Revised Traffic Impact Assessment

Proposed Concrete Batching Plant at 13 - 17
Wah Sing Street, Kwai Chung

Traffic Impact Assessment
Final Report
December 2024

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Proposed Concrete Batching Plant at 13 - 17
Wah Sing Street, Kwai Chung

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1.0 INTRODUCTION

Background

1.1 The Subject Site is located at 13 – 17 Wah Sing Street in Kwai Chung. **Figure 1.1** shows the location of the Subject Site.

1.2 On 24th May 2024, the Town Planning Board ("TPB") approved the S16 Planning Application of Proposed minor relaxation of plot ratio restriction for Permitted Warehouse Use (excluding Dangerous Goods Godown) in "Industrial" Zone at the Subject Site (TPB ref: A/KC/505) ("the Approved Warehouse"). The Owner now intends to redevelop the Subject Site into a Proposed Concrete Batching Plant ("Proposed Concrete Batching Plant").

1.3 CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned by the Owner to conduct a traffic impact assessment in support of the Proposed Concrete Batching Plant. This report presents the findings of the Traffic Impact Assessment.

Structure of Report

1.4 The report is structured as follows:

Chapter One - Gives the background of the project;
Chapter Two - Describes the existing situation;
Chapter Three - Explains the Proposed Concrete Batching Plant and presents the internal transport facilities provided;
Chapter Four - Describes the traffic impact analysis;
Chapter Five - Gives the overall conclusion.

2.0 EXISTING SITUATION

The Subject Site

2.1 The Subject Site fronts onto Wah Sing Street to the east and a Right-of-Way (i.e. Kwai Chung Town Lot 111 RP in DD445) ("ROW") to the west and south. In-between the ROW to the west and Tai Lin Pai Road, is the Gold King Industrial Building. The existing run-in/out of the Subject Site is provided at the ROW, which connects with Tai Lin Pai Road.

Public Transport Facilities

2.2 The Subject Site is well-served by public transport facilities, and access to these services is convenient. Details of public transport services operating in the vicinity of the Subject Site are given in **Table 2.1** and shown in **Figure 2.1**.

TABLE 2.1 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR THE SUBJECT SITE

Route	Routing	Frequency (minutes)
KMB 30	Cheung Sha Wan – Allway Gardens	25 – 30
KMB 31	Tsuen Wan West Station – Shek Lei (Circular)	10 – 20
KMB 31B	Olympic Station – Shek Lei (Tai Loong Street)	12 – 25
KMB 31M	Shek Lei (Lei Pui Street) – Kwai Fong Station	5 –15
KMB 31P(1)	Shek Lei Commercial Complex → Kwai Fong Station	AM Peak
KMB 32	Olympic Station – Shek Wai Kok	20 – 28
KMB 32H	Cheung Shan – Lai Chi Kok	30 – 60
KMB 32M	Kwai Fong Station – Cheung Shan (Circular)	15 – 25
KMB 33A	Mong Kok (Park Avenue) – Tsuen Wan (Nina Tower)	17 – 25
KMB 34	Tsuen Wan (Bayview Garden) – Kwai Shing (Central)	12 – 20
KMB 35A	Tsim Sha Tsui East – On Yam Estate	5 – 20
KMB 35X(2)	On Yam Estate – Tsim Sha Tsui East	AM, PM Peak
KMB 36A	Cheung Sha Wan (Sham Mong Road) – Lei Muk Shue	15 – 30
KMB 36B	Jordan (West Kowloon Station) – Lei Muk Shue	12 – 25
KMB 36M	Kwai Fong Station – Lei Muk Shue	5 – 12
KMB 36X(1)	Lei Muk Shue – Tsim Sha Tsui East (Mody Road)	AM, PM Peak
KMB 37	Kwai Shing (Central) – Olympic Station	12 – 20
KMB 37M	Kwai Hing Station → Kwai Shing Central (Circular)	8 – 20
KMB 38	Kwai Shing (East) – Ping Tin	6 – 20
KMB 38A	Mei Foo – Riviera Gardens	20 – 30
KMB 38B(1)	Riviera Gardens – Shek Mun Estate	AM, PM Peak
KMB 38P(1)	Kwai Shing (Central) – Ping Tin	AM, PM Peak
KMB 40	Laguna City – Tsuen Wan (Belvedere Garden)	11 – 25
KMB 40A(1)	Ping Tin – Kwai Hing Station	AM, PM Peak
KMB 40P	Tsuen Wan (Nina Tower) – Kwun Tong Ferry	8 – 30
KMB 40E(1)	Nai Chung – Kwai Chung (Kwai Fong Estate)	AM, PM Peak
KMB 40X	Wu Kai Sha Station – Kwai Chung Estate	6 – 20
KMB 42C	Cheung Hang Estate – Lam Tin Station	5 – 15
KMB 43	Cheung Hong Estate – Tsuen Wan West Station	12 – 20
KMB 43A	Cheung Wang Estate – Shek Lei (Tai Loong Street)	6 – 20
KMB 43D(1)	Cheung Wang Estate → Kwai Shing	AM Peak
KMB 43S(1)	Shek Yam → Hong Kong Science Park	AM Peak
KMB 44M	Tsing Yi Station – Kwai Chung Estate	11 – 20
KMB 46P(2)	Mei Tin – Kwai Fong Station (Circular)	10 – 30

Note: KMB – Kowloon Motor Bus LWB – Long Win Bus CTB – Citybus GMB – Green Minibus
(1) Monday to Friday. No services on Sundays and Public Holidays
(2) Monday to Saturday. No services on Sundays and Public Holidays
(O) Overnight service

TABLE 2.1 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR THE SUBJECT SITE (CONT'D)

Route	Routing	Frequency (minutes)
KMB 46X	Mei Foo – Hin Keng	5 – 20
KMB 47A	Kwai Fong (South) – Shui Chuen O	20 – 30
KMB 47X	Kwai Shing (East) – Chun Shek	6 – 20
KMB 57M	Lai King (North) – Shan King Estate	11 – 30
KMB 58M	Kwai Fong Station – Leung King Estate	3 – 15
KMB 59A	Kwai Fong (Kwai Tsui Estate) – Tuen Mun Pier Head	6 – 60
KMB 61M	Lai King (North) – Yau Oi (South)	8 – 25
KMB 67M	Kwai Fong Station – Siu Hong Court	5 – 20
KMB 69M	Kwai Fong Station – Tin Shui Wai Town Centre	5 – 30
KMB 69P(2)	Tin Shui Wai Station → Kwai Fong Station	AM Peak
KMB 73P(1)	Tai Mei Tuk – Tsuen Wan (Nina Tower)	AM Peak
KMB 73P(1)	Tsuen Wan (Nina Tower) → Tai Mei Tuk	PM Peak
KMB 235M	Kwai Fong Station – On Yam Estate	5 – 15
KMB 237A(2)	Kwai Shing (Central) → Tsim Sha Tsui East (Mody Road)	AM Peak
KMB 240X(1)	Wong Nai Tau – Kwai Hing Station	AM, PM Peak
KMB 260C(1)	Sam Shing Estate – Kwai Fong Station	AM, PM Peak
KMB 265M	Lai Yiu Estate – Tin Heng Estate	5 – 35
KMB 269A(2)	Wetland Park Road → Kwai Chung (Kwai Fong Estate)	AM Peak
KMB 269M	Cho Yiu – Tin Yan Estate	12 – 25
KMB 272P(2)	Tai Po (Fu Heng) – Kwai Hing Station	AM, PM Peak
KMB 290	Choi Ming – Tsuen Wan West Station	10 – 20
KMB 290A	Choi Ming – Tsuen Wan West Station	10 – 25
KMB 290B(1)	Tsuen Wan West Station – Tseung Kwan O Industrial Estate	AM, PM Peak
KMB 290E(1)	Tseung Kwan O Industrial Estate – Tseun Wan West Station	AM, PM Peak
KMB 290X	Lohas Park Station – Tsuen Wan West Station	15 – 35
KMB 935(2)	Shek Lei (Tai Loong Street) – Wan Chai (Fleming Road)	AM, PM Peak
KMB 936	Shek Wai Kok → Causeway Bay (Cotton Path)	AM Peak
KMB 936	Causeway Bay (Cotton Path) → Shek Wai Kok	PM Peak
KMB 936A(2)	Tsuen Wan (Shek Wai Kok) → Causeway Bay (Cotton Path)	AM Peak
KMB 936A(1)	Causeway Bay (Cotton Path) → Lei Muk Shue	PM Peak
KMB N237(O)	Mei Foo – Kwai Shing (Circular)	30
KMB N260(O)	Mei Foo – Tuen Mun Pier Head	20 – 30
KMB N269(O)	Mei Foo – Tin Tsz	10 – 25
KMB N290(O)	Tsuen Wan West Station → Lohas Park Station	2 per day
KMB X42P(1)	Cheung On Estate → Lam Tin Station	AM Peak
LWB A30	Lei Muk Shue – Airport (Ground Transportation Centre)	30 – 60
LWB A32	Airport (Ground Transportation Centre) – Kwai Chung Estate	30 – 60
LWB E32	Asiaworld-Expo – Kwai Fong (South)	11 – 30
LWB E32A	Tung Chung Development Pier – Kwai Fong (South)	12 – 30
LWB NA32(O)	Hzmb Hong Kong Port – Kwai Chung Estate	2 – 3 per day
CTB 930	Tsuen Wan – Exhibition Centre Station	10 – 30
CTB 930B(1)	Kwai Shing (East) → Causeway Bay (Moreton Terrace)	AM Peak
CTB N930(O)	Causeway Bay (Moreton Terrace) → Tsuen Wan	1 per day
CTB N930(O)	Tsuen Wan → Causeway Bay (Moreton Terrace)	2 per day
GMB 83A	Tsuen Wan (Chuen Lung Street) – On Yam Estate	8 – 30
GMB 86	Tsuen Wan West Station – Shek Lei Estate	10 – 20
GMB 86A(O)	Tsuen Wan (Chuen Lung Street) – Shek Lei Estate	15 – 30
GMB 86M	Tsuen Wan (Chuen Lung Street) – Shek Lei Estate	5 – 20
GMB 87K	Kwai Fong Station – Tsuen Wan West Station	6 – 10
GMB 89A	Kwai Hing Station – Tsuen Wan (Ho Pui Street)	8 – 18

Note: KMB – Kowloon Motor Bus LWB – Long Win Bus CTB – Citybus GMB – Green Minibus
(1) Monday to Friday. No services on Sundays and Public Holidays
(2) Monday to Saturday. No services on Sundays and Public Holidays
(O) Overnight service

TABLE 2.1 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR THE SUBJECT SITE (CONT'D)

Route	Routing	Frequency (minutes)
GMB 89B	Tsuen Wan West Station – Kwai Shing East Estate	10 – 12
GMB 89M	Kwai Fong Station – Kwai Shing East Estate	5 – 15
GMB 89P	Kwai Chung (Shek Tau Street) – Kwai Fong (Circular)	15
GMB 89S	Kwai Fong Station – Kwai Shing Circuit (Circular)	5 – 15
GMB 94	Shek Wai Kok Estate – Kwai Shing Circuit	8 – 15
GMB 94A	Lei Muk Shue Estate – Kwai Shing Circuit	10 – 15
GMB 302	Hong Kong Garden – Kwai Fong Station	5 – 30
GMB 302	Bellagio – Kwai Fong Station	AM Peak
GMB 313	Fuk Loi Estate – Princess Margaret Hospital	6 – 11
GMB 401	Tsing Yi Ferry Terminus – Shek Yam Estate	7 – 10
GMB 403	Shek Lei Estate – Sha Tin Wai (Circular)	20
GMB 403P	Shek Lei Estate – Shatin Town Centre	6 – 20
GMB 403X	Tai Wai Station – Shek Lei Estate (Circular)	12 – 15
GMB 406(1)	Shek Lei Estate – Kwai Shing Circuit (Circular)	AM Peak
GMB 407	Cheung Wang Estate – Princess Margaret Hospital	4 – 10
GMB 410	Shek Yam Estate – Princess Margaret Hospital	15 – 20

Note: KMB – Kowloon Motor Bus LWB – Long Win Bus CTB – Citybus GMB – Green Minibus
(1) Monday to Friday. No services on Sundays and Public Holidays
(2) Monday to Saturday. No services on Sundays and Public Holidays
(O) Overnight service

Pedestrian Facilities

2.3 In the vicinity of the Subject Site, footpaths are provided alongside roads, and footbridges are provided across Kwai Chung Road.

Existing Traffic Flows

2.4 To quantify the existing traffic flows in the vicinity of the Subject Site, manual classified counts were conducted on Thursday, 10th October 2024 at the following junctions:

J01 – Junction of Kwai Chung Road / Kwai On Road / Kwai Yik Road;
J02 – Junction of Tai Lin Pai Road / Kwai On Road;
J03 – Junction of Tai Lin Pai Road / Kung Yip Street;
J04 – Junction of Kung Yip Street / Wah Sing Street;
J05 – Junction of Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road; and
J06 – Junction of Tai Lin Pai Road / San Kwai Street.

2.5 In view that junction of Kwai Chung Road / Tai Lin Pai Road is not a signal controlled or a priority junction, the junction performance assessment is not conducted.

2.6 The existing road network, the locations of these surveyed junctions and the area of influence ("AOI") are shown in **Figure 2.2** and the junction layouts are shown in **Figures 2.3 – 2.8**.

2.7 The traffic counts are classified by vehicle type to enable traffic flows in passenger car units ("pcu") to be calculated. The AM and PM peak hours identified from the surveys are found to be between 0900 – 1000 hours and 1700 – 1800 hours respectively. **Figure 2.9** presents the 2024 observed AM and PM peak hour traffic flows in pcu/hour.

Queueing of Taxis for Refilling Liquefied Petroleum Gas ("LPG") at J02

2.8 Since queuing of taxis for refilling liquefied petroleum gas occurs during the PM peak hour along Tai Lin Pai Road northbound near its junction with Kwai On Road, the effect of taxi queueing is only considered for the PM peak hour junction capacity analysis.

2.9 In the junction analysis, the queueing of taxis is regarded as "dead vehicles" occupying part of the slow lane of Tai Lin Pai Road northbound. Despite the presence of the "dead vehicles", the remaining lane width could still serve 2 northbound traffic movements.

Performance of the Surveyed Junctions

2.10 The existing performance of the surveyed junctions are calculated based on the methods outlined in Volume 2 of the Transport Planning and Design Manual ("TPDM"), which is published by the Transport Department. The results of the performance of junctions are summarised in **Table 2.2**, and detailed calculations of junction performance are found in **Appendix A**.

TABLE 2.2 EXISTING JUNCTION PERFORMANCE

Ref.	**Junction**	**Type of Junction (Parameter)**	**AM Peak Hour**	**PM Peak Hour**
J01	Kwai Chung Road / Kwai On Road / Kwai Yik Road	Signal (RC)	36%	42%
J02	Tai Lin Pai Road / Kwai On Road	Priority (RFC)	0.648	0.542(1)
J03	Tai Lin Pai Road / Kung Yip Street	Signal (RC)	86%	92%
J04	Kung Yip Street / Wah Sing Street	Priority (RFC)	0.330	0.294
J05	Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road	Signal (RC)	34%	50%
J06	Tai Lin Pai Road / San Kwai Street	Priority (RFC)	0.197	0.148

Note: RC – Reserve Capacity RFC – Ratio of Flow to Capacity
(1) The effect of taxi queueing is considered.

2.11 The results in **Table 2.2** show that the junctions analysed operate with capacity.

3.0 THE PROPOSED CONCRETE BATCHING PLANT

Development Schedule

3.1 The Proposed Concrete Batching Plant has 4 production lines with peak concrete production capacity of 100m^3/hour/line. Sufficient loading / unloading facilities which meet the operational requirements are provided within the Proposed Concrete Batching Plant.

Vehicular Access Points

3.2 The vehicular access to the Proposed Concrete Batching Plant is provided at Wah Sing Street.

Operation of Proposed Concrete Batching Plant

3.3 The Proposed Concrete Batching Plant has 2 main activities which generate traffic: (a) delivery of concrete from the Proposed Concrete Batching Plant, and (b) delivery of raw materials, such as aggregate, cementitious materials, etc, to the Proposed Concrete Batching Plant.

3.4 Details of vehicle movements related to the concrete production and raw material delivery, are presented in **Table 3.1**.

TABLE 3.1 DETAILS OF DELIVERY TO / FROM THE PROPOSED CONCRETE BATCHING PLANT

Type of Delivery	**Type of Vehicle**	**Typical Vehicle Dimension (Approx.)**	**Traffic Generation (veh/hour)**		
			Peak Concrete Production (0600 – 1800 hrs)	**Peak Raw Material Delivery (1800 – 2300 hrs)**	**Evening (2300 – 0600 hrs)**
Concrete mixer truck [a]					
Concrete	Concrete mixer truck	10m(L) x 2.5m(W)	Max. 40(1)	6	2
Raw material delivery truck [b]					
Aggregate/ sand	Aggregate/ sand truck	Heavy Goods Vehicle: 10m(L) x 2.5m(W)	18	45	7
Admixture	Admixture truck		0	1	0
Waste	Waste truck		2	0	0
Cement / PFA	Cement / PFA tanker	Articulated Vehicle: 15.4m(L) x 2.5m(W)	2	10	7
		Total [a] + [b]	**62**	**62**	**16**

Note: (1) Maximum concrete production capacity = 100m^3 x 4 production lines ÷ typical capacity of 10m^3 for a concrete mixer truck = 40 nos.

3.5 **Table 3.1** shows the following:

- During the **peak concrete production**, i.e. 0600 to 1800 hours, the Proposed Concrete Batching Plant is expected to operate at its production capacity. A total of 40 concrete mixer trucks and 22 raw material delivery trucks per hour are generated.
- The **peak raw material delivery period** is from 1800 to 2300 hours. Each hour 6 concrete mixers trucks and 56 raw material delivery trucks are generated.

Internal Transport Facilities

3.6 The internal transport facilities provided for the Proposed Concrete Batching Plant are presented in **Table 3.2** and the master layout plan is shown in **Figure 3.1.**

TABLE 3.2 INTERNAL TRANSPORT FACILITIES

Ref.	**Type**	**Dimension**	**Quantity**
Ground Floor			
LP01–LP02	Waiting space	11m(L) x 3.5m(W) x 4.7m(H)	2
LP03	Raw material unloading bay for container	16m(L) x 3.5m(W) x 4.7m(H)	1
LP04–LP07	Concrete mixer truck loading point	11m(L) x 3.5m(W) x 4.7m(H)	4
N/A	Raw material unloading area	N/A	3
		Total	**10**

Swept Path Analysis

3.7 The CAD-based swept path analysis programme, ***AUTODESK VEHICLE TRACKING***, was used to ensure that all vehicles could enter and leave their respective space / bays, with ease. The swept path analysis drawings are found in **Appendix B**.

4.0 TRAFFIC IMPACT

Design Year

4.1 The Proposed Concrete Batching Plant is expected to be completed in 2026, and the assessment year adopted is 2029, i.e. 3 years after the completion. The 2 scenarios for year 2029 assessed are:
(i) Year 2029 AM and PM peak hours without the Concrete Batching Plant;
(ii) Year 2029 AM and PM peak hours with the Concrete Batching Plant

Traffic Forecasting Methodology

4.2 Since the completion year of the Proposed Concrete Batching Plant is same as the Approved Warehouse, which is 2026, the same traffic forecasting methodology adopted for the Approved Warehouse is applied for the Proposed Concrete Batching Plant.

4.3 The 2029 traffic flows used for the junction analysis are produced with reference to the following:
(i) 2026 traffic flows derived based on the NTW2 Base District Traffic Model ("BDTM");
(ii) estimated traffic growth from 2026 to 2029 based on the higher of: (a) 2019 – based Territorial Population and Employment Data Matrix ("TPEDM") data produced by Planning Department ("PlanD") for Kwai Chung District, (b) Projections of Population Distribution 2023-2031 by PlanD, or (c) historic Annual Average Daily Traffic ("AADT") produced by Transport Department ("TD");
(iii) the other developments in the vicinity of the Proposed Concrete Batching Plant; and
(iv) Traffic generated by the Proposed Concrete Batching Plant.

