7
TOTAL FLOW	=	1147.024399 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0137
DFC c-b	=	0.6704

CRITICAL DFC = 0.67

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION		INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi	PROJECT NO.: 81882	PREPARED BY:	LL
J1: Tsing Yi Road / Sai Shan Road	**2028 Des_PM**	CHECKED BY:	MM
2028 Design PM Peak Hour Traffic Flow	FILENAME : J1 TsingYiRd_SaiShaRd_P.xls	REVIEWED BY:	OC



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)

W	=	14.4	(metres)
W cr	=	2	(metres)
q a-b	=	6.284	(pcu/hr)
q a-c	=	119.3	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.7	(metres)
Vr c-b	=	53.5	(metres)
q c-a	=	170.8	(pcu/hr)
q c-b	=	384.1	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	3.6	(metres)
W b-c	=	3.6	(metres)
Vl b-a	=	95.3	(metres)
Vr b-a	=	100	(metres)
Vr b-c	=	100	(metres)
q b-a	=	6.284	(pcu/hr)
q b-c	=	303.7	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.9449497
E	=	0.9770154
F	=	0.9423142
Y	=	0.502855
F for (Qb-ac)	=	0.9797301

THE CAPACITY OF MOVEMENT :

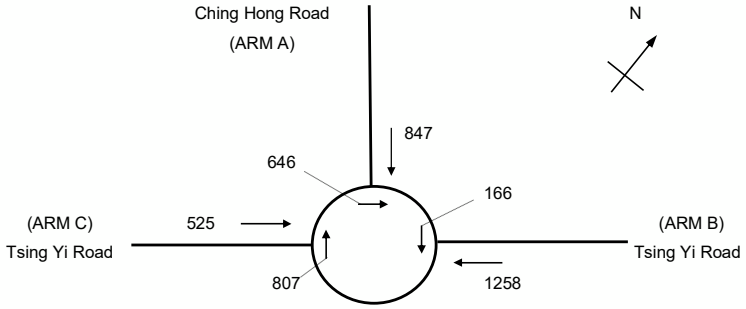
Q b-a	=	484
Q b-c	=	706
Q c-b	=	680
Q b-ac	=	699.5
TOTAL FLOW	=	984.2305768 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0130
DFC c-b	=	0.5648

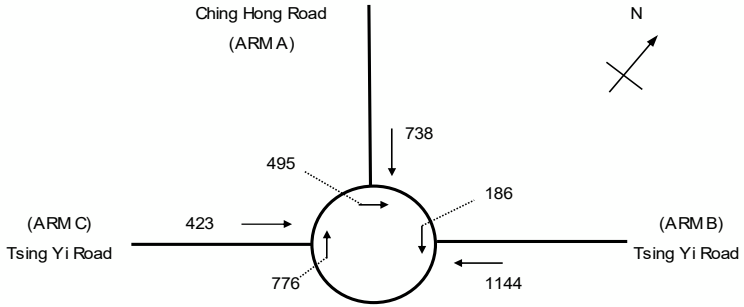
CRITICAL DFC = 0.56

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J2: Tsing Yi Road / Ching Hong Road Roundabout	**2028 Des_AM**	FILENAME :	CHECKED BY:	MM
2028 Design AM Peak Hour Traffic Flow		J2 TsingYiRd_ChingHongRd_R.xls	REVIEWED BY:	OC