4.4 The (ii) estimated traffic growth from 2026 to 2029, (iii) the other development in the vicinity of the Proposed Concrete Batching Plant and (iv) traffic generated by the Proposed Concrete Batching Plant are presented in the paragraphs below.

Estimated Growth Rate from 2026 to 2029

4.5 The (a) 2019 – based TPEDM data for Kwai Chung District, and the (b) Projections of Population Distribution 2023-2031, and (c) historic AADT are summarised in **Tables 4.1 – 4.3** respectively.

TABLE 4.1 2019-BASED TPEDM DATA FOR KWAI CHUNG DISTRICT

Item	TPEDM Estimation / Projection			Annual Growth Rate		
	2019	2026	2031	2019 to 2026	2026 to 2031	2019 to 2031
Population	319,150	315,800	319,700	-0.15%	**0.25%**	0.01%
Employment	195,950	192,350	183,600	-0.26%	-0.93%	-0.54%

TABLE 4.2 PROJECTIONS OF POPULATION DISTRIBUTION 2023-2031

District	Year 2026	Year 2029	Annual Growth Rate from 2026 to 2029
Kwai Tsing	488,700	483,900	**-0.33%**

TABLE 4.3 AADT OF THE STATION IN THE VICINITY OF THE SUBJECT SITE

Year \ Station	5426	5430	5608	5629	5809	5828	6005	Overall
2011	15,660	13,720	29,110	14,960	51,600	10,260	70,640	205,950
2012	15,560	13,620	28,620	14,860	49,900	8,740	57,400	188,700
2013	16,220	14,210	28,500	15,490	49,700	9,120	54,130	187,370
2014	15,720	13,100	30,440	15,620	53,080	9,190	57,810	194,960
2015	16,500	10,540	30,090	14,710	54,590	9,370	59,460	195,260
2016	16,960	10,830	30,350	16,400	53,410	10,220	59,380	197,550
2017	17,270	11,030	30,480	16,700	52,580	10,700	60,970	199,730
2018	17,520	11,200	31,330	16,950	54,030	10,860	45,480	187,370
							Average Annual Growth	**-1.34%**

Note: Due to the social events in 2019 and the COVID-19 pandemic thereafter, the 2019 to 2023 AADT are not used

5426 – Kwai On Road (From Tai Lin Pai Road to Kwai Chung Road)
5430 – Tai Lin Pai Road (From Kwai Chung Road Southern Junction to Kwai On Road)
5608 – Kwai Chung Road (From Kwai On Road to Kwai Foo Road)
5629 – Tai Lin Pai Road (From Kwai Cheong Road to Kwai On Road)
5809 – Kwai Chung Road (GL) (From Tai Lin Pai Road to Kwai On Road)
5828 – Tai Lin Pai Road (From Kwai Chung Road Southern Junction to Kwai Cheong Road)
6005 – Kwai Chung Road (From Tai Lin Pai Road to Castle Peak Road - Kwai Chung Interchange)

4.6 **Table 4.1** shows that the highest annual growth rate for population is +0.25% and for employment is -0.26%. **Table 4.2** shows that the annual growth rate from 2026 to 2029 is -0.33%. **Table 4.3** shows that in the historic AADT of the stations between 2011 and 2018 in the vicinity has average annual growth rate of -1.34% per annum. To be conservative, the growth rate of +0.5% per annum is adopted for the traffic growth between 2026 and 2029.

Other Developments in the Vicinity of the Proposed Concrete Batching Plant

4.7 The major planned developments in the vicinity of the Proposed Concrete Batching Plant are summarized in **Table 4.4**.

TABLE 4.4 DETAILS OF MAJOR PLANNED DEVELOPMENTS

Site	Address	Use	Development Parameters (Approx.)
A	132 – 134 Tai Lin Pai Road (A/KC/467)	Industrial	around 7,035m^2 GFA
B	45 – 51 Tai Lin Pai Road (A/KC/480)	Data Centre	around 24,955m^2 GFA
C	10 – 16 Kwai Ting Road (A/KC/483)	Office and Retail	around 19,480m^2 GFA
D	11-19 Wing Yip Street (A/KC/488)	Data Centre	around 32,735m^2 GFA
E	2 San Kwai Street (A/KC/499)	Public Housing, Retail and Office	Around 800 flats, 360 m^2 Retail GFA and 2300 m^2 Office GFA

4.8 The major planned developments listed in **Table 4.4** have been included in the traffic forecast.

Traffic Generation of the Proposed Concrete Batching Plant

4.9 With reference to **Table 3.1**, the estimated traffic generation of the Proposed Concrete Batching Plant is given in **Table 4.5**. To be conservative, the peak concrete production is assumed to occur during both the AM and PM peak hours.

TABLE 4.5 TRAFFIC GENERATION OF THE PROPOSED CONCRETE BATCHING PLANT

Item	AM Peak Hour		PM Peak Hour	
	Generation	**Attraction**	**Generation**	**Attraction**
Total in veh/hr [From **Table 3.1**]	62	62	62	62
PCU Factor	2.5	2.5	2.5	2.5
Total in PCU/Hour	**155**	**155**	**155**	**155**
	310 (2-way)		**310 (2-way)**	

4.10 **Table 4.5** shows that the Proposed Concrete Batching Plant is expected to generate a total of 124 vehicles (2-way), or equivalent to 310 pcu (2-way) during the AM and PM peak hours.

2029 Traffic Flows

4.11 Year 2029 traffic flows for the following cases are derived:

2029 without the Proposed Concrete Batching Plant [A] = *(i) 2026 traffic flows derived with reference to Base District Traffic Model + (ii) estimated total growth from 2026 to 2029, i.e. +0.5% per annum + (iii) traffic generated by other development in the vicinity of the Proposed Concrete Batching Plant*

2029 with the Proposed Concrete Batching Plant [B] = *[A] + Traffic generated by the Proposed Concrete Batching Plant (**Table 4.5**)*

4.12 The 2029 peak hour traffic flows for the cases without and with the Proposed Concrete Batching Plant, are shown in **Figures 4.1 - 4.2**, respectively.

2029 Junction Capacity Analysis

4.13 The 2029 junction capacity analyses for the cases without and with the Proposed Concrete Batching Plant are summarised in **Table 4.6** and the detailed calculations are found in **Appendix A**.

TABLE 4.6 2029 JUNCTION PERFORMANCE

Ref.	Junction	Type of Junction	Parameter	Without the Concrete Batching Plant		With the Concrete Batching Plant	
				AM Peak Hour	**PM Peak Hour**	**AM Peak Hour**	**PM Peak Hour**
J01[(1)]	Kwai Chung Road / Kwai On Road / Kwai Yik Road	Signal	RC	39%	53%	32%	40%
J02[(1)]	Tai Lin Pai Road / Kwai On Road	Signal	RC	6%	46%	-8%	21%
J03	Tai Lin Pai Road / Kung Yip Street	Signal	RC	77%	81%	49%	79%
J04	Kung Yip Street / Wah Sing Street	Priority	RFC	0.378	0.334	0.698	0.645
J05	Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road	Signal	RC	22%	37%	20%	34%
J06	Tai Lin Pai Road / San Kwai Street	Priority	RFC	0.341	0.225	0.341	0.225

Note: RC – Reserve Capacity RFC – Ratio of Flow to Capacity
(1) – Junction layout and control is prior to the implementation of the improvement proposed by Kwai On Factory Estate Redevelopment

4.14 **Table 4.6** shows that the junctions analysed have capacity to accommodate the expected traffic growth to 2029 and the traffic generated by the Proposed Concrete Batching Plant, except for J02 Tai Lin Pai Road / Kwai On Road.

Junction Improvement Scheme at J02

4.15 The junction improvement found in **Appendix C** is proposed by the Kwai On Factory Estate Redevelopment. The improvement includes conversion of the existing priority junction Tai Li Pai Road / Kwai On Road ("J02") into a signalised junction.

4.16 It is found that with this junction improvement, the RC in 2029 for the case without the Proposed Concrete Batching Plant will be less than 15%. Hence, further improvement ("Further Improvement") is proposed and this involves modification of the road markings and staging plans. The Further Improvement is presented in **Figure 4.3.**

4.17 The capacity analysis is re-conducted with the Further Improvement and the results are presented in **Table 4.7**, and detailed calculations are found in Pages 20-21 of **Appendix A**.

TABLE 4.7 2029 JUNCTION PERFORMANCE WITH FURTHER IMPROVEMENT

Ref.	**Junction**	**Type of Junction**	**Parameter**	**Without the Proposed Concrete Batching Plant**		**With the Proposed Concrete Batching Plant**	
				AM Peak Hour	**PM Peak Hour**	**AM Peak Hour**	**PM Peak Hour**
J02	Tai Lin Pai Road / Kwai On Road	Signal	RC	42%	65%	32%	51%

Note: RC – Reserve Capacity RFC – Ratio of Flow to Capacity

4.18 **Table 4.7** shows that J02 with the Further Improvement implemented, could accommodate the expected traffic growth to 2029 and the traffic generated by the Proposed Concrete Batching Plant.

5.0 SUMMARY

5.1 On 24th May 2024, the TPB approved the S16 Planning Application of Proposed minor relaxation of plot ratio restriction for Permitted Warehouse Use (excluding Dangerous Goods Godown) in "Industrial" Zone at 13 – 17 Wah Sing Street in Kwai Chung the Subject Site (TPB ref: A/KC/505). The Owner now intends to redevelop the Subject Site into a Proposed Concrete Batching Plant.

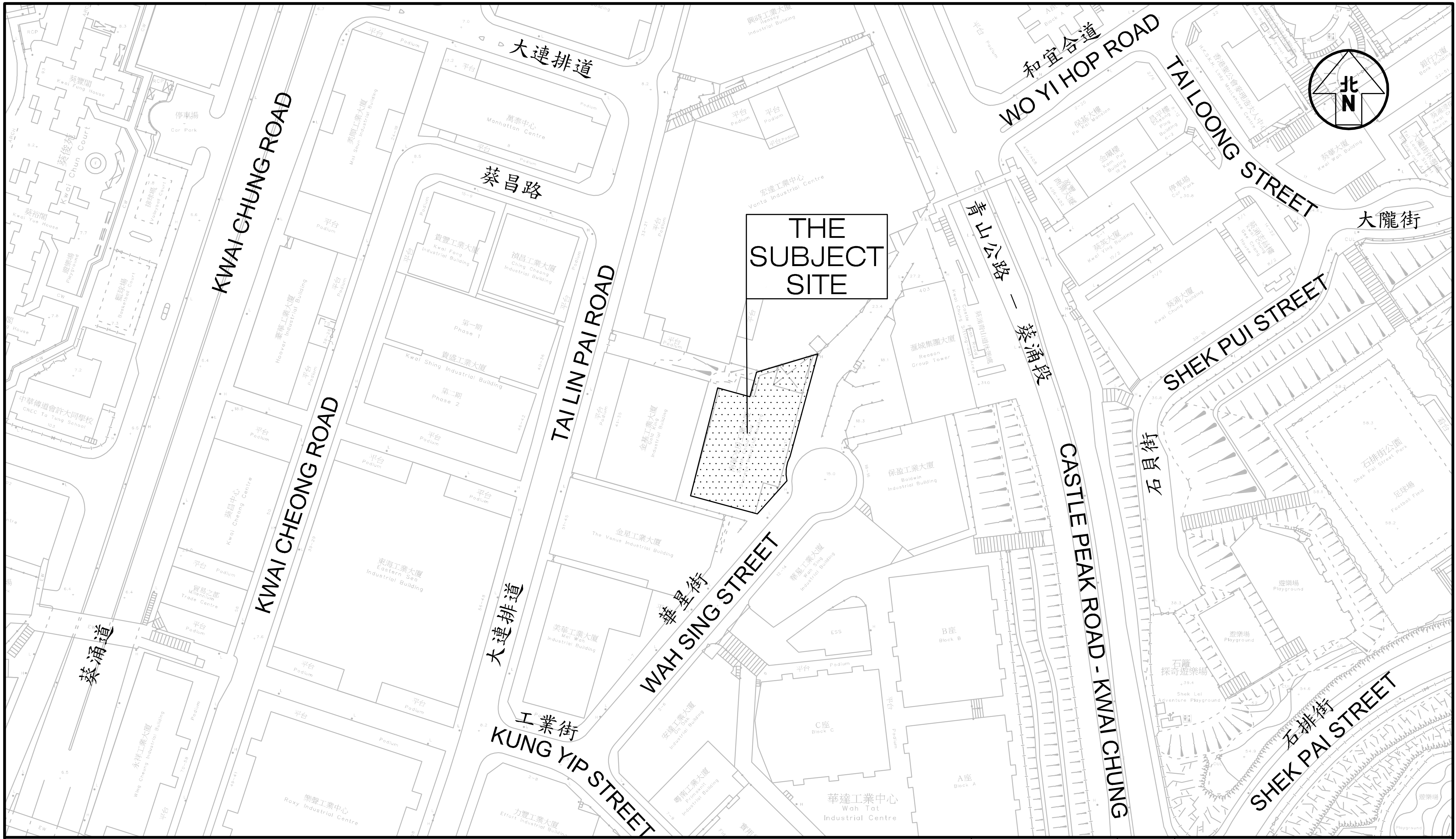
5.2 The Proposed Concrete Batching Plant provides sufficient internal transport facilities meet the operational requirements. The vehicular access to the Proposed Concrete Batching Plant is provided at Wah Sing Street.

5.3 Manual classified counts were conducted at junctions located in the vicinity of the Proposed Concrete Batching Plant in order to establish the peak hour traffic flows. Currently, the junctions operate with capacities during the AM and PM peak hours.

5.4 The Proposed Concrete Batching Plant is expected to be completed by 2026, and the junction capacity analysis is undertaken for year 2029. With the Further Improvement implemented, in addition to the improvement proposed by the Hong Kong Housing Authority, at the junction of Tai Lin Pai Road / Kwai On Road, all junctions analysed are found to have sufficient capacity to accommodate the expected traffic flow in 2029 and the traffic generated by the Proposed Concrete Batching Plant.

5.5 It is concluded that the Proposed Concrete Batching Plant will result in **no** adverse traffic impact to the surrounding road network. From traffic engineering grounds, the Proposed Concrete Batching Plant is acceptable.

Figures


THE SUBJECT SITE
KWAI CHUNG ROAD
KWAI CHEONG ROAD
TAI LIN PAI ROAD
大連排道
葵昌路
大連排道
WAH SING STREET
華星街
KUNG YIP STREET
工業街
葵涌道
WO YI HOP ROAD
和宜合道
TAI LOONG STREET
大隴街
青山公路 — 葵涌段
CASTLE PEAK ROAD - KWAI CHUNG
SHEK PUI STREET
石貝街
SHEK PAI STREET
石排街
北
N
華達工業中心
Wah Tat Industrial Centre

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure No.
1.1

Revision
B

Figure Title

LOCATION OF THE SUBJECT SITE

Designed by
CYY

Drawn by
SCY

Checked by
KC

Scale in A4
1 : 2,000

Date
20 DEC 2024

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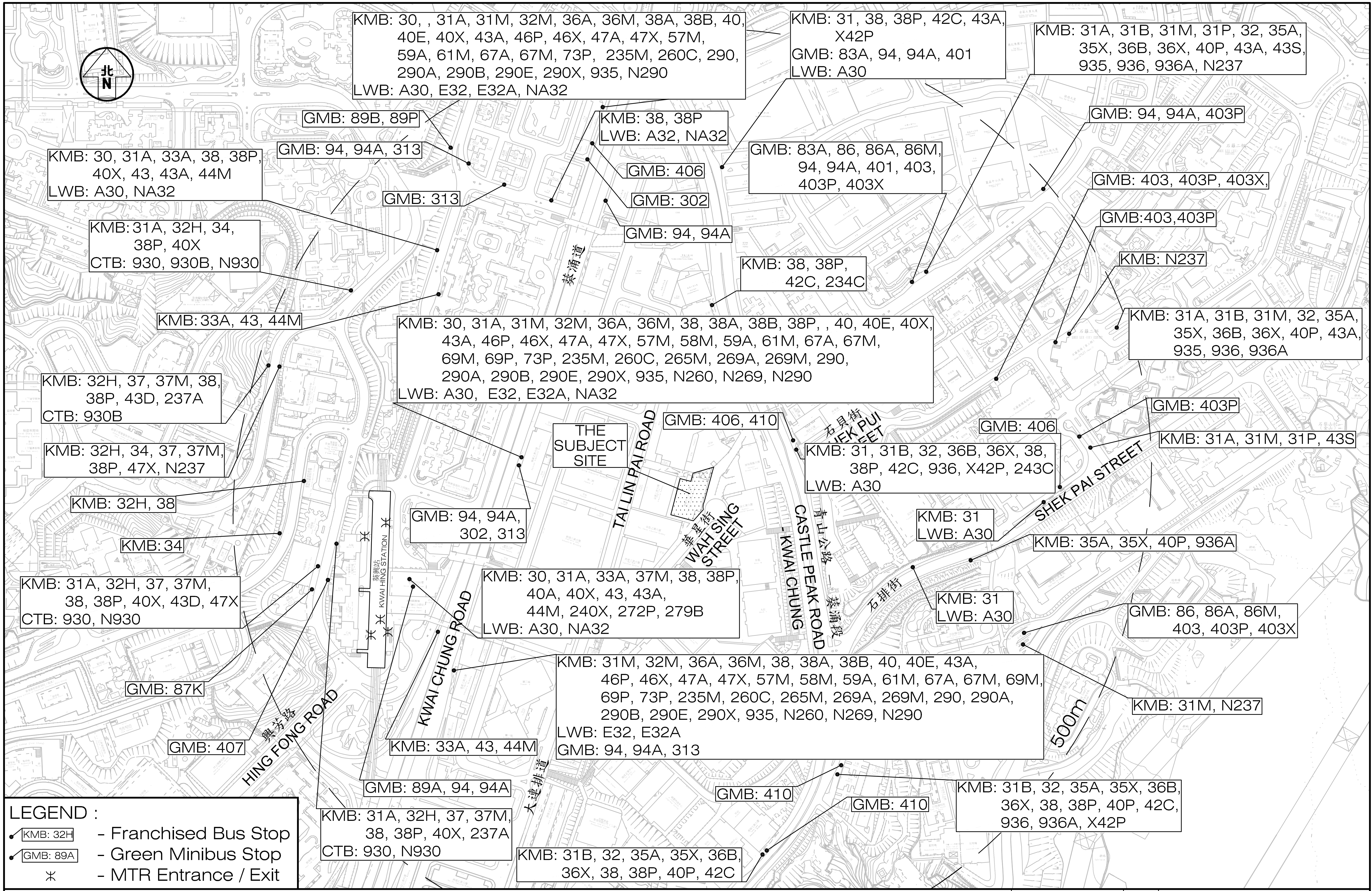
北
N
KMB: 30, , 31A, 31M, 32M, 36A, 36M, 38A, 38B, 40, 40E, 40X, 43A, 46P, 46X, 47A, 47X, 57M, 59A, 61M, 67A, 67M, 73P, 235M, 260C, 290, 290A, 290B, 290E, 290X, 935, N290
LWB: A30, E32, E32A, NA32
KMB: 31, 38, 38P, 42C, 43A, X42P
GMB: 83A, 94, 94A, 401
LWB: A30
KMB: 31A, 31B, 31M, 31P, 32, 35A, 35X, 36B, 36X, 40P, 43A, 43S, 935, 936, 936A, N237
GMB: 89B, 89P
KMB: 38, 38P
LWB: A32, NA32
GMB: 94, 94A, 403P
GMB: 94, 94A, 313
KMB: 30, 31A, 33A, 38, 38P, 40X, 43, 43A, 44M
LWB: A30, NA32
GMB: 406
GMB: 83A, 86, 86A, 86M, 94, 94A, 401, 403, 403P, 403X
GMB: 403, 403P, 403X,
GMB: 313
GMB: 302
GMB:403,403P
KMB: 31A, 32H, 34, 38P, 40X
CTB: 930, 930B, N930
GMB: 94, 94A
葵涌道
KMB: N237
KMB: 38, 38P, 42C, 234C
KMB:33A, 43, 44M
KMB: 30, 31A, 31M, 32M, 36A, 36M, 38, 38A, 38B, 38P, , 40, 40E, 40X, 43A, 46P, 46X, 47A, 47X, 57M, 58M, 59A, 61M, 67A, 67M, 69M, 69P, 73P, 235M, 260C, 265M, 269A, 269M, 290, 290A, 290B, 290E, 290X, 935, N260, N269, N290
LWB: A30, E32, E32A, NA32
KMB: 31A, 31B, 31M, 32, 35A, 35X, 36B, 36X, 40P, 43A, 935, 936, 936A
KMB: 32H, 37, 37M, 38, 38P, 43D, 237A
CTB: 930B
TAI LIN PAI ROAD
GMB: 406, 410
石貝街
HEK PUI
EET
GMB: 403P
GMB: 406
THE SUBJECT SITE
KMB: 31A, 31M, 31P, 43S
KMB: 32H, 34, 37, 37M, 38P, 47X, N237
KMB: 31, 31B, 32, 36B, 36X, 38, 38P, 42C, 936, X42P, 243C
LWB: A30
SHEK PAI STREET
KMB: 32H, 38
華星街
WAH SING STREET
CASTLE PEAK ROAD - KWAI CHUNG
青山公路 – 葵涌段
GMB: 94, 94A, 302, 313
KMB: 31
LWB: A30
KMB:34
葵興站
KWAI HING STATION
KMB: 35A, 35X, 40P, 936A
KMB: 31A, 32H, 37, 37M, 38, 38P, 40X, 43D, 47X
CTB: 930, N930
KMB: 30, 31A, 33A, 37M, 38, 38P, 40A, 40X, 43, 43A, 44M, 240X, 272P, 279B
LWB: A30, NA32
石排街
KMB: 31
LWB: A30
GMB: 86, 86A, 86M, 403, 403P, 403X
KWAI CHUNG ROAD
KMB: 31M, 32M, 36A, 36M, 38, 38A, 38B, 40, 40E, 43A, 46P, 46X, 47A, 47X, 57M, 58M, 59A, 61M, 67A, 67M, 69M, 69P, 73P, 235M, 260C, 265M, 269A, 269M, 290, 290A, 290B, 290E, 290X, 935, N260, N269, N290
LWB: E32, E32A
GMB: 94, 94A, 313
GMB: 87K
KMB: 31M, N237
興芳路
HING FONG ROAD
500m
GMB: 407
KMB: 33A, 43, 44M
大連排道
GMB: 89A, 94, 94A
GMB: 410
GMB: 410
KMB: 31B, 32, 35A, 35X, 36B, 36X, 38, 38P, 40P, 42C, 936, 936A, X42P
LEGEND :
KMB: 32H
- Franchised Bus Stop
GMB: 89A
- Green Minibus Stop
- MTR Entrance / Exit
KMB: 31A, 32H, 37, 37M, 38, 38P, 40X, 237A
CTB: 930, N930
KMB: 31B, 32, 35A, 35X, 36B, 36X, 38, 38P, 40P, 42C

Project Title		Figure No.	Revision	
PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG	J7345	2.1	B	CKM Asia Limited Traffic and Transportation Planning Consultants

Figure Title

PUBLIC TRANSPORT FACILITIES IN THE VICINITY OF THE SUBJECT SITE

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A3	Date
1 : 4,000	20 DEC 2024

21st Floor, Methodist House, 36 Hennessy Road
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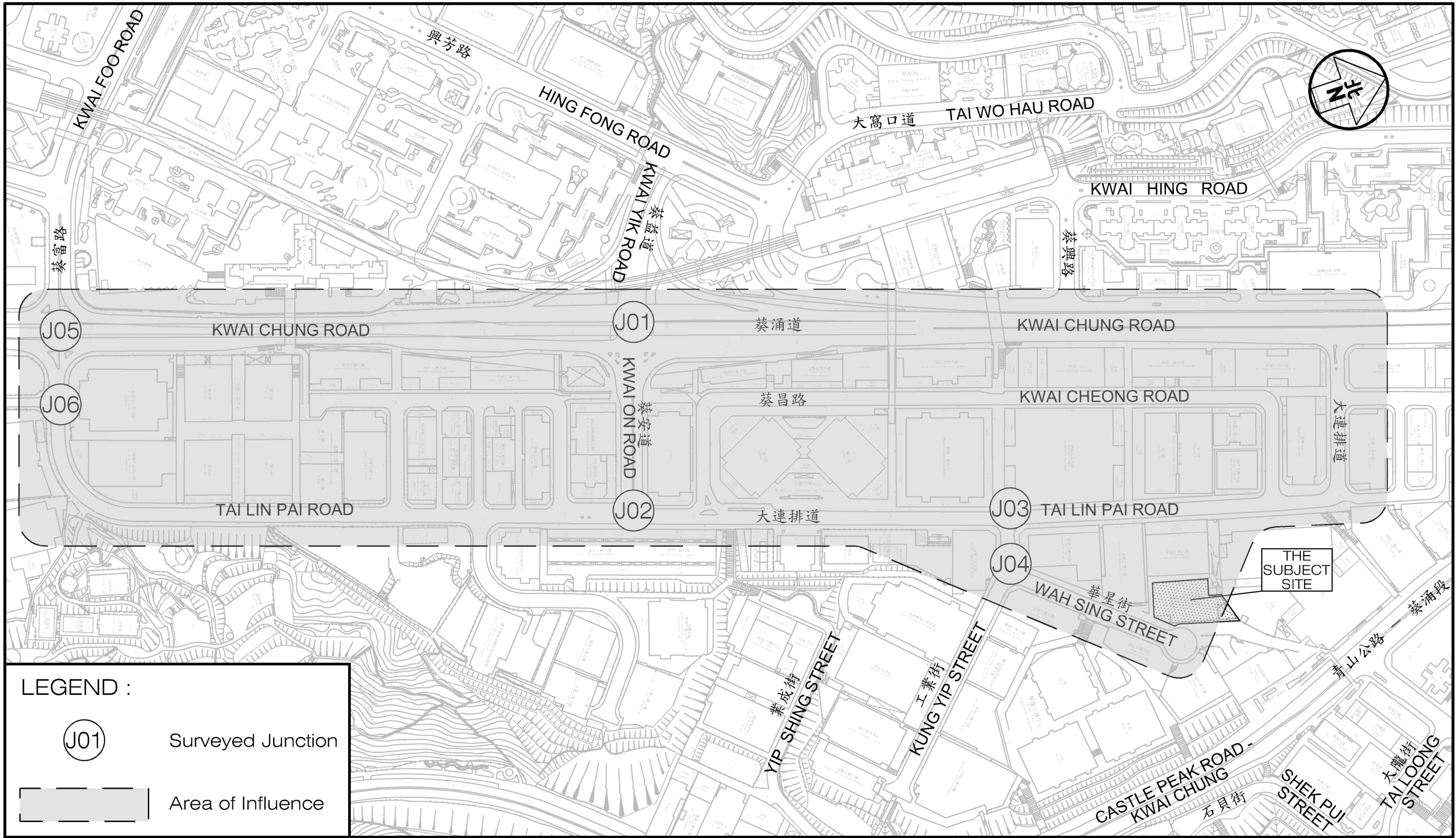
北
N
KWAI FOO ROAD
葵富路
興芳路
HING FONG ROAD
KWAI YIK ROAD
葵益道
大窩口道
TAI WO HAU ROAD
KWAI HING ROAD
葵興路
J05
KWAI CHUNG ROAD
J01
葵涌道
KWAI CHUNG ROAD
J06
KWAI ON ROAD
葵安道
葵昌路
KWAI CHEONG ROAD
大連排道
TAI LIN PAI ROAD
J02
大連排道
J03
TAI LIN PAI ROAD
J04
華星街
WAH SING STREET
THE SUBJECT SITE
業成街
YIP SHING STREET
工業街
KUNG YIP STREET
CASTLE PEAK ROAD - KWAI CHUNG
青山公路 — 葵涌段
石貝街
SHEK PUI STREET
大隴街
TAI LOONG STREET
LEGEND :
J01
Surveyed Junction
Area of Influence

Project Title
PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG
J7345

Figure No.
2.2

Revision
B

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Figure Title
LOCATION OF SURVEYED JUNCTIONS AND AREA OF INFLUENCE

Designed by	Drawn by	Checked by
CYY	SCY	KC

Scale in A4	Date
1 : 4,000	20 DEC 2024

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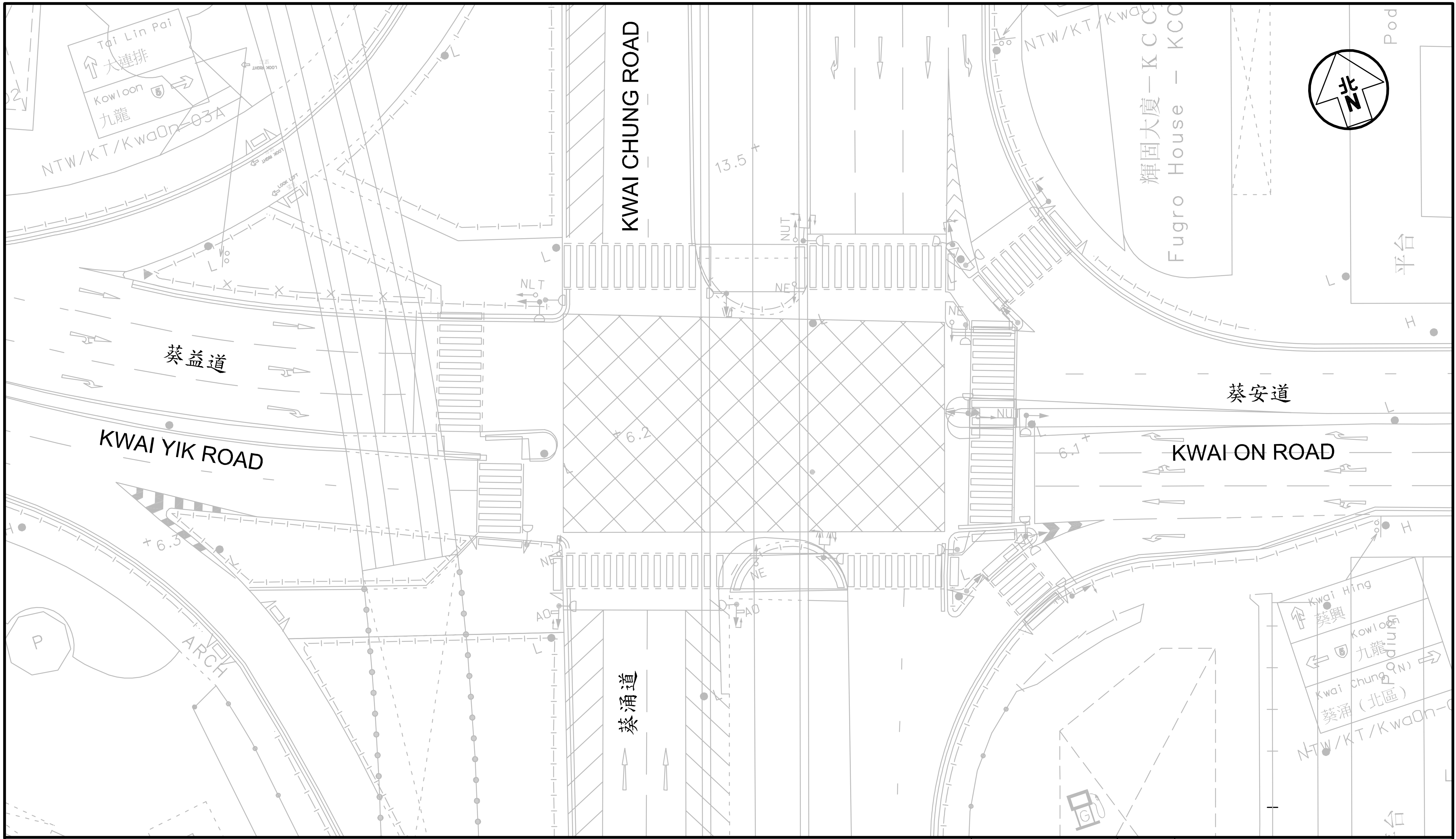
KWAI CHUNG ROAD
KWAI YIK ROAD
KWAI ON ROAD
葵益道
葵安道
葵涌道
北 N
Tai Lin Pai
大連排
Kowloon
九龍
NTW/KT/Kwa0n-03A
NTW/KT/Kwa0n
Fugro House
輝固大廈
KCC
Podium
平台
Kwai Hing
葵興
Kowloon
九龍
Kwai Chung (N)
葵涌（北區）
13.5
6.2
6.1
6.3
NLT
NE
NUT
AO
ARCH
P
G
LOOK RIGHT
LOOK LEFT

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

EXISTING JUNCTION LAYOUT OF
KWAI CHUNG ROAD / KWAI ON ROAD / KWAI YIK ROAD

Figure No.		Revision
2.3		B
Designed by	Drawn by	Checked by
C Y Y	S C Y	K C
Scale in A4	Date	
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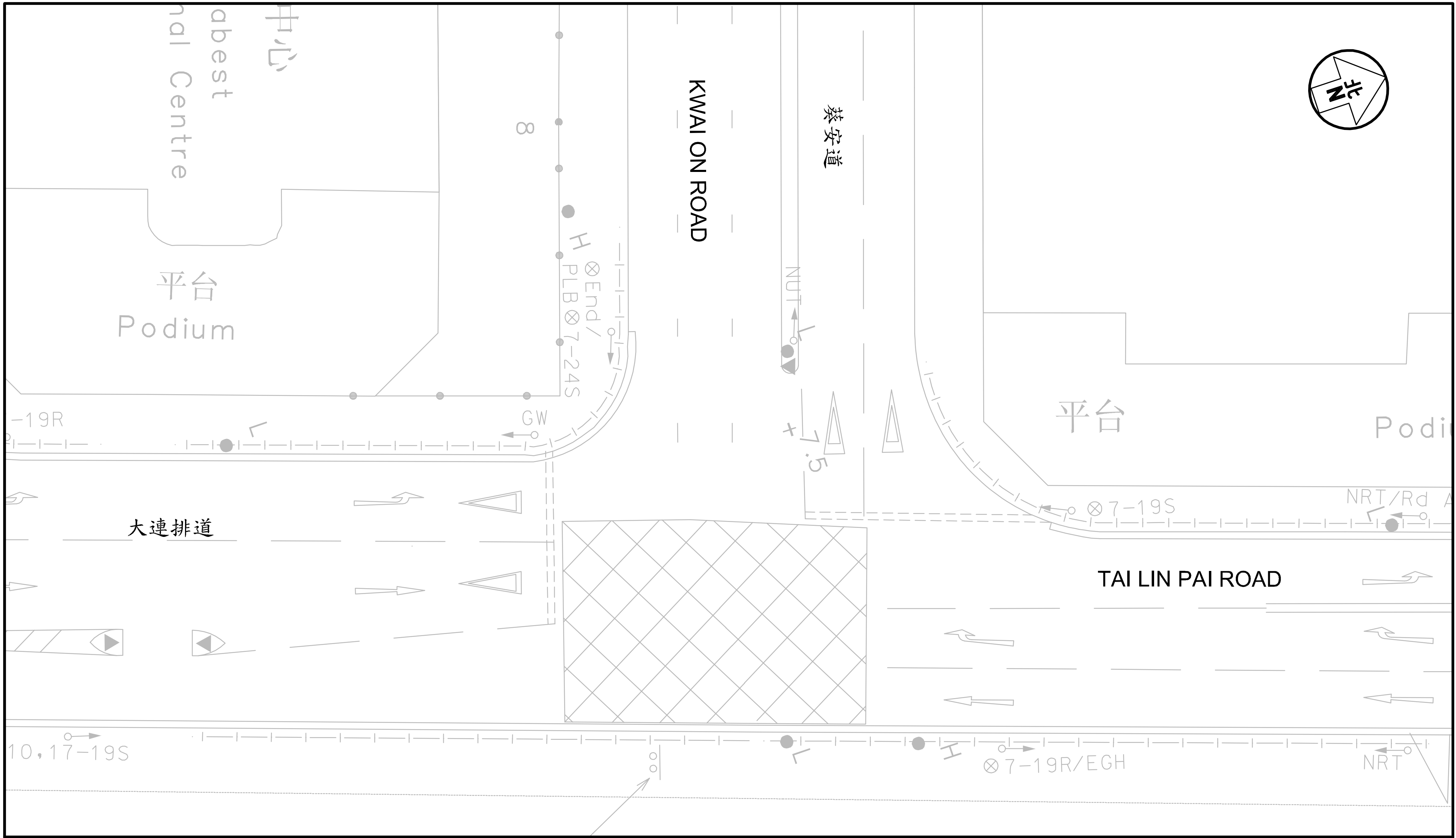
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NRT/Rd A
L
大連排道
TAI LIN PAI ROAD
10,17-19S
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NRT

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure No.
2.4

Revision
B

Figure Title

EXISTING JUNCTION LAYOUT OF TAI LIN PAI ROAD / KWAI ON ROAD

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1 : 300	20 DEC 2024

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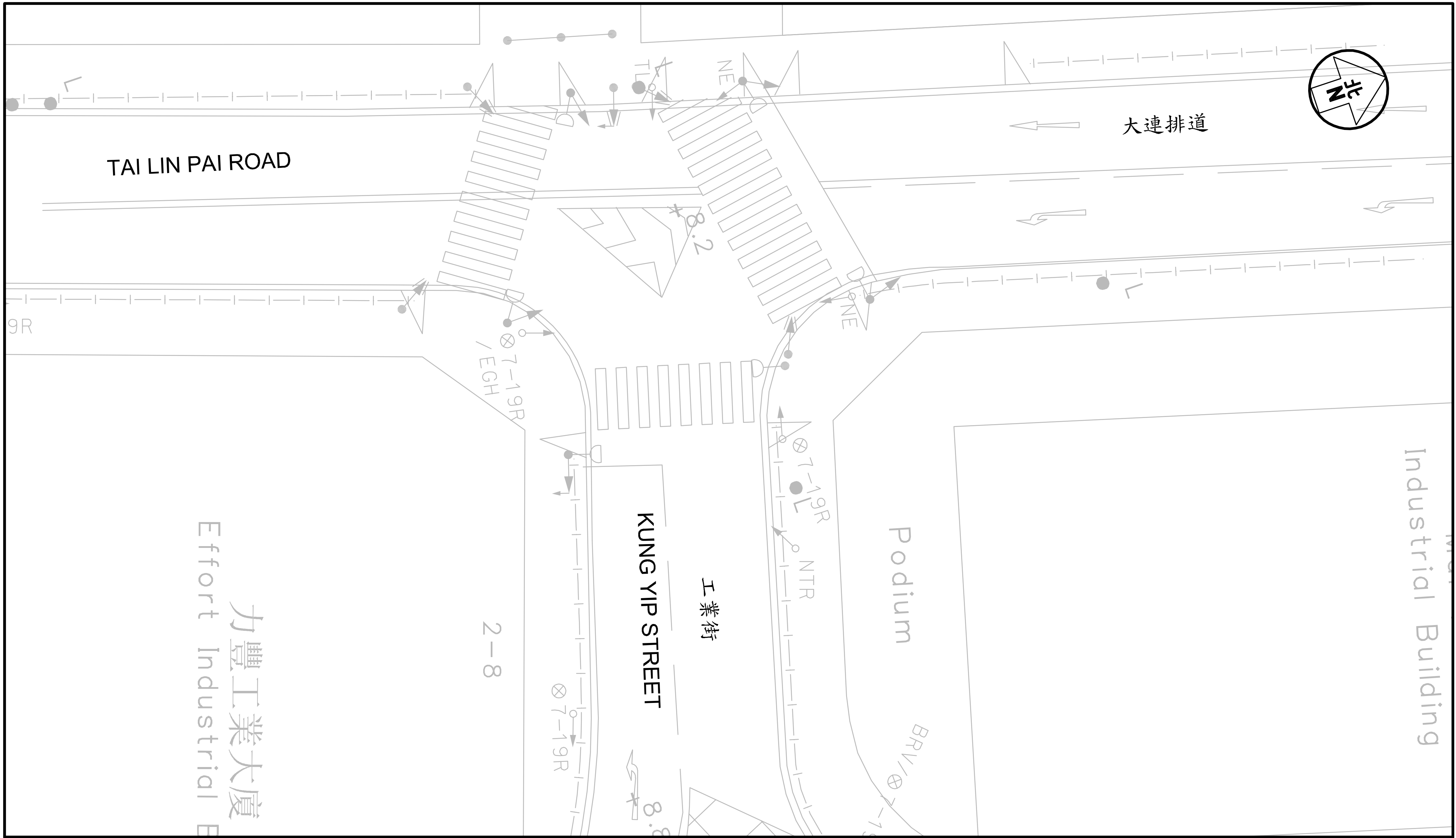
TAI LIN PAI ROAD
大連排道
北
N
KUNG YIP STREET
工業街
8.2
9R
7-19R
/ EGH
7-19R
NTR
NE
NE
TL
Podium
Industrial Building
Effort Industrial B
力豐工業大廈
2-8
7-19R
8.8
BRV/