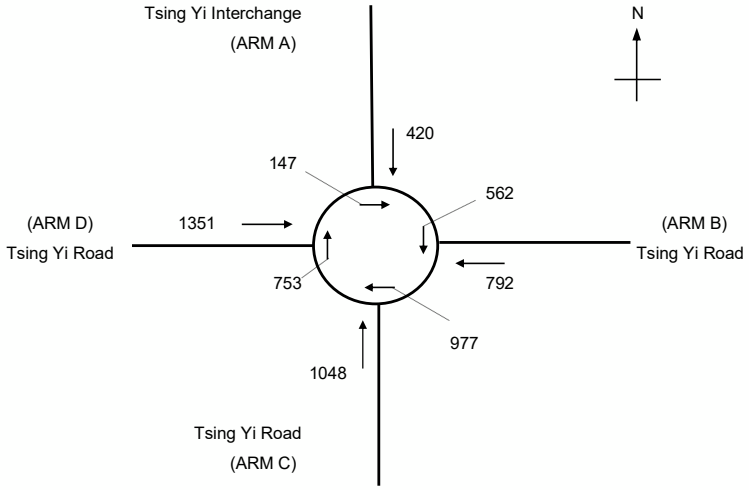
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.0	7.2	5.0	0.0			
E	=	Entry width (m)	7.6	8.7	9.2	0.0			
L	=	Effective length of flare (m)	3.4	5.8	14.7	0.0			
R	=	Entry radius (m)	23.1	24.3	24.1	0.0			
D	=	Inscribed circle diameter (m)	30.0	30.0	30.0	0.0			
A	=	Entry angle (degree)	10.0	28.0	20.0	0.0			
Q	=	Entry flow (pcu/h)	847	1258	525	0			
Qc	=	Circulating flow across entry (pcu/h)	646	166	807	0			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.42	0.45	0.00			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.08	1.02	1.04	0.00			
X2	=	V + ((E-V)/(1+2S))	7.39	8.02	7.22	0.00			
M	=	EXP((D-60)/10)	0	0	0	0			
F	=	303*X2	2240	2429	2188	0			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48	0.00			
Fc	=	0.21*Td(1+0.2*X2)	0.77	0.81	0.76	0.00			
Qe	=	K(F-Fc*Qc)	1876	2331	1644	0	Total In Sum =	2630	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.45	0.54	0.32	0.00	DFC of Critical Approach =	0.54	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J2: Tsing Yi Road / Ching Hong Road Roundabout	**2028 Des_PM**	FILENAME :	CHECKED BY:	MM
2028 Design PM Peak Hour Traffic Flow		J2 TsingYiRd_ChingHongRd_R.xls	REVIEWED BY:	OC



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.0	7.2	5.0	0.0			
E	=	Entry width (m)	7.6	8.7	9.2	0.0			
L	=	Effective length of flare (m)	3.4	5.8	14.7	0.0			
R	=	Entry radius (m)	23.1	24.3	24.1	0.0			
D	=	Inscribed circle diameter (m)	30.0	30.0	30.0	0.0			
A	=	Entry angle (degree)	10.0	28.0	20.0	0.0			
Q	=	Entry flow (pcu/h)	738	1144	423	0			
Qc	=	Circulating flow across entry (pcu/h)	495	186	776	0			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.29	0.42	0.45	0.00			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.08	1.02	1.04	0.00			
X2	=	V + ((E-V)/(1+2S))	7.39	8.02	7.22	0.00			
M	=	EXP((D-60)/10)	0	0	0	0			
F	=	303*X2	2240	2429	2188	0			
Td	=	1+(0.5/(1+M))	1.48	1.48	1.48	0.00			
Fc	=	0.21*Td(1+0.2*X2)	0.77	0.81	0.76	0.00			
Qe	=	K(F-Fc*Qc)	2001	2315	1669	0	Total In Sum =	2306	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.37	0.49	0.25	0.00	DFC of Critical Approach =	0.49	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J3: Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	**2028 Des_AM**	FILENAME :	CHECKED BY:	MM
2028 Design AM Peak Hour Traffic Flow		J3 TsingYiRd_TsingYi INT_R.xls	REVIEWED BY:	OC