Project Title
PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG
J7345

Figure Title
EXISTING JUNCTION LAYOUT OF
TAI LIN PAI ROAD / KUNG YIP STREET

Figure No.		Revision
2.5		B

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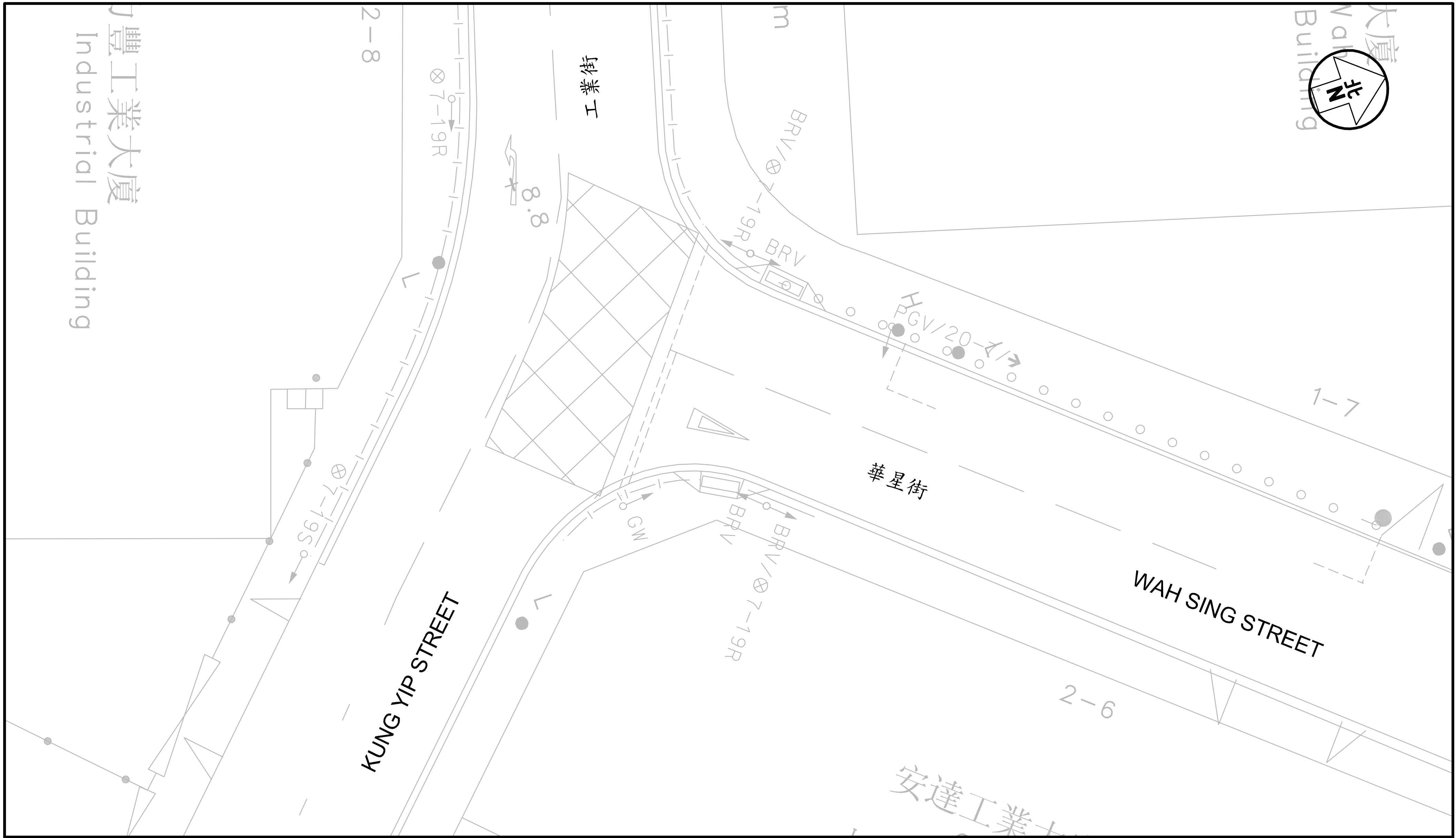
工業街
華星街
KUNG YIP STREET
WAH SING STREET
北
N
Industrial Building
工業大廈
2-8
8.8
1-7
2-6
BRV
BRV/⊗7-19R
⊗7-19R
⊗7-19S
HPGV/20
GW
L
安達工業大

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

EXISTING JUNCTION LAYOUT OF
KUNG YIP STREET / WAH SING STREET

Figure No.		Revision
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C Y Y	S C Y	K C
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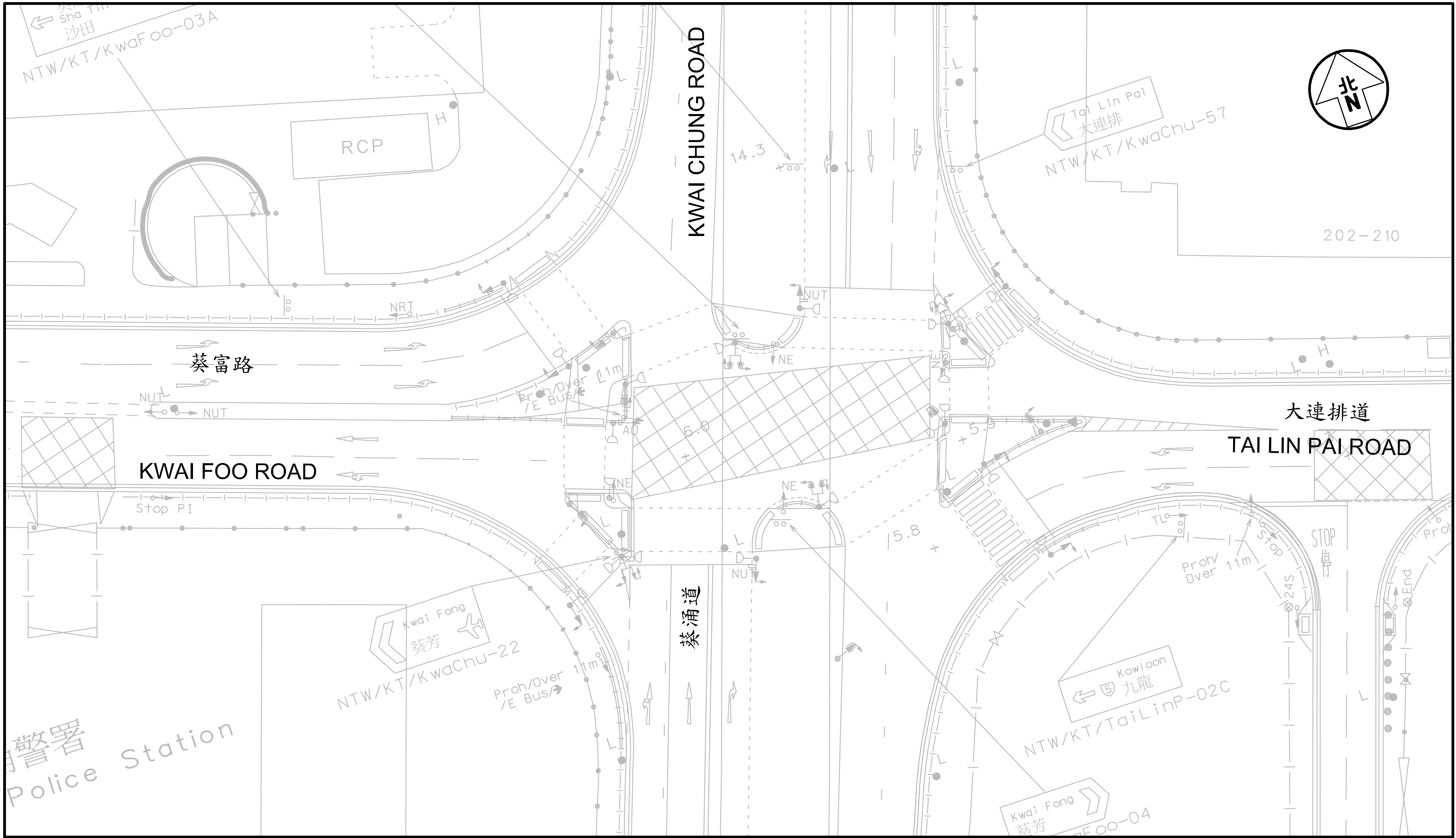
KWAI CHUNG ROAD
葵涌道
KWAI FOO ROAD
葵富路
TAI LIN PAI ROAD
大連排道
北
N
RCP
H
202-210
Sha Tin
沙田
NTW/KT/KwaFoo-03A
Tai Lin Pai
大連排
NTW/KT/KwaChu-57
Kwai Fong
葵芳
NTW/KT/KwaChu-22
Kowloon
5
九龍
NTW/KT/TaiLinP-02C
Kwai Fong
葵芳
aFoo-04
警署
Police Station
14.3
6.0
5.9
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NUT
NRT
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TL
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STOP
停
Proh/Over 11m
/E Bus
End
245

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

EXISTING JUNCTION LAYOUT OF
KWAI CHUNG ROAD / TAI LIN PAI ROAD / KWAI FOO ROAD

Figure No.		Revision
2.7		B
Designed by	Drawn by	Checked by
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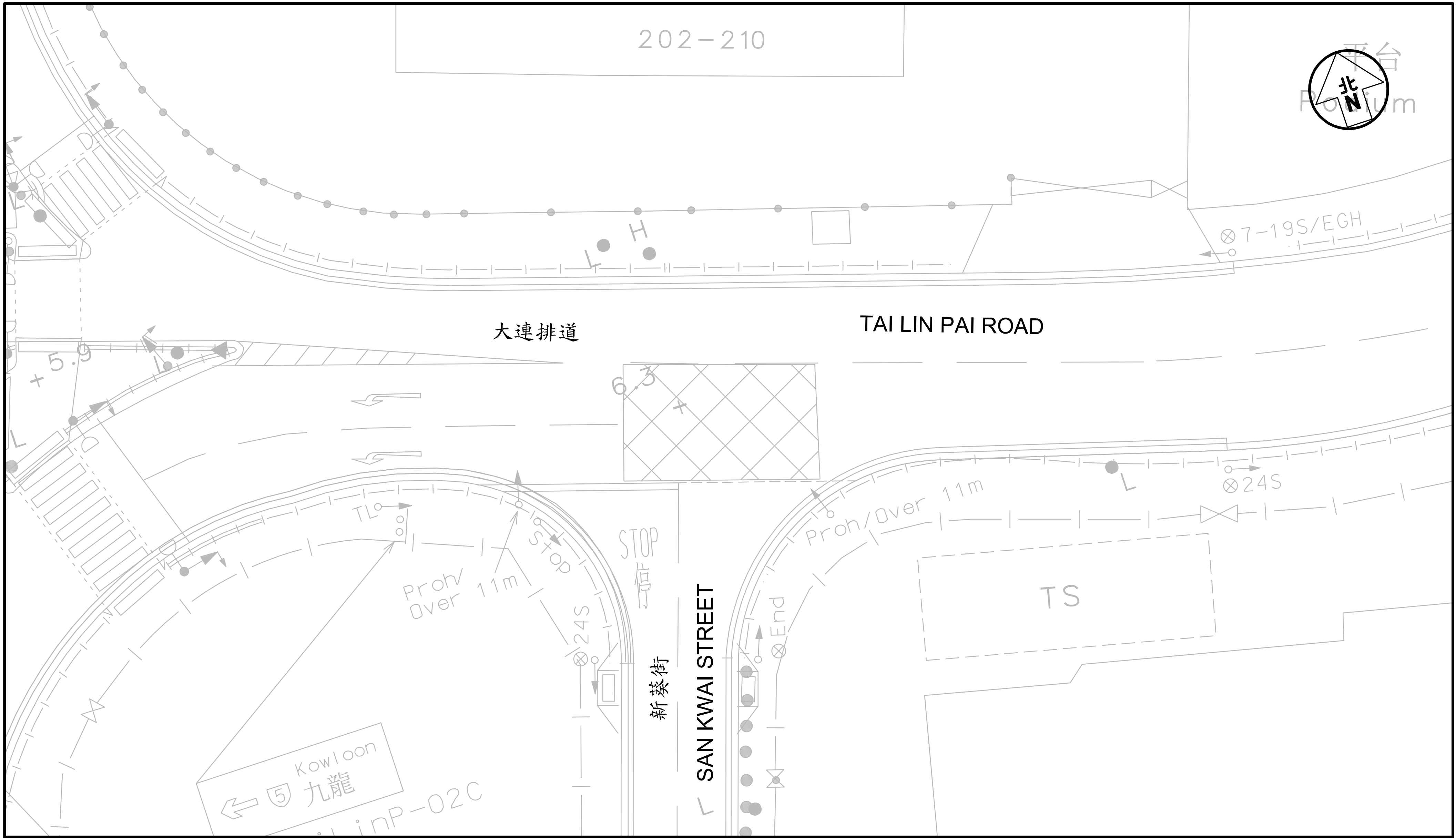
202-210
平台
Podium
北
N
7-19S/EGH
L H
大連排道
TAI LIN PAI ROAD
+5.9
6.3
TL
Stop
STOP
停
Proh/
Over 11m
24S
Proh/Over 11m
L
24S
End
TS
SAN KWAI STREET
新葵街
Kowloon
5 九龍
LinP-02C
L

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

EXISTING JUNCTION LAYOUT OF
TAI LIN PAI ROAD / SAN KWAI STREET

Figure No.		Revision
2.8		B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

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1 : 300	20 DEC 2024

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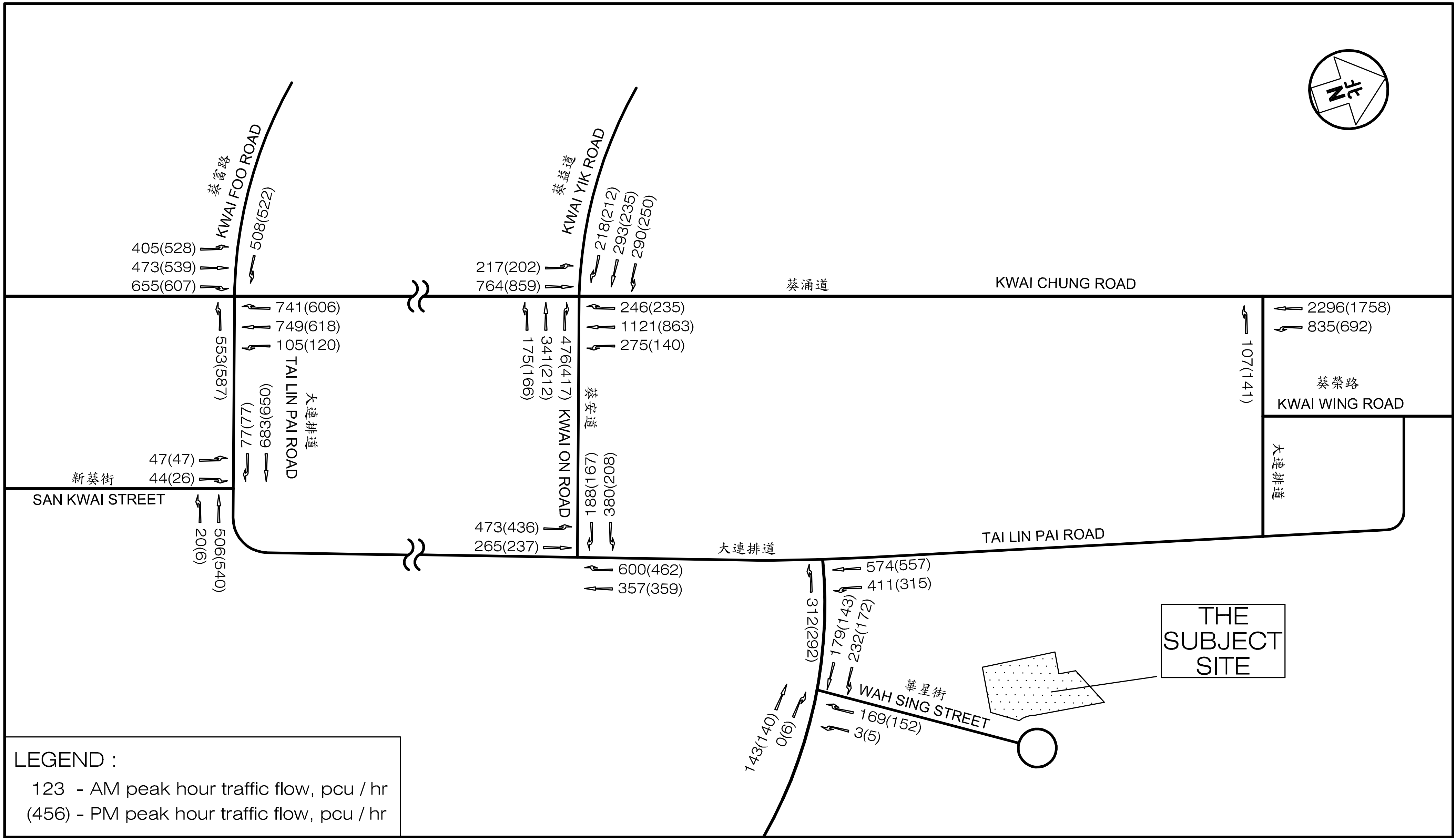
北
N
葵富路
KWAI FOO ROAD
508(522)
405(528)
473(539)
655(607)
741(606)
749(618)
105(120)
553(587)
大連排道
TAI LIN PAI ROAD
77(77)
683(650)
47(47)
44(26)
新葵街
SAN KWAI STREET
20(6)
506(540)
葵益道
KWAI YIK ROAD
218(212)
293(235)
290(250)
217(202)
764(859)
175(166)
341(212)
476(417)
246(235)
1121(863)
275(140)
葵安道
KWAI ON ROAD
188(167)
380(208)
473(436)
265(237)
600(462)
357(359)
大連排道
葵涌道
KWAI CHUNG ROAD
107(141)
2296(1758)
835(692)
葵榮路
KWAI WING ROAD
大連排道
TAI LIN PAI ROAD
574(557)
411(315)
312(292)
179(143)
232(172)
143(140)
0(6)
華星街
WAH SING STREET
169(152)
3(5)
THE SUBJECT SITE
LEGEND :
123 - AM peak hour traffic flow, pcu / hr
(456) - PM peak hour traffic flow, pcu / hr

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

YEAR 2024 OBSERVED PEAK HOUR TRAFFIC FLOWS

Figure No.	Revision
2.9	B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
N.T.S.	20 DEC 2024

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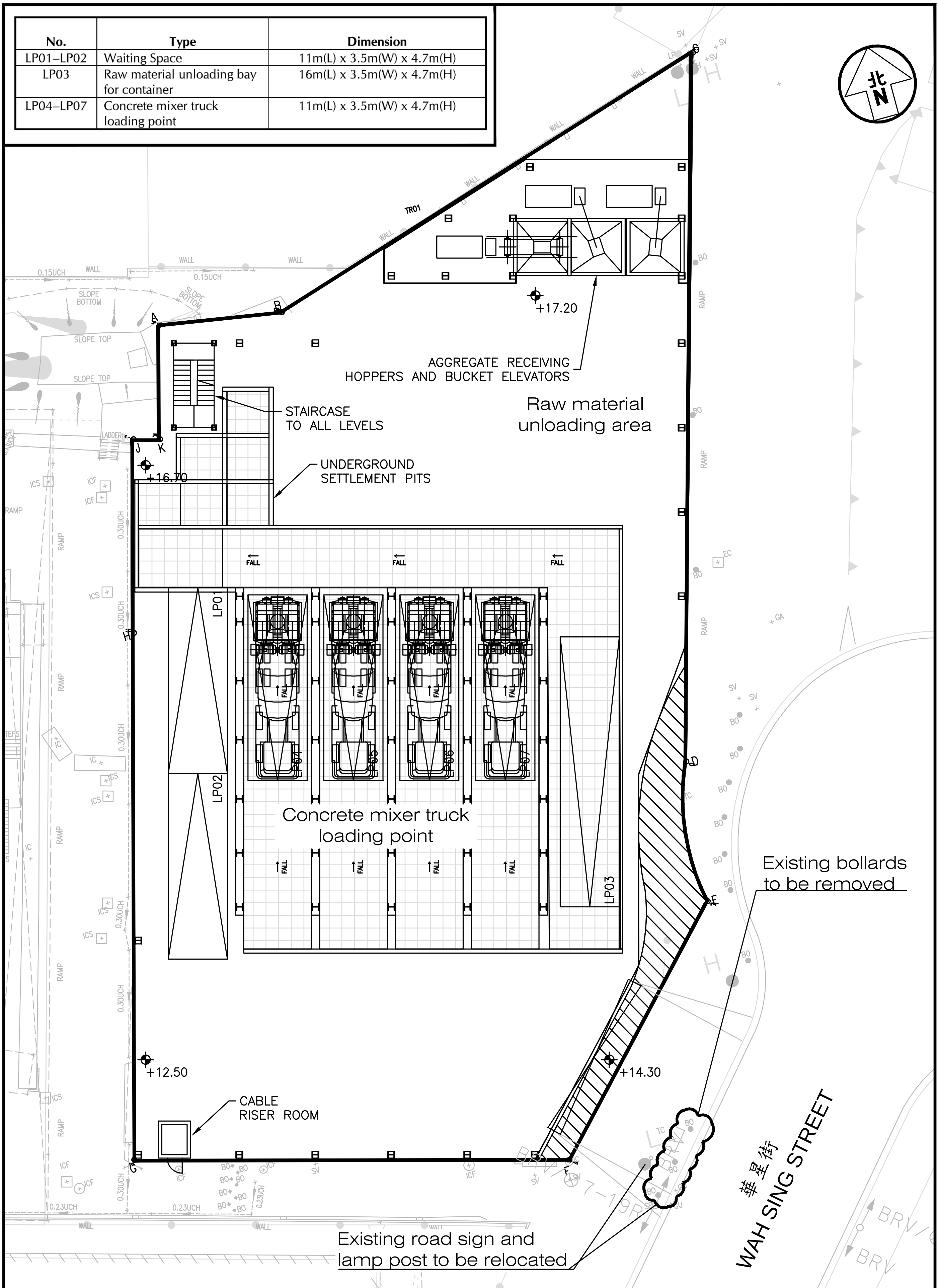
T:\JOB\J7300-J7349\J7345\2024 12\Fig 2.9 RevB.dwg

No.	Type	Dimension
LP01–LP02	Waiting Space	11m(L) x 3.5m(W) x 4.7m(H)
LP03	Raw material unloading bay for container	16m(L) x 3.5m(W) x 4.7m(H)
LP04–LP07	Concrete mixer truck loading point	11m(L) x 3.5m(W) x 4.7m(H)



北 N
AGGREGATE RECEIVING HOPPERS AND BUCKET ELEVATORS
+17.20
Raw material unloading area
STAIRCASE TO ALL LEVELS
UNDERGROUND SETTLEMENT PITS
+16.70
LP01
LP02
LP03
Concrete mixer truck loading point
FALL
Existing bollards to be removed
+12.50
+14.30
CABLE RISER ROOM
Existing road sign and lamp post to be relocated
華星街
WAH SING STREET
A
B
C
D
E
F
G
H
J
K
WALL
SLOPE BOTTOM
SLOPE TOP
RAMP
0.15UCH
0.30UCH
0.23UCH

Project Title

PROPOSED CONCRETE BATCHING PLANT
AT 13 – 17 WAH SING STREET, KWAI CHUNG

Job No.	Figure No.	Scale in A4
J7345	3.1	1 : 300

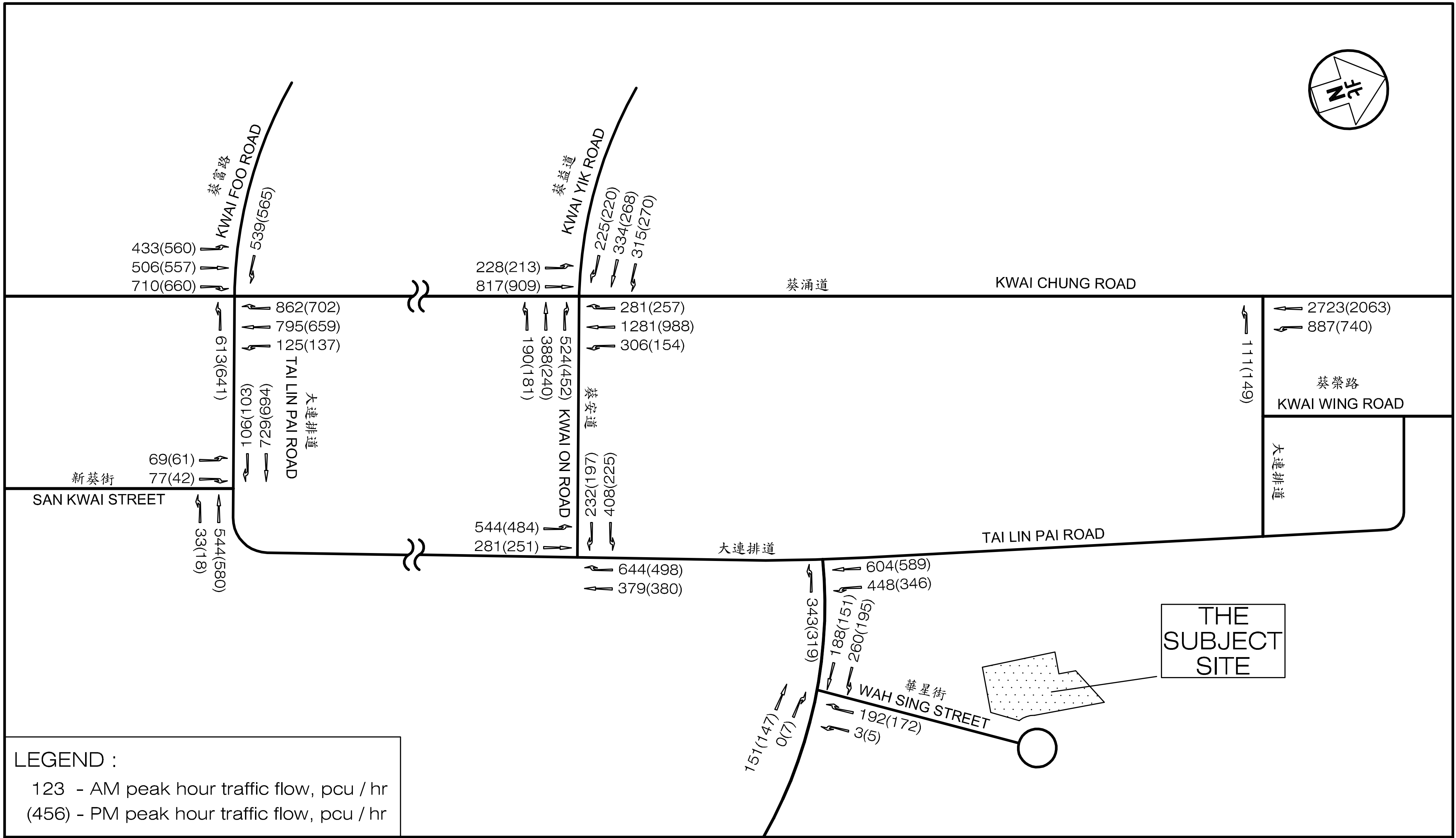
Designed by	Drawn by	Checked by	Revision	Date
C Y Y	S C Y	K C	B	20 DEC 2024

Figure Title

GROUND FLOOR

CKM Asia Limited
Traffic and Transportation Planning Consultants
21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong
Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk

T:\JOB\J7300-J7349\J7345\2024 12\Fig 3.1 RevB.dwg


北 N
葵富路
KWAI FOO ROAD
539(565)
433(560)
506(557)
710(660)
862(702)
795(659)
125(137)
613(641)
106(103)
729(694)
大連排道
TAI LIN PAI ROAD
69(61)
77(42)
新葵街
SAN KWAI STREET
33(18)
544(580)
葵益道
KWAI YIK ROAD
225(220)
334(268)
315(270)
228(213)
817(909)
281(257)
1281(988)
306(154)
190(181)
388(240)
524(452)
葵安道
KWAI ON ROAD
232(197)
408(225)
544(484)
281(251)
644(498)
379(380)
大連排道
葵涌道
KWAI CHUNG ROAD
111(149)
2723(2063)
887(740)
葵榮路
KWAI WING ROAD
大連排道
TAI LIN PAI ROAD
604(589)
448(346)
343(319)
188(151)
260(195)
華星街
WAH SING STREET
192(172)
3(5)
151(147)
0(7)
THE SUBJECT SITE

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

YEAR 2029 PEAK HOUR TRAFFIC FLOWS
WITHOUT THE PROPOSED CONCRETE BATCHING PLANT

Figure No.	Revision
4.1	B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
N.T.S.	20 DEC 2024

CKM Asia Limited
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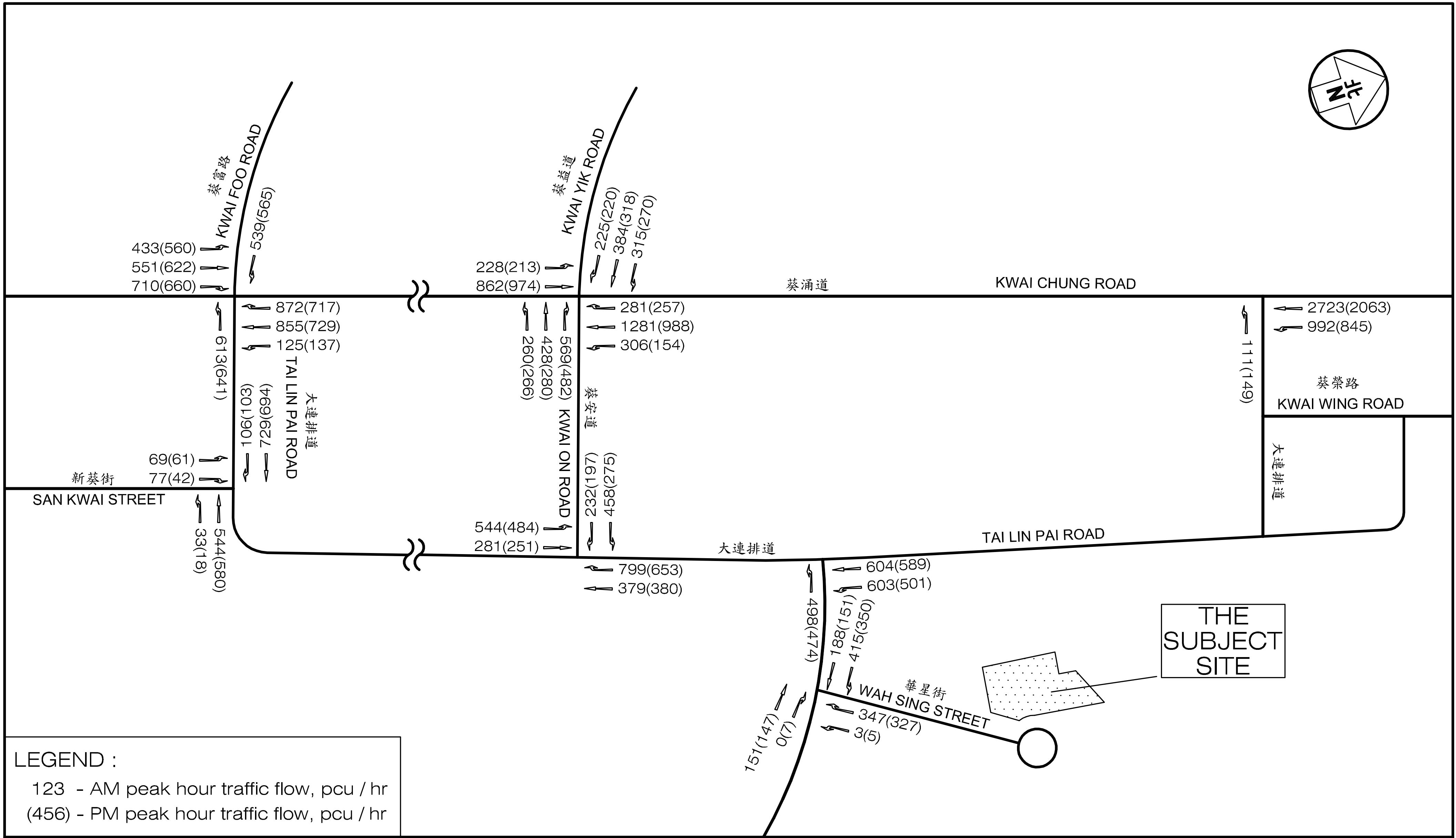
T:\JOB\J7300-J7349\J7345\2024 12\Fig 4.1 RevB.dwg


北
N
葵富路
KWAI FOO ROAD
葵益道
KWAI YIK ROAD
葵涌道
KWAI CHUNG ROAD
大連排道
TAI LIN PAI ROAD
葵安道
KWAI ON ROAD
新葵街
SAN KWAI STREET
葵榮路
KWAI WING ROAD
華星街
WAH SING STREET
THE SUBJECT SITE
433(560)
551(622)
710(660)
539(565)
872(717)
855(729)
125(137)
613(641)
106(103)
729(694)
69(61)
77(42)
33(18)
544(580)
228(213)
862(974)
225(220)
384(318)
315(270)
281(257)
1281(988)
306(154)
260(266)
428(280)
569(482)
232(197)
458(275)
544(484)
281(251)
799(653)
379(380)
2723(2063)
992(845)
111(149)
604(589)
603(501)
498(474)
188(151)
415(350)
151(147)
0(7)
347(327)
3(5)

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

YEAR 2029 PEAK HOUR TRAFFIC FLOWS
WITH THE PROPOSED CONCRETE BATCHING PLANT

Figure No.		Revision
4.2		B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
N.T.S.	20 DEC 2024

CKM Asia Limited
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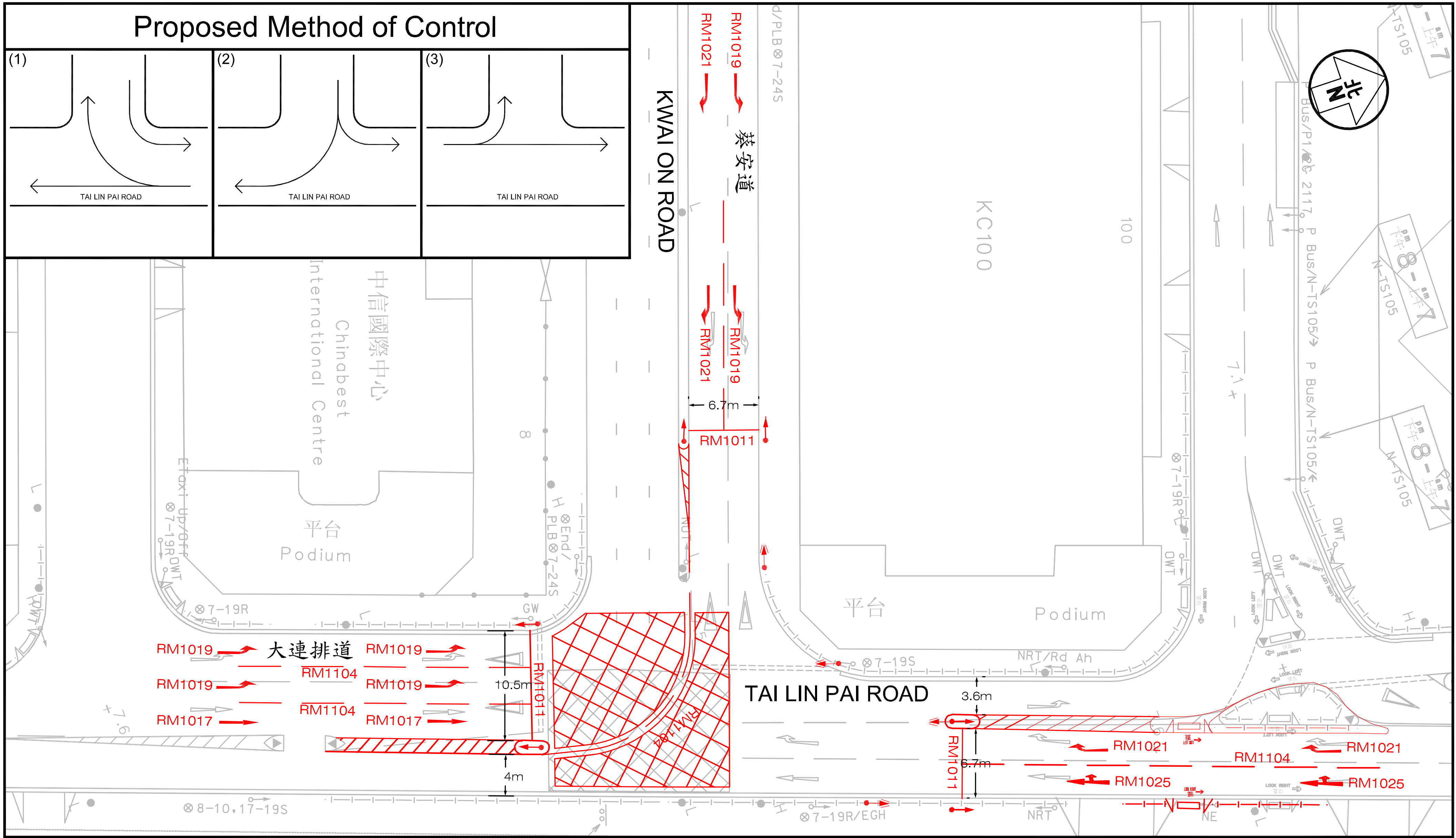
T:\JOB\J7300-J7349\J7345\2024 12\Fig 4.2 RevB.dwg


Proposed Method of Control
(1)
TAI LIN PAI ROAD
(2)
TAI LIN PAI ROAD
(3)
TAI LIN PAI ROAD
KWAI ON ROAD
葵安道
RM1021
RM1019
RM1021
RM1019
6.7m
RM1011
中信國際中心
Chinabest International Centre
平台
Podium
KC100
平台
Podium
TAI LIN PAI ROAD
大連排道
RM1019
RM1019
RM1104
RM1019
RM1019
RM1104
RM1017
RM1017
10.5m
RM1011
RM1104
4m
3.6m
RM1011
6.7m
RM1021
RM1104
RM1021
RM1025
RM1025

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure No.