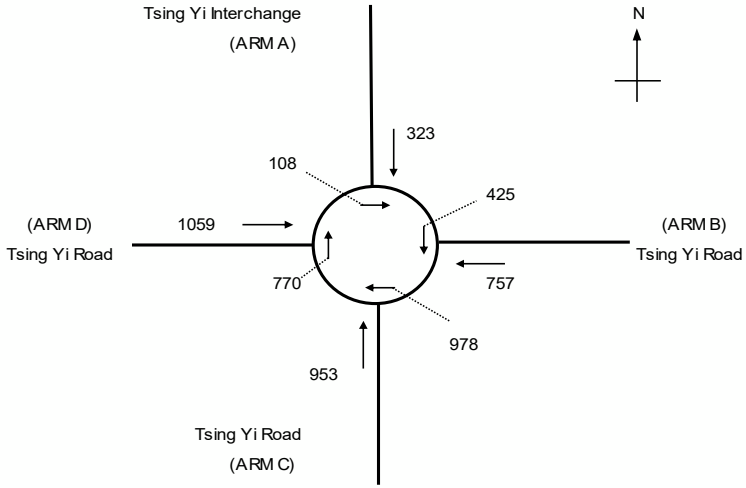


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.5	7.2	7.8	7.5
E	=	Entry width (m)	10.3	10.1	11.4	9.3
L	=	Effective length of flare (m)	5.9	5.0	6.2	3.2
R	=	Entry radius (m)	21.5	43.4	10.2	33.7
D	=	Inscribed circle diameter (m)	60.0	60.0	60.0	60.0
A	=	Entry angle (degree)	34.0	32.0	60.0	33.0
Q	=	Entry flow (pcu/h)	420	792	1048	1351
Qc	=	Circulating flow across entry (pcu/h)	147	562	977	753
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.77	0.93	0.93	0.92
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.02	0.85	1.01
X2	=	V + ((E-V)/(1+2S))	8.58	8.23	9.02	8.15
M	=	EXP((D-60)/10)	1	1	1	1
F	=	303*X2	2600	2494	2733	2469
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.71	0.69	0.74	0.69
Qe	=	K(F-Fc*Qc)	2469	2145	1711	1968
DFC	=	Design flow/Capacity = Q/Qe	0.17	0.37	0.61	0.69

Total In Sum = 3611 PCU

DFC of Critical Approach = 0.69

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J3: Tsing Yi Road / Kwai Tsing Road Tsing Yi Bridge	**2028 Des_PM**	FILENAME :	CHECKED BY:	MM
2028 Design PM Peak Hour Traffic Flow		J3 TsingYiRd_TsingYi INT_R.xls	REVIEWED BY:	OC

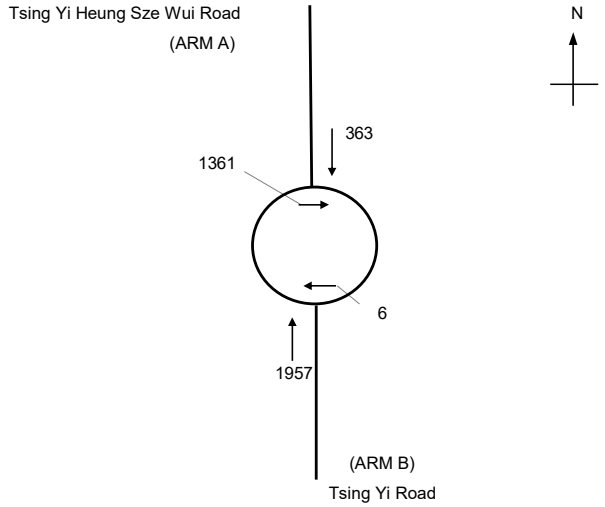


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.5	7.2	7.8	7.5
E	=	Entry width (m)	10.3	10.1	11.4	9.3
L	=	Effective length of flare (m)	5.9	5.0	6.2	3.2
R	=	Entry radius (m)	21.5	43.4	10.2	33.7
D	=	Inscribed circle diameter (m)	60.0	60.0	60.0	60.0
A	=	Entry angle (degree)	34.0	32.0	60.0	33.0
Q	=	Entry flow (pcu/h)	323	757	953	1059
Qc	=	Circulating flow across entry (pcu/h)	108	425	978	770
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.77	0.93	0.93	0.92
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.99	1.02	0.85	1.01
X2	=	V + ((E-V)/(1+2S))	8.58	8.23	9.02	8.15
M	=	EXP((D-60)/10)	1	1	1	1
F	=	303*X2	2600	2494	2733	2469
Td	=	1+(0.5/(1+M))	1.25	1.25	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.71	0.69	0.74	0.69
Qe	=	K(F-Fc*Qc)	2497	2242	1710	1956
DFC	=	Design flow/Capacity = Q/Qe	0.13	0.34	0.56	0.54

Total In Sum = 3091 PCU

DFC of Critical Approach = 0.56

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J4: Tsing Yi Interchange	**2028 Des_AM**	FILENAME :	CHECKED BY:	MM
2028 Design AM Peak Hour Traffic Flow		TsingYiRd_TsingYiHeungSzeWuiRd_R.xls	REVIEWED BY:	OC