4.3

Revision

B

CKM Asia Limited

Traffic and Transportation Planning Consultants

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Figure Title

JUNCTION IMPROVEMENT SCHEME AT TAI LIN PAI ROAD / KWAI ON ROAD

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
1 : 500	20 DEC 2024

T:\JOB\J7300-J7349\J7345\2024 12\Fig 4.3 RevB.dwg

Appendix A –
Detailed Calculation

Signal Junction Analysis

Junction: J01 - Kwai Chung Road / Kwai On Road / Kwai Yik Road Job Number: J7345

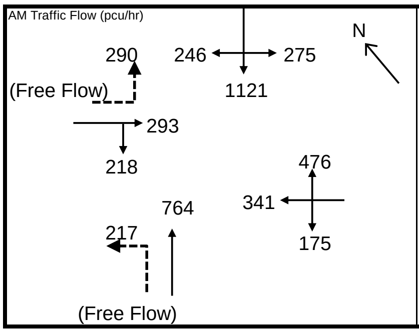
Scenario: Existing Condition Page 1

Design Year: 2024 Designed By: ________ Checked By: ________ Date: 20 December 2024

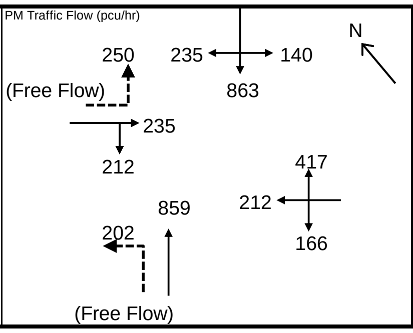
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kwai Chung Road SB	LT	A1	1, 2	4.00	25.0		100	1901	275	0.145		100	1901	140	0.074	
Kwai Chung Road SB	SA	A2	1, 2	4.40				2195	561	0.256			2195	432	0.197	
Kwai Chung Road SB	SA	A3	1, 2	4.40				2195	560	0.255			2195	431	0.196	
Kwai Chung Road SB	RT	A4	2	4.40	20.0		100	2042	246	0.120	0.120	100	2042	235	0.115	0.115
Kwai Yik Road EB	SA	B1	3	3.80				2135	175	0.082			2135	153	0.072	
Kwai Yik Road EB	SA+RT	B2	3	3.80	30.0		31	2102	172	0.082	0.082	45	2088	150	0.072	0.072
Kwai Yik Road EB	RT	B3	3	3.80	25.0		100	2014	164	0.081		100	2014	144	0.071	
Kwai Chung Road NB	SA	C1	1	3.50				2105	382	0.181	0.181		2105	430	0.204	0.204
Kwai Chung Road NB	SA	C2	1	3.50				2105	382	0.181			2105	429	0.204	
Kwai On Road WB	LT	D1	4	3.40	25.0		100	1844	175	0.095		100	1844	166	0.090	
Kwai On Road WB	SA	D2	4	2.90				2045	283	0.138	0.139		2045	212	0.104	
Kwai On Road WB	SA+RT	D3	4	2.90	25.0		79	1952	270	0.138		100	1929	210	0.109	
Kwai On Road WB	RT	D4	4	2.90	20.0		100	1902	264	0.139		100	1902	207	0.109	0.109

pedestrian phase	P1	1, 3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P2	1, 2, 4		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P3	1, 2		min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P4	1, 2, 3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	2, 3		min crossing time =	6	sec GM +	13	sec FGM =	19	sec	
	P6	2, 3, 4		min crossing time =	7	sec GM +	14	sec FGM =	21	sec	
	P7	4		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P8	3, 4		min crossing time =	6	sec GM +	12	sec FGM =	18	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

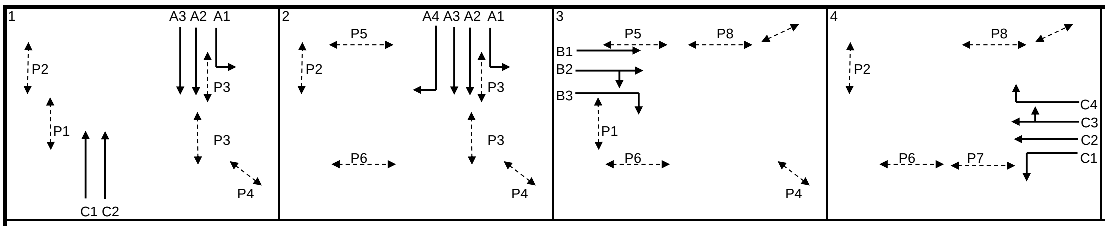


S = 1940+100(W-3.25) S = 2080+100(W-3.25)

S_M = S / (1 + 1.5 f/r) S_M = (S - 230) / (1 + 1.5 f/r)

	AM Peak		PM Peak	
	1+2+3+4	1,2+3+4	1+2+3+4	1,2+3+4
Sum y	0.523	0.476	0.500	0.378
L (s)	25	18	25	18
C (s)	120	120	120	120
practical y	0.713	0.765	0.713	0.765
R.C. (%)	36%	61%	42%	103%

Note:



AM	G =		I/G = 5	G =		I/G = 5	G =		I/G = 11	G =		I/G = 8	G =
	G =		I/G =	G =		I/G = 5	G =		I/G = 11	G =		I/G = 5	G =
PM	G =		I/G = 5	G =		I/G = 5	G =		I/G = 11	G =		I/G = 8	G =
	G =		I/G =	G =		I/G = 5	G =		I/G = 11	G =		I/G = 5	G =

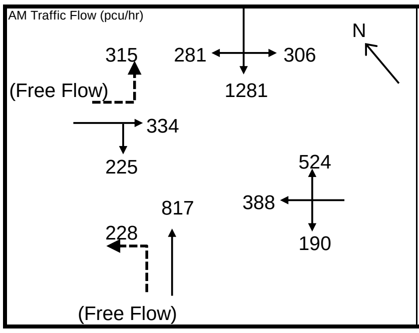
Signal Junction Analysis

Junction: J01 - Kwai Chung Road / Kwai On Road / Kwai Yik Road
Job Number: J7345
Scenario: Without Proposed Concrete Batching Plant
Page 2
Design Year: 2029
Designed By: ____________
Checked By: ____________
Date: 20 December 2024

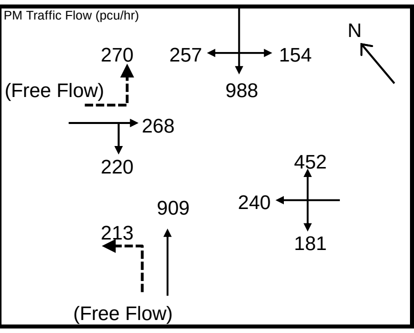
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kwai Chung Road SB	LT	A1	1, 2	4.00	25.0		100	1901	306	0.161		100	1901	154	0.081	
Kwai Chung Road SB	SA	A2	1, 2	4.40				2195	641	0.292			2195	494	0.225	
Kwai Chung Road SB	SA	A3	1, 2	4.40				2195	640	0.292			2195	494	0.225	
Kwai Chung Road SB	RT	A4	2	4.40	20.0		100	2042	281	0.138	0.138	100	2042	257	0.126	0.126
Kwai Yik Road EB	SA	B1	3	3.80				2135	191	0.089	0.089		2135	167	0.078	0.078
Kwai Yik Road EB	SA+RT	B2	3	3.80	30.0		24	2110	188	0.089		38	2095	164	0.078	
Kwai Yik Road EB	RT	B3	3	3.80	25.0		100	2014	180	0.089		100	2014	157	0.078	
Kwai Chung Road NB	SA*	C1	1	3.50				2105	272	0.129	0.130		2105	303	0.144	0.144
Kwai Chung Road NB	SA	C2	1	3.50				2105	272	0.129			2105	303	0.144	
Kwai Chung Road NB	SA	C3	1	3.50				2105	273	0.130			2105	303	0.144	
Kwai On Road WB	LT	D1	4	3.40	25.0		100	1844	190	0.103		100	1844	181	0.098	
Kwai On Road WB	SA	D2	4	2.90				2045	316	0.155			2045	240	0.117	
Kwai On Road WB	SA+RT	D3	4	2.90	25.0		76	1956	302	0.154	0.155	100	1929	228	0.118	

pedestrian phase	P1	1, 3	min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P2	1, 2, 4	min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P3	1, 2	min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P4	1, 2, 3	min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P5	2, 3	min crossing time =	6	sec GM +	13	sec FGM =	19	sec
	P6	2, 3, 4	min crossing time =	7	sec GM +	14	sec FGM =	21	sec
	P7	4	min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P8	3, 4	min crossing time =	6	sec GM +	12	sec FGM =	18	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



S = 1940+100(W-3.25)
S = 2080+100(W-3.25)

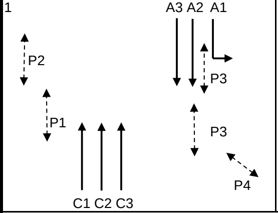
$S_M = S / (1 + 1.5 f/r)$
$S_M = (S - 230) / (1 + 1.5 f/r)$

	AM Peak 1+2+3+4	AM Peak 1,2+3+4	PM Peak 1+2+3+4	PM Peak 1,2+3+4
Sum y	0.511	0.536	0.466	0.422
L (s)	25	18	25	18
C (s)	120	120	120	120
practical y	0.713	0.765	0.713	0.765
R.C. (%)	39%	43%	53%	81%

Note:

*Junction Improvement Scheme by Other Project

1



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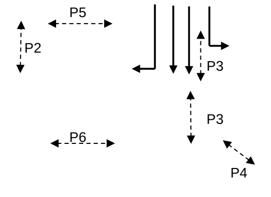

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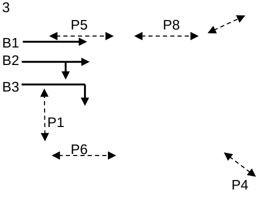

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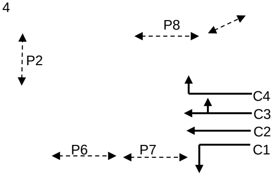
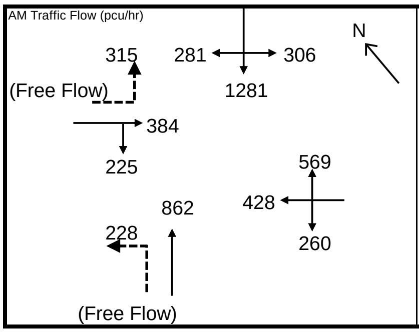


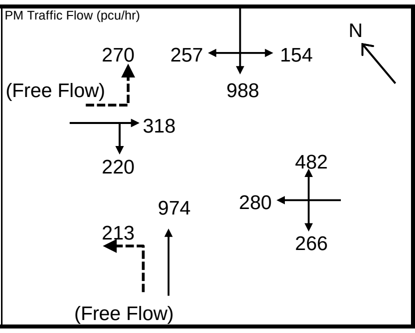
AM	G =	I/G = 5	G =	I/G = 5	G =	I/G = 11	G =	I/G = 8	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 11	G =	I/G = 5	G =
PM	G =	I/G = 5	G =	I/G = 5	G =	I/G = 11	G =	I/G = 8	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 11	G =	I/G = 5	G =

Signal Junction Analysis

Junction: J01 - Kwai Chung Road / Kwai On Road / Kwai Yik Road
Job Number: J7345
Scenario: With Proposed Concrete Batching Plant
Page 3
Design Year: 2029
Designed By:
Checked By:
Date: 20 December 2024

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	PM Peak Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Kwai Chung Road SB	LT	A1	1, 2	4.00	25.0		100	1901	306	0.161		100	1901	154	0.081	
Kwai Chung Road SB	SA	A2	1, 2	4.40				2195	641	0.292			2195	494	0.225	
Kwai Chung Road SB	SA	A3	1, 2	4.40				2195	640	0.292			2195	494	0.225	
Kwai Chung Road SB	RT	A4	2	4.40	20.0		100	2042	281	0.138	0.138	100	2042	257	0.126	0.126
Kwai Yik Road EB	SA	B1	3	3.80				2135	207	0.097	0.097		2135	184	0.086	0.086
Kwai Yik Road EB	SA+RT	B2	3	3.80	30.0		14	2120	206	0.097		26	2108	181	0.086	
Kwai Yik Road EB	RT	B3	3	3.80	25.0		100	2014	196	0.097		100	2014	173	0.086	
Kwai Chung Road NB	SA*	C1	1	3.50				2105	287	0.136	0.137		2105	325	0.154	0.154
Kwai Chung Road NB	SA	C2	1	3.50				2105	287	0.136			2105	325	0.154	
Kwai Chung Road NB	SA	C3	1	3.50				2105	288	0.137			2105	324	0.154	
Kwai On Road WB	LT	D1	4	3.40	25.0		100	1844	260	0.141		100	1844	266	0.144	
Kwai On Road WB	SA	D2	4	2.90				2045	345	0.169			2045	265	0.130	
Kwai On Road WB	SA+RT	D3	4	2.90	25.0		75	1957	330	0.169	0.169	94	1936	251	0.130	
pedestrian phase		P1	1, 3		min crossing time =			5	sec GM +		7	sec FGM =		12	sec	
		P2	1, 2, 4		min crossing time =			5	sec GM +		10	sec FGM =		15	sec	
		P3	1, 2		min crossing time =			5	sec GM +		9	sec FGM =		14	sec	
		P4	1, 2, 3		min crossing time =			5	sec GM +		10	sec FGM =		15	sec	
		P5	2, 3		min crossing time =			6	sec GM +		13	sec FGM =		19	sec	
		P6	2, 3, 4		min crossing time =			7	sec GM +		14	sec FGM =		21	sec	
		P7	4		min crossing time =			5	sec GM +		10	sec FGM =		15	sec	
		P8	3, 4		min crossing time =			6	sec GM +		12	sec FGM =		18	sec	


AM Traffic Flow (pcu/hr)
N
315
281
306
(Free Flow)
1281
384
225
569
862
428
228
260
(Free Flow)


PM Traffic Flow (pcu/hr)
N
270
257
154
(Free Flow)
988
318
220
482
974
280
213
266
(Free Flow)

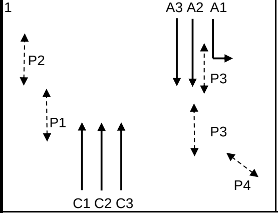
$S = 1940+100(W-3.25)$ $S = 2080+100(W-3.25)$

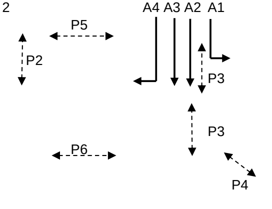
$S_M = S / (1 + 1.5 f/r)$ $S_M = (S - 230) / (1 + 1.5 f/r)$

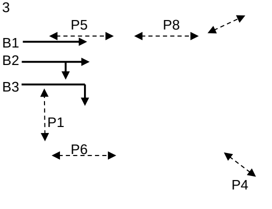
	AM Peak		PM Peak	
	1+2+3+4	1,2+3+4	1+2+3+4	1,2+3+4
Sum y	0.541	0.559	0.511	0.455
L (s)	25	18	25	18
C (s)	120	120	120	120
practical y	0.713	0.765	0.713	0.765
R.C. (%)	32%	37%	40%	68%

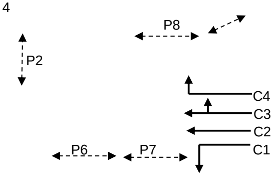
Note:

*Junction Improvement Scheme by Other Project


1
A3 A2 A1
P2
P3
P1
P3
P4
C1 C2 C3


2
A4 A3 A2 A1
P5
P2
P3
P3
P6
P4

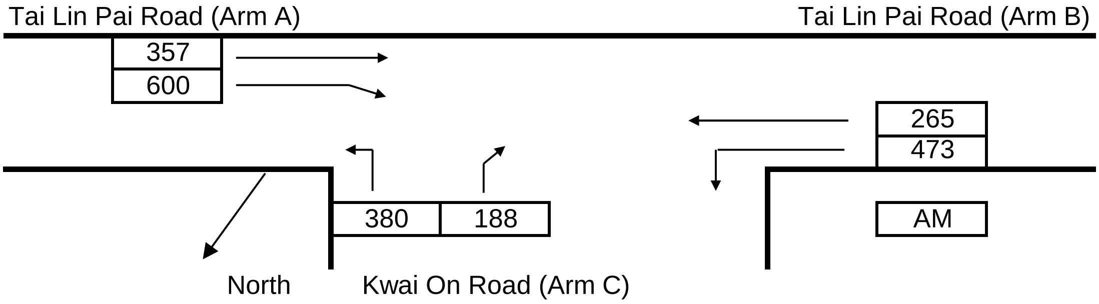

3
P5
P8
B1
B2
B3
P1
P6
P4


4
P8
P2
C4
C3
C2
C1
P6
P7

AM	G =	I/G = 5	G =	I/G = 5	G =	I/G = 11	G =	I/G = 8	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 11	G =	I/G = 5	G =
PM	G =	I/G = 5	G =	I/G = 5	G =	I/G = 11	G =	I/G = 8	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 11	G =	I/G = 5	G =

Priority Junction Analysis

Junction: J02 - Tai Lin Pai Road / Kwai On Road
Design Year: 2024 Job Number: J7345 Date: 20 December 2024
Scenario: Existing Condition P. 4



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:

$$D = [1 + 0.094(w\text{-}BA - 3.65)][1 + 0.0009(V\text{-}rBA - 120)][1 + 0.0006(V\text{-}lBA - 150)]$$
$$E = [1 + 0.094(w\text{-}BC - 3.65)][1 + 0.0009(V\text{-}rBC - 120)]$$
$$F = [1 + 0.094(w\text{-}CB - 3.65)][1 + 0.0009(V\text{-}rCB - 120)]$$

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

Geometry :	Input		Input		Input		Calculated	
	W	14.00	V-rBA	250	w-BA	4.50	D	1.1773
	W-CR	3.00	V-lBA	110	w-BC	4.50	E	1.2062
			V-rBC	250	w-CB	3.40	F	1.0908
			V-rCB	250			Y	0.5170

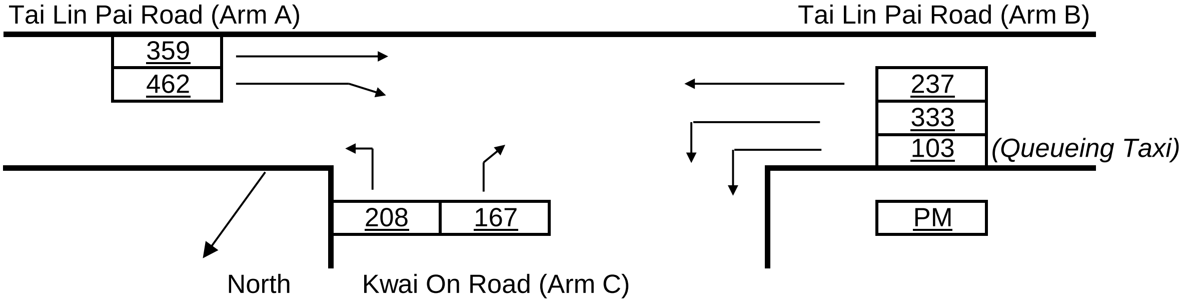
Analysis :

Traffic Flows, pcu/hr	AM	Capacity, pcu/hr	AM
q-CA	380	Q-BA	511
q-CB	188	Q-BC	730
q-AB	357	Q-CB	616
q-AC	600	Q-BAC	633
q-BA	265		
q-BC	473		
f	0.641		

Ratio-of-flow to Capacity	AM
B-A	0.519
B-C	0.648
C-B	0.305

Priority Junction Analysis

Junction:	J02 - Tai Lin Pai Road / Kwai On Road				
Design Year:	2024	Job Number:	J7345	Date:	20 December 2024
Scenario:	Existing Condition				P. 5



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

Geometry :

Input		Input		Input		Calculated	
W*	12.00	V-rBA	250	w-BA	4.50	D	1.1773
W-CR	3.00	V-lBA	110	w-BC*	2.50	E	0.9963
		V-rBC	250	w-CB	3.40	F	1.0908
		V-rCB	250			Y	0.5860

Analysis :

Traffic Flows, pcu/hr	PM	Capacity, pcu/hr	PM
q-CA	208	Q-BA	543
q-CB	167	Q-BC	614
q-AB	359	Q-CB	622
q-AC	462	Q-BAC	582
q-BA	237		
q-BC	333		
f	0.584		

Ratio-of-flow to Capacity	PM
B-A	0.436
B-C	0.542
C-B	0.269

Note: *Due to the effect of taxi queueing at Tai Lin Pai Road NB

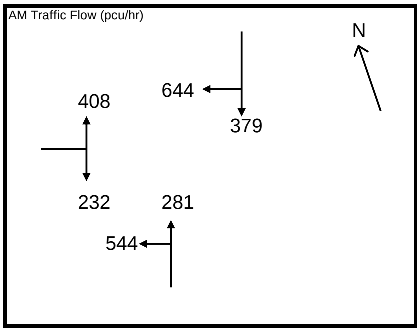
Signal Junction Analysis

Junction: J02 - Tai Lin Pai Road / Kwai On Road   Job Number: J7345
Scenario: Without Proposed Concrete Batching Plant   Page 6
Design Year: 2029   Designed By: ____________   Checked By: ____________   Date: 20 December 2024

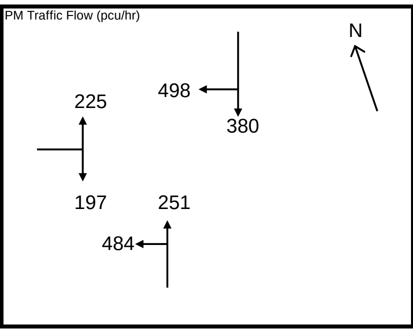
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB	SA	A1	1	3.35				1950	379	0.194			1950	380	0.195	
Tai Lin Pai Road SB	RT	A2	1	3.35	18.0		100	1929	644	0.334	0.334	100	1929	498	0.258	0.258
Tai Lin Pai Road NB	LT	B1	2	3.50	7.0		100	1618	255	0.158	0.158	100	1618	227	0.140	
Tai Lin Pai Road NB	LT	B2	2	3.50	10.0		100	1830	289	0.158		100	1830	257	0.140	0.140
Tai Lin Pai Road NB	SA	B3	2	3.50				2105	281	0.133			2105	251	0.119	
Kwai On Road EB	LT	C1	3	3.35	13.0		100	1748	408	0.233	0.233	100	1748	225	0.129	0.129
Kwai On Road EB	RT	C2	3	3.35	17.0		100	1921	232	0.121		100	1921	197	0.103	

pedestrian phase	P1	1, 3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P2	1, 2, 4		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P3	1, 2		min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P4	1, 2, 3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	2, 3		min crossing time =	6	sec GM +	13	sec FGM =	19	sec	
	P6	2, 3, 4		min crossing time =	7	sec GM +	14	sec FGM =	21	sec	
	P7	4		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P8	3, 4		min crossing time =	6	sec GM +	12	sec FGM =	18	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



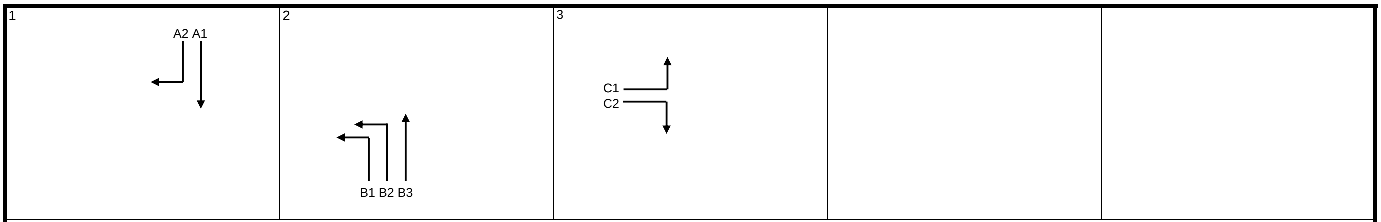
S = 1940+100(W-3.25)   S = 2080+100(W-3.25)

S_M = S / (1 + 1.5 f/r) S_M = (S - 230) / (1 + 1.5 f/r)

	AM Peak		PM Peak	
	1+2+3		1+2+3	
Sum y	0.725		0.527	
L (s)	19		19	
C (s)	130		130	
practical y	0.768		0.768	
R.C. (%)	6%		46%	

Note:

Junction Improvement Scheme proposed by Kwai On Factory Redevelopment



AM	G =	I/G = 5	G =	I/G = 7	G =	I/G = 10	G =	I/G =	G =		
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =		
PM	G =	I/G = 5	G =	I/G = 7	G =	I/G = 10	G =	I/G =	G =		
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =		

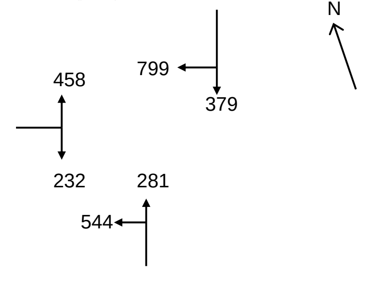
Signal Junction Analysis

Junction: J02 - Tai Lin Pai Road / Kwai On Road Job Number: J7345
Scenario: With Proposed Concrete Batching Plant Page 7
Design Year: 2029 Designed By: ______ Checked By: ______ Date: 20 December 2024

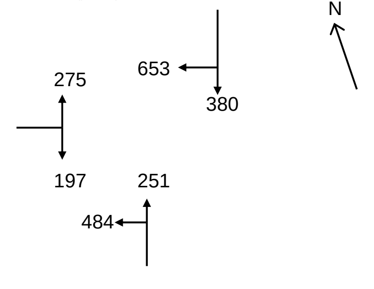
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB	SA	A1	1	3.35				1950	379	0.194			1950	380	0.195	
Tai Lin Pai Road SB	RT	A2	1	3.35	18.0		100	1929	799	0.414	0.414	100	1929	653	0.339	0.339
Tai Lin Pai Road NB	LT	B1	2	3.50	7.0		100	1618	255	0.158	0.158	100	1618	227	0.140	
Tai Lin Pai Road NB	LT	B2	2	3.50	10.0		100	1830	289	0.158		100	1830	257	0.140	
Tai Lin Pai Road NB	SA	B3	2	3.50				2105	281	0.133			2105	251	0.119	0.140
Kwai On Road EB	LT	C1	3	3.35	13.0		100	1748	458	0.262	0.262	100	1748	275	0.157	0.157
Kwai On Road EB	RT	C2	3	3.35	17.0		100	1921	232	0.121		100	1921	197	0.103	

pedestrian phase	P1	1, 3	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P2	1, 2, 4	min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P3	1, 2	min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P4	1, 2, 3	min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	2, 3	min crossing time =	6	sec GM +	13	sec FGM =	19	sec	
	P6	2, 3, 4	min crossing time =	7	sec GM +	14	sec FGM =	21	sec	
	P7	4	min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P8	3, 4	min crossing time =	6	sec GM +	12	sec FGM =	18	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



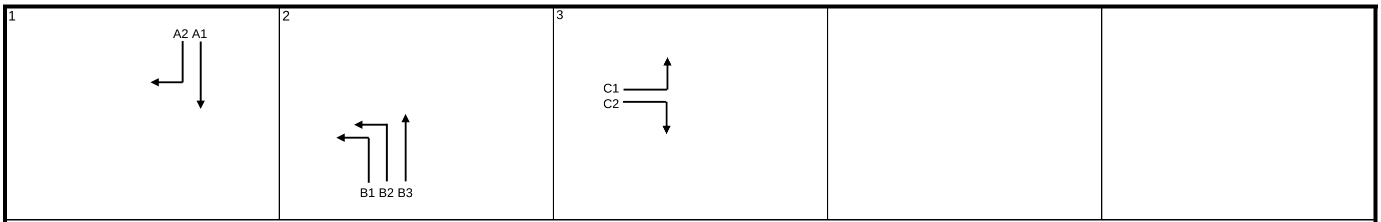
S = 1940+100(W-3.25) S = 2080+100(W-3.25)

S_M = S / (1 + 1.5 f/r) S_M = (S - 230) / (1 + 1.5 f/r)

	AM Peak		PM Peak	
	1+2+3		1+2+3	
Sum y	0.834		0.636	
L (s)	19		19	
C (s)	130		130	
practical y	0.768		0.768	
R.C. (%)	-8%		21%	

Note:

Junction Improvement Scheme proposed by Kwai On Factory Redevelopment



AM	G =	I/G = 5	G =	I/G = 7	G =	I/G = 10	G =	I/G =	G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	
PM	G =	I/G = 5	G =	I/G = 7	G =	I/G = 10	G =	I/G =	G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	

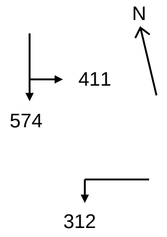
Signal Junction Analysis

Junction: J03 - Tai Lin Pai Road / Kung Yip Street
Job Number: J7345
Scenario: Existing Condition
Page 8
Design Year: 2024
Designed By:
Checked By:
Date: 20 December 2024

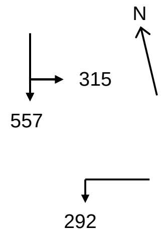
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB	LT	A1	1	5.20	8.0		100	1798	411	0.229		100	1798	315	0.175	
Tai Lin Pai Road SB	SA	A2	1	5.20				2135	574	0.269	0.269		2135	557	0.261	0.261
Kung Yip Street WB	LT	B1	1	4.30	8.0		100	1722	312	0.181		100	1722	292	0.170	

pedestrian phase	P1	2		min crossing time =	6	sec GM +	13	sec FGM =	19	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

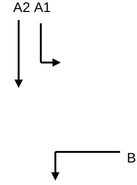


S = 1940 + 100 (W-3.25)
S = 2080 + 100 (W-3.25)
S_M = S / (1 + 1.5 f/r)
S_M = (S - 230) / (1 + 1.5 f/r)

	AM Peak		PM Peak	
	1		1	
Sum y	0.269		0.261	
L (s)	40		40	
C (s)	90		90	
practical y	0.500		0.500	
R.C. (%)	86%		92%	

Note:

1



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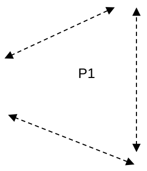


AM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =
PM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =

Signal Junction Analysis

Junction: J03 - Tai Lin Pai Road / Kung Yip Street   Job Number: J7345

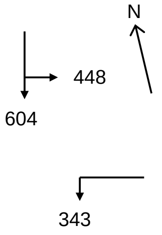
Scenario: Without Proposed Concrete Batching Plant   Page 9

Design Year: 2029   Designed By: ____________   Checked By: ____________   Date: 20 December 2024

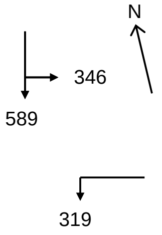
Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Tai Lin Pai Road SB LT	A1	1	5.20	8.0		100	1798	448	0.249		100	1798	346	0.192	
Tai Lin Pai Road SB SA	A2	1	5.20				2135	604	0.283	0.283		2135	589	0.276	0.276
Kung Yip Street WB LT	B1	1	4.30	8.0		100	1722	343	0.199		100	1722	319	0.185	

pedestrian phase	P1	2		min crossing time =	6	sec GM +	13	sec FGM =	19	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



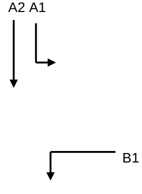
S = 1940 + 100 (W-3.25)   S = 2080 + 100 (W-3.25)

S_M = S / (1 + 1.5 f/r) S_M = (S - 230) / (1 + 1.5 f/r)

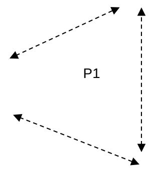
	AM Peak		PM Peak	
	1		1	
Sum y	0.283		0.276	
L (s)	40		40	
C (s)	90		90	
practical y	0.500		0.500	
R.C. (%)	77%		81%	

Note:

1



2



AM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =
PM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =

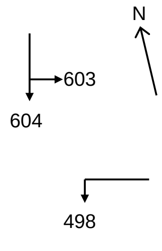
Signal Junction Analysis

Junction: J03 - Tai Lin Pai Road / Kung Yip Street — Job Number: J7345
Scenario: With Proposed Concrete Batching Plant — Page 10
Design Year: 2029 — Designed By: ______ — Checked By: ______ — Date: 20 December 2024

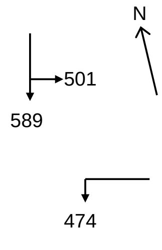
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB	LT	A1	1	5.20	8.0		100	1798	603	0.335	0.335	100	1798	501	0.279	0.279
Tai Lin Pai Road SB	SA	A2	1	5.20				2135	604	0.283			2135	589	0.276	
Kung Yip Street WB	LT	B1	1	4.30	8.0		100	1722	498	0.289		100	1722	474	0.275	

pedestrian phase	P1	2		min crossing time =	6	sec GM +	13	sec FGM =	19	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



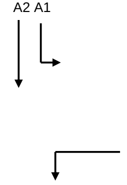
S = 1940 + 100 (W-3.25) S = 2080 + 100 (W-3.25)

S_M = S / (1 + 1.5 f/r) S_M = (S - 230) / (1 + 1.5 f/r)

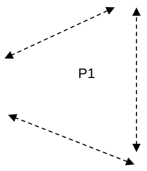
	AM Peak		PM Peak	
	1		1	
Sum y	0.335		0.279	
L (s)	40		40	
C (s)	90		90	
practical y	0.500		0.500	
R.C. (%)	49%		79%	

Note:

1



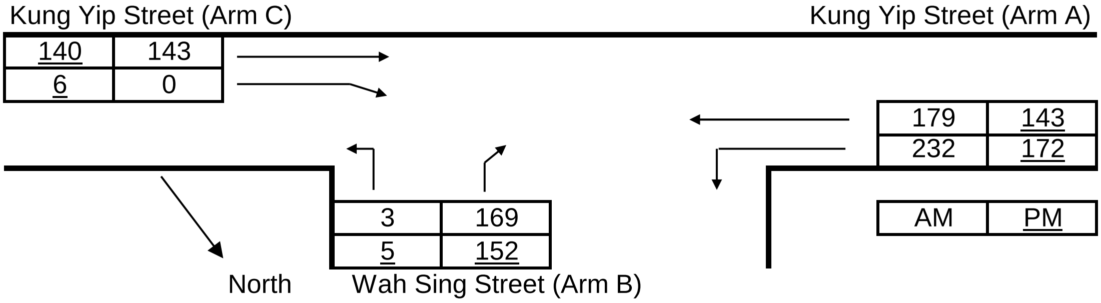
2



AM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =
PM	G =	I/G = 7	G = 32	I/G = 2	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =

Priority Junction Analysis

Junction:	J04 - Kung Yip Street / Wah Sing Street				
Design Year:	2024	Job Number:	J7345	Date:	20 December 2024
Scenario:	Existing Condition				P. 11



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

Geometry :

Input		Input		Input		Calculated	
W	10.90	V-rBA	40	w-BA	4.70	D	0.9523
W-CR	0.00	V-lBA	40	w-BC	4.70	E	1.0196
		V-rBC	40	w-CB	2.50	F	0.8237
		V-rCB	35			Y	0.6240

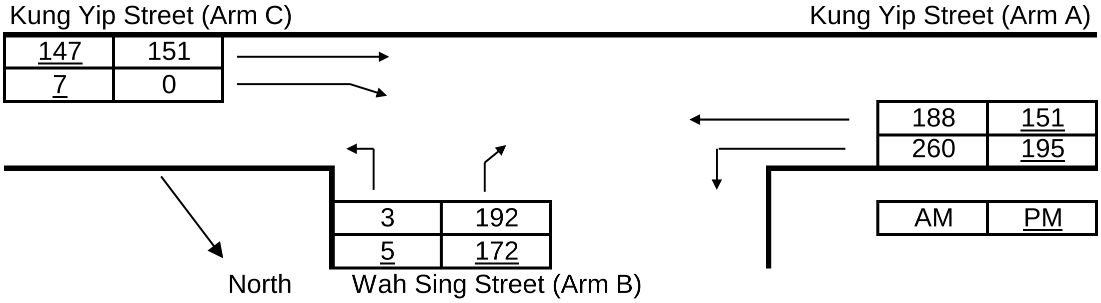
Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	143	140	Q-BA	519	531
q-CB	0	6	Q-BC	697	711
q-AB	232	172	Q-CB	537	555
q-AC	179	143	Q-BAC	521	535
q-BA	169	152			
q-BC	3	5			
f	0.017	0.032			

Ratio-of-flow to Capacity	AM	PM	
B-A	0.326	0.286	
B-C	0.004	0.007	
C-B	0.000	0.011	
B-AC	0.330	0.294	(for shared lane BA, BC)

Priority Junction Analysis

Junction: J04 - Kung Yip Street / Wah Sing Street
Design Year: 2029 Job Number: J7345 Date: 20 December 2024
Scenario: Without Proposed Concrete Batching Plant P. 12



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

Geometry :

Input		Input		Input		Calculated	
W	10.90	V-rBA	40	w-BA	4.70	D	0.9523
W-CR	0.00	V-lBA	40	w-BC	4.70	E	1.0196
		V-rBC	40	w-CB	2.50	F	0.8237
		V-rCB	35			Y	0.6240

Analysis :

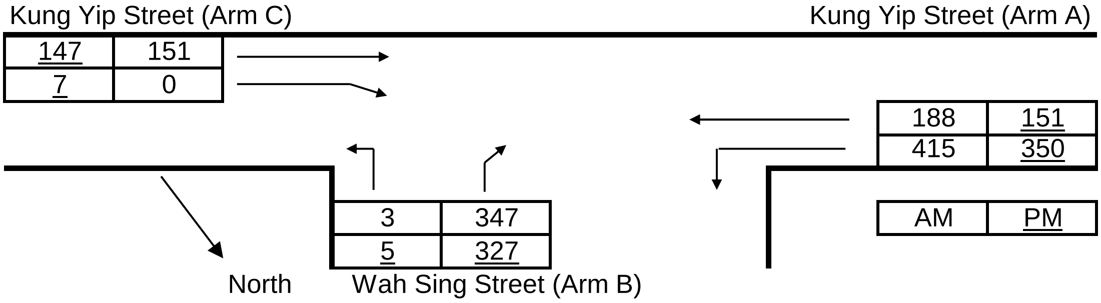
Traffic Flows, pcu/hr	AM	PM
q-CA	151	147
q-CB	0	7
q-AB	260	195
q-AC	188	151
q-BA	192	172
q-BC	3	5
f	0.015	0.028

Capacity, pcu/hr	AM	PM
Q-BA	514	526
Q-BC	692	707
Q-CB	530	549
Q-BAC	516	529

Ratio-of-flow to Capacity	AM	PM	
B-A	0.374	0.327	
B-C	0.004	0.007	
C-B	0.000	0.013	
B-AC	0.378	0.334	(for shared lane BA, BC)

Priority Junction Analysis

Junction: J04 - Kung Yip Street / Wah Sing Street
Design Year: 2029 Job Number: J7345 Date: 20 December 2024
Scenario: With Proposed Concrete Batching Plant P. 13



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

Geometry :

Input		Input		Input		Calculated	
W	10.90	V-rBA	40	w-BA	4.70	D	0.9523
W-CR	0.00	V-lBA	40	w-BC	4.70	E	1.0196
		V-rBC	40	w-CB	2.50	F	0.8237
		V-rCB	35			Y	0.6240

Analysis :

Traffic Flows, pcu/hr	AM	PM
q-CA	151	147
q-CB	0	7
q-AB	415	350
q-AC	188	151
q-BA	347	327
q-BC	3	5
f	0.009	0.015

Capacity, pcu/hr	AM	PM
Q-BA	500	512
Q-BC	678	693
Q-CB	501	520
Q-BAC	502	514

Ratio-of-flow to Capacity	AM	PM	
B-A	0.693	0.638	
B-C	0.004	0.007	
C-B	0.000	0.013	
B-AC	0.698	0.645	(for shared lane BA, BC)

Signal Junction Analysis

Junction: J05 - Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road　　Job Number: J7345