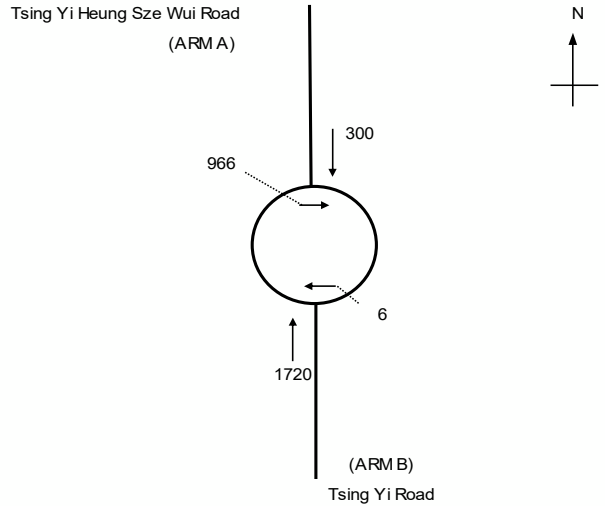


ARM			A	B
INPUT PARAMETERS:				
V	=	Approach half width (m)	5.8	7.4
E	=	Entry width (m)	9.2	8.7
L	=	Effective length of flare (m)	4.8	7.1
R	=	Entry radius (m)	18.1	44.5
D	=	Inscribed circle diameter (m)	60.0	60.0
A	=	Entry angle (degree)	45.0	29.0
Q	=	Entry flow (pcu/h)	363	1957
Qc	=	Circulating flow across entry (pcu/h)	1361	6
OUTPUT PARAMETERS:				
S	=	Sharpness of flare = 1.6(E-V)/L	1.14	0.30
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.94	1.03
X2	=	V + ((E-V)/(1+2S))	6.87	8.23
M	=	EXP((D-60)/10)	1	1
F	=	303*X2	2081	2494
Td	=	1+(0.5/(1+M))	1.25	1.25
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.69
Qe	=	K(F-Fc*Qc)	1163	2565
DFC	=	Design flow/Capacity = Q/Qe	0.31	0.76

Total In Sum = 2320 PCU

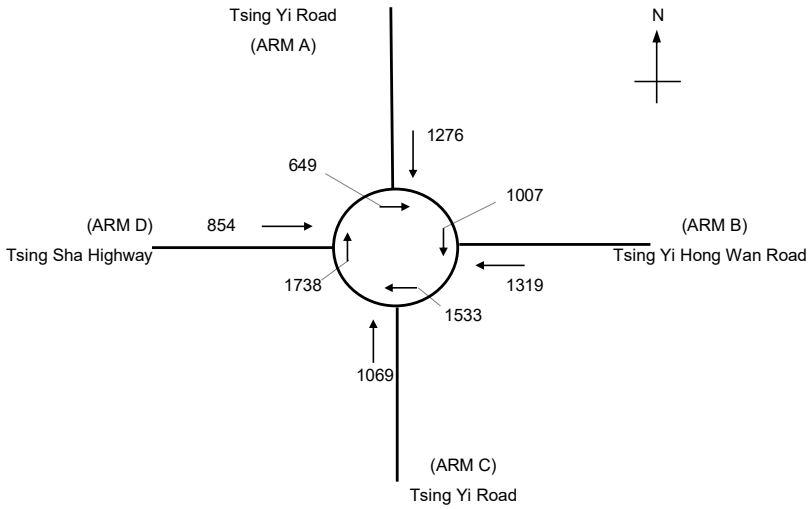
DFC of Critical Approach = 0.76

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J4: Tsing Yi Interchange	**2028 Des_PM**	FILENAME :	CHECKED BY:	MM
2028 Design PM Peak Hour Traffic Flow		TsingYiRd_TsingYiHeungSzeWuiRd_R.xls	REVIEWED BY:	OC



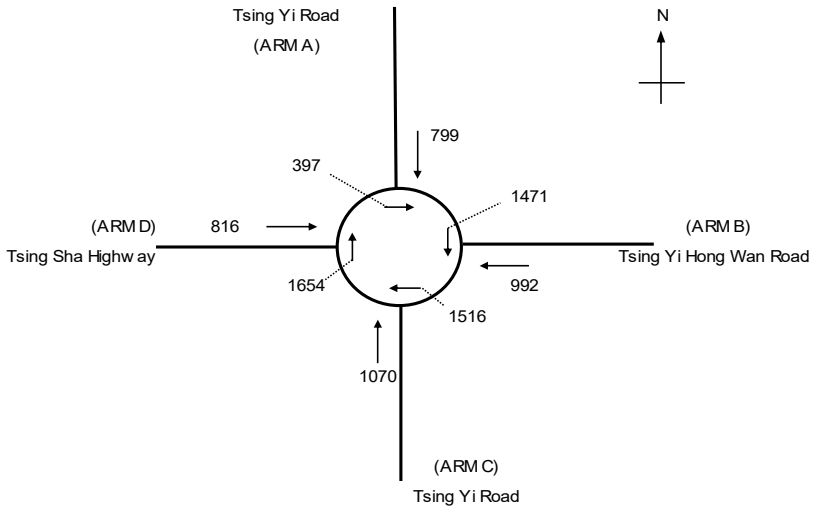
ARM			A	B			
INPUT PARAMETERS:							
V	=	Approach half width (m)	5.8	7.4			
E	=	Entry width (m)	9.2	8.7			
L	=	Effective length of flare (m)	4.8	7.1			
R	=	Entry radius (m)	18.1	44.5			
D	=	Inscribed circle diameter (m)	60.0	60.0			
A	=	Entry angle (degree)	45.0	29.0			
Q	=	Entry flow (pcu/h)	300	1720			
Qc	=	Circulating flow across entry (pcu/h)	966	6			
OUTPUT PARAMETERS:							
S	=	Sharpness of flare = 1.6(E-V)/L	1.14	0.30			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.94	1.03			
X2	=	V + ((E-V)/(1+2S))	6.87	8.23			
M	=	EXP((D-60)/10)	1	1			
F	=	303*X2	2081	2494			
Td	=	1+(0.5/(1+M))	1.25	1.25			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.69			
Qe	=	K(F-Fc*Qc)	1395	2565	Total In Sum =	2019	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.21	0.67	DFC of Critical Approach =	0.67	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J5: Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	**2028 Des_AM**	FILENAME :	CHECKED BY:	MM
2028 Design AM Peak Hour Traffic Flow		/ay_TsingYiRd_TsingYiHongWanRd_R.xls	REVIEWED BY:	OC



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	11.1	9.1	8.0	11.4			
E	=	Entry width (m)	15.1	13.9	13.2	12.4			
L	=	Effective length of flare (m)	27.6	9.9	9.3	9.8			
R	=	Entry radius (m)	45.9	29.5	77.1	73.4			
D	=	Inscribed circle diameter (m)	100.0	100.0	100.0	100.0			
A	=	Entry angle (degree)	18.0	14.0	16.0	12.0			
Q	=	Entry flow (pcu/h)	1276	1319	1069	854			
Qc	=	Circulating flow across entry (pcu/h)	649	1007	1533	1738			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.23	0.78	0.91	0.16			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.07	1.07	1.08	1.10			
X2	=	V + ((E-V)/(1+2S))	13.82	10.94	9.82	12.18			
M	=	EXP((D-60)/10)	55	55	55	55			
F	=	303*X2	4188	3314	2976	3692			
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01			
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.68	0.63	0.73			
Qe	=	K(F-Fc*Qc)	3924	2821	2184	2664	Total In Sum =	4518	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.47	0.49	0.32	DFC of Critical Approach =	0.49	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS
VTC Proposed Aviation and Maritime Education Centre, Tsing Yi		PROJECT NO.: 81882	PREPARED BY:	LL
J5: Tsing Sha Highway / Tsing Yi Road / Tsing Yi Hong Wan Road	**2028 Des_PM**	FILENAME :	CHECKED BY:	MM
2028 Design PM Peak Hour Traffic Flow		/ay_TsingYiRd_TsingYiHongWanRd_R.xls	REVIEWED BY:	OC



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	11.1	9.1	8.0	11.4			
E	=	Entry width (m)	15.1	13.9	13.2	12.4			
L	=	Effective length of flare (m)	27.6	9.9	9.3	9.8			
R	=	Entry radius (m)	45.9	29.5	77.1	73.4			
D	=	Inscribed circle diameter (m)	100.0	100.0	100.0	100.0			
A	=	Entry angle (degree)	18.0	14.0	16.0	12.0			
Q	=	Entry flow (pcu/h)	799	992	1070	816			
Qc	=	Circulating flow across entry (pcu/h)	397	1471	1516	1654			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.23	0.78	0.91	0.16			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.07	1.07	1.08	1.10			
X2	=	V + ((E-V)/(1+2S))	13.82	10.94	9.82	12.18			
M	=	EXP((D-60)/10)	55	55	55	55			
F	=	303*X2	4188	3314	2976	3692			
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01			
Fc	=	0.21*Td(1+0.2*X2)	0.80	0.68	0.63	0.73			
Qe	=	K(F-Fc*Qc)	4139	2486	2196	2731	Total In Sum =	3677	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.19	0.40	0.49	0.30	DFC of Critical Approach =	0.49	