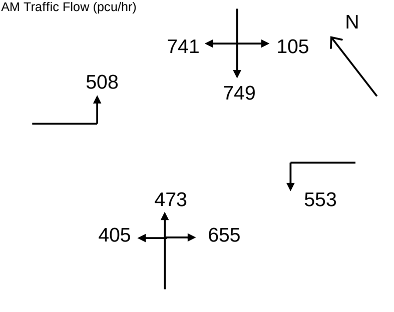
Scenario: Existing Condition　　Page 14

Design Year: 2024　　Designed By: ____　　Checked By: ____　　Date: 20 December 2024

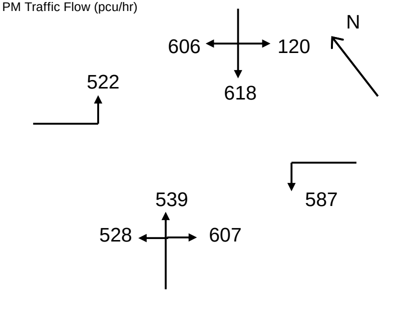
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kwai Foo Road EB	LT	A1	1	4.10	25.0		100	2042	253	0.124		100	2042	260	0.127	
Kwai Foo Road EB	LT	A2	1	4.10	29.0		100	2059	255	0.124		100	2059	262	0.127	
Kwai Chung Road NB	LT+SA*	B1	2	4.00	22.0		98	1919	414	0.216		100	1916	528	0.276	
Kwai Chung Road NB	SA	B2	2	4.00				2155	464	0.215			2155	539	0.250	
Kwai Chung Road NB	RT	B3	2	4.00	20.0		100	2005	655	0.327	0.327	100	2005	607	0.303	0.303
Tai Lin Pai Road WB	LT	C1	2	3.80	22.0		100	1868	266	0.142		100	1868	282	0.151	
Tai Lin Pai Road WB	LT	C2	2	3.80	26.0		100	2019	287	0.142		100	2019	305	0.151	
Kwai Chung Road SB	LT+SA*	D1	1	4.30	27.0		20	2053	524	0.255	0.255	27	2045	441	0.216	0.216
Kwai Chung Road SB	SA+RT	D2	1	4.30				2185	558	0.255			2185	471	0.216	
Kwai Chung Road SB	RT	D3	1	4.20	18.0		100	2008	513	0.255		100	2008	432	0.215	

pedestrian phase	P1	1	min crossing time =	6	sec GM +	12	sec FGM =	18	sec	
	P2	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P4	1	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P5	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P6	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P7	2	min crossing time =	7	sec GM +	13	sec FGM =	20	sec	
	P8	2	min crossing time =	5	sec GM +	6	sec FGM =	11	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



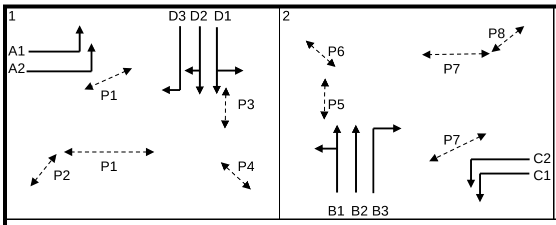
S = 1940 + 100 (W-3.25)　S = 2080 + 100 (W-3.25)

S_M = S / (1 + 1.5 f/r)　S_M = (S - 230) / (1 + 1.5 f/r)

	AM Peak		PM Peak	
	1+2		1+2	
Sum y	0.582		0.518	
L (s)	16		16	
C (s)	120		120	
practical y	0.780		0.780	
R.C. (%)	34%		50%	

Note:

*A flared approach



AM	G =	I/G =	9	G =	I/G =	9	G =	I/G =		G =	I/G =		G =				
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =				
PM	G =	I/G =	9	G =	I/G =	9	G =	I/G =		G =	I/G =		G =				
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =				

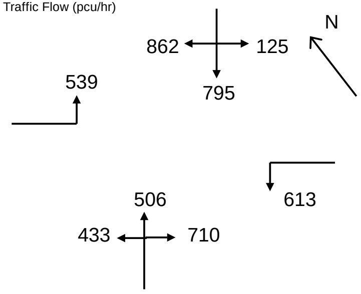
Signal Junction Analysis

Junction: J05 - Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road Job Number: J7345
Scenario: Without Proposed Concrete Batching Plant Page 15
Design Year: 2029 Designed By: Checked By: Date: 20 December 2024

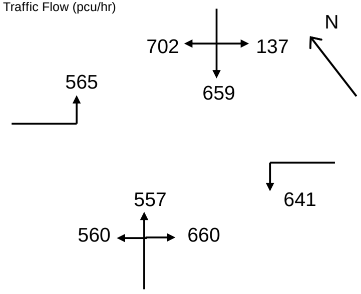
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kwai Foo Road EB	LT	A1	1	4.10	25.0		100	2042	268	0.131		100	2042	281	0.138	
Kwai Foo Road EB	LT	A2	1	4.10	29.0		100	2059	271	0.132		100	2059	284	0.138	
Kwai Chung Road NB	LT+SA*	B1	2	4.00	22.0		98	1919	442	0.230		100	1916	560	0.292	
Kwai Chung Road NB	SA	B2	2	4.00				2155	497	0.231			2155	557	0.258	
Kwai Chung Road NB	RT	B3	2	4.00	20.0		100	2005	710	0.354	0.354	100	2005	660	0.329	0.329
Tai Lin Pai Road WB	LT	C1	2	3.80	22.0		100	1868	295	0.158		100	1868	308	0.165	
Tai Lin Pai Road WB	LT	C2	2	3.80	26.0		100	2019	318	0.158		100	2019	333	0.165	
Kwai Chung Road SB	LT+SA*	D1	1	4.30	27.0		21	2051	585	0.285	0.286	28	2044	491	0.240	0.240
Kwai Chung Road SB	SA+RT	D2	1	4.30				2185	624	0.286			2185	525	0.240	
Kwai Chung Road SB	RT	D3	1	4.20	18.0		100	2008	573	0.285		100	2008	482	0.240	

pedestrian phase	P1	1	min crossing time =	6	sec GM +	12	sec FGM =	18	sec	
	P2	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P4	1	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P5	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P6	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P7	2	min crossing time =	7	sec GM +	13	sec FGM =	20	sec	
	P8	2	min crossing time =	5	sec GM +	6	sec FGM =	11	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

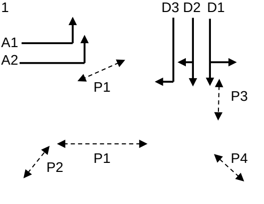


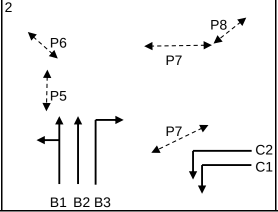
S = 1940 + 100 (W-3.25)
S = 2080 + 100 (W-3.25)
$S_M = S / (1 + 1.5 f/r)$
$S_M = (S - 230) / (1 + 1.5 f/r)$

	AM Peak		PM Peak	
	1+2		1+2	
Sum y	0.640		0.569	
L (s)	16		16	
C (s)	120		120	
practical y	0.780		0.780	
R.C. (%)	22%		37%	

Note:

*A flared approach





AM	G =	I/G = 9	G =	I/G = 9	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =
PM	G =	I/G = 9	G =	I/G = 9	G =	I/G =	G =	I/G =	G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =

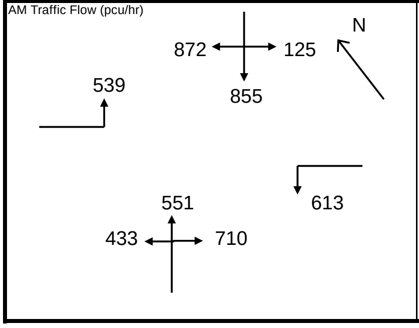
Signal Junction Analysis

Junction: J05 - Kwai Chung Road / Tai Lin Pai Road / Kwai Foo Road
Job Number: J7345
Scenario: With Proposed Concrete Batching Plant
Page 16
Design Year: 2029
Designed By:
Checked By:
Date: 20 December 2024

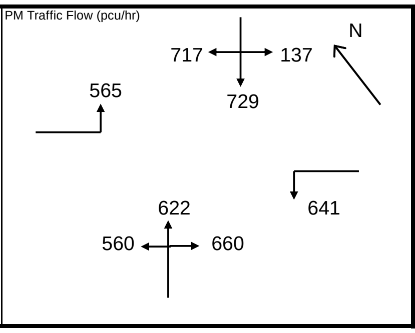
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kwai Foo Road EB	LT	A1	1	4.10	25.0		100	2042	268	0.131		100	2042	281	0.138	
Kwai Foo Road EB	LT	A2	1	4.10	29.0		100	2059	271	0.132		100	2059	284	0.138	
Kwai Chung Road NB	LT+SA*	B1	2	4.00	22.0		98	1919	463	0.241		100	1916	560	0.292	
Kwai Chung Road NB	SA	B2	2	4.00				2155	521	0.242			2155	622	0.289	
Kwai Chung Road NB	RT	B3	2	4.00	20.0		100	2005	710	0.354	0.354	100	2005	660	0.329	0.329
Tai Lin Pai Road WB	LT	C1	2	3.80	22.0		100	1868	295	0.158		100	1868	308	0.165	
Tai Lin Pai Road WB	LT	C2	2	3.80	26.0		100	2019	318	0.158		100	2019	333	0.165	
Kwai Chung Road SB	LT+SA*	D1	1	4.30	27.0		21	2051	608	0.296		26	2046	519	0.254	0.254
Kwai Chung Road SB	SA+RT	D2	1	4.30				2185	648	0.297			2185	554	0.254	
Kwai Chung Road SB	RT	D3	1	4.20	18.0		100	2008	596	0.297	0.297	100	2008	510	0.254	

pedestrian phase	P1	1	min crossing time =	6	sec GM +	12	sec FGM =	18	sec	
	P2	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	1	min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P4	1	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P5	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P6	2	min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P7	2	min crossing time =	7	sec GM +	13	sec FGM =	20	sec	
	P8	2	min crossing time =	5	sec GM +	6	sec FGM =	11	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S = 1940 + 100 (W-3.25)$ $S = 2080 + 100 (W-3.25)$

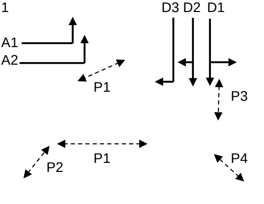
$S_M = S / (1 + 1.5 f/r)$ $S_M = (S - 230) / (1 + 1.5 f/r)$

	AM Peak		PM Peak	
	1+2		1+2	
Sum y	0.651		0.583	
L (s)	16		16	
C (s)	120		120	
practical y	0.780		0.780	
R.C. (%)	20%		34%	

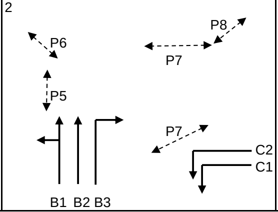
Note:

*A flared approach

1



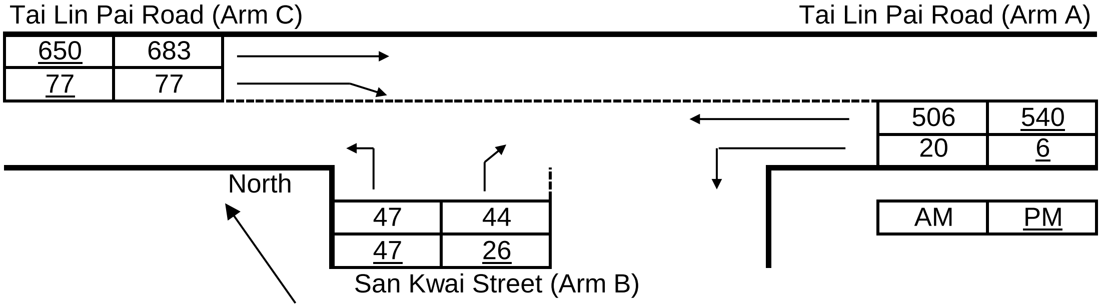
2



AM	G =	I/G = 9	G =	I/G = 9	G =	I/G =	G =	I/G =	G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	
PM	G =	I/G = 9	G =	I/G = 9	G =	I/G =	G =	I/G =	G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	

Priority Junction Analysis

Junction: J06 - Tai Lin Pai Road / San Kwai Street
Design Year: 2024 Job Number: J7345 Date: 20 December 2024
Scenario: Existing Condition P. 17



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

Geometry :	Input		Input		Input		Calculated	
	W	10.60	V-rBA	30	w-BA	4.70	D	0.9340
	W-CR	0.00	V-lBA	25	w-BC	4.70	E	1.0097
			V-rBC	30	w-CB	4.40	F	1.0416
			V-rCB	90			Y	0.6343

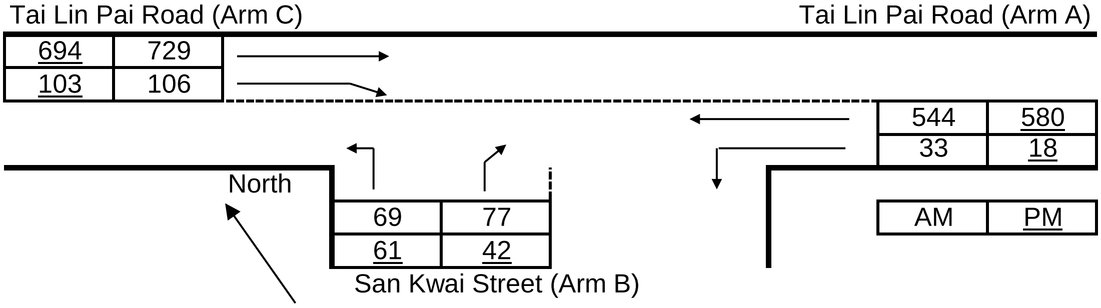
Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	683	650	Q-BA	358	357
q-CB	77	77	Q-BC	632	626
q-AB	20	6	Q-CB	649	645
q-AC	506	540	Q-BAC	462	493
q-BA	44	26			
q-BC	47	47			
f	0.516	0.644			

Ratio-of-flow to Capacity	AM	PM	
B-A	0.123	0.073	
B-C	0.074	0.075	
C-B	0.119	0.119	
B-AC	0.197	0.148	(for shared lane BA, BC)

Priority Junction Analysis

Junction: J06 - Tai Lin Pai Road / San Kwai Street
Design Year: 2029 Job Number: J7345 Date: 20 December 2024
Scenario: Without Proposed Concrete Batching Plant P. 18



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

Geometry :	Input		Input		Input		Calculated	
	W	10.60	V-rBA	30	w-BA	4.70	D	0.9340
	W-CR	0.00	V-lBA	25	w-BC	4.70	E	1.0097
			V-rBC	30	w-CB	4.40	F	1.0416
			V-rCB	90			Y	0.6343

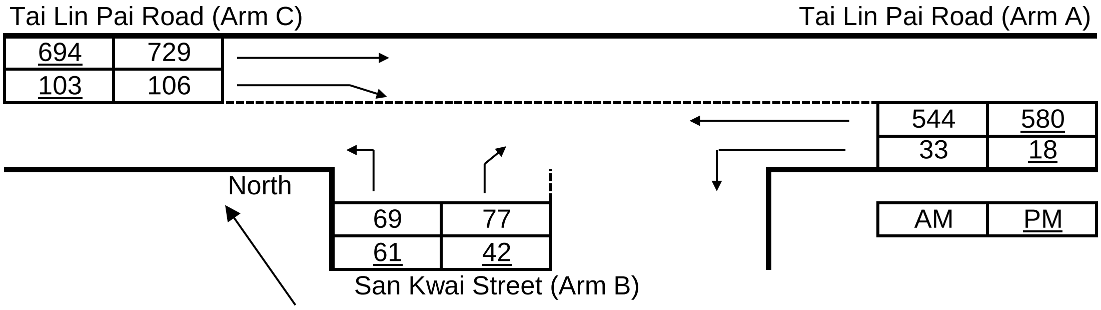
Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	729	694	Q-BA	334	333
q-CB	106	103	Q-BC	622	615
q-AB	33	18	Q-CB	637	632
q-AC	544	580	Q-BAC	428	457
q-BA	77	42			
q-BC	69	61			
f	0.473	0.592			

Ratio-of-flow to Capacity	AM	PM	
B-A	0.231	0.126	
B-C	0.111	0.099	
C-B	0.166	0.163	
B-AC	0.341	0.225	(for shared lane BA, BC)

Priority Junction Analysis

Junction: J06 - Tai Lin Pai Road / San Kwai Street
Design Year: 2029 Job Number: J7345 Date: 20 December 2024
Scenario: With Proposed Concrete Batching Plant P. 19



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

Geometry :

	Input		Input		Input		Calculated
W	10.60	V-rBA	30	w-BA	4.70	D	0.9340
W-CR	0.00	V-lBA	25	w-BC	4.70	E	1.0097
		V-rBC	30	w-CB	4.40	F	1.0416
		V-rCB	90			Y	0.6343

Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	729	694	Q-BA	334	333
q-CB	106	103	Q-BC	622	615
q-AB	33	18	Q-CB	637	632
q-AC	544	580	Q-BAC	428	457
q-BA	77	42			
q-BC	69	61			
f	0.473	0.592			

Ratio-of-flow to Capacity	AM	PM	
B-A	0.231	0.126	
B-C	0.111	0.099	
C-B	0.166	0.163	
B-AC	0.341	0.225	(for shared lane BA, BC)

Signal Junction Analysis

Junction: J02 - Tai Lin Pai Road / Kwai On Road Job Number: J7345

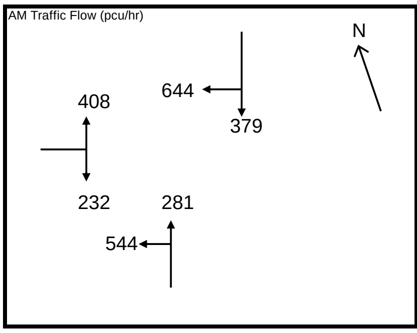
Scenario: Without Proposed Concrete Batching Plant Page 20

Design Year: 2029 Designed By: ____________ Checked By: ____________ Date: 20 December 2024

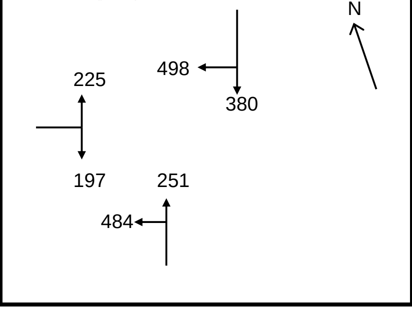
Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB SA+RT	A1	1	3.35	21.0		26	1914	510	0.266	0.266	13	1932	439	0.227	0.228
Tai Lin Pai Road SB RT	A2	1	3.35	18.0		100	1929	513	0.266		100	1929	439	0.228	
Tai Lin Pai Road NB LT*	B1	3	3.50	7.0		100	1618	255	0.158	0.158	100	1618	227	0.140	0.140
Tai Lin Pai Road NB LT	B2	3	3.50	10.0		100	1830	289	0.158		100	1830	257	0.140	
Tai Lin Pai Road NB SA	B3	3	3.50				2105	281	0.133			2105	251	0.119	
Kwai On Road EB LT	C1	1, 2	3.35	13.0		100	1748	408	0.233		100	1748	225	0.129	
Kwai On Road EB RT	C2	2	3.35	17.0		100	1921	232	0.121	0.121	100	1921	197	0.103	0.103

pedestrian phase

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S = 1940+100(W-3.25)$ $S = 2080+100(W-3.25)$

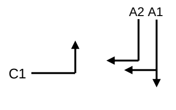
$S_M = S / (1 + 1.5 f/r)$ $S_M = (S - 230) / (1 + 1.5 f/r)$

	AM Peak		PM Peak	
	1+2+3	1,2, + 3	1+2+3	1,2 + 3
Sum y	0.545	0.391	0.471	0.269
L (s)	18	12	18	12
C (s)	130	130	130	130
practical y	0.775	0.817	0.775	0.817
R.C. (%)	42%	109%	65%	204%

Note:

Further improvement on Scheme proposed by Kwai On Factory Redevelopment

1



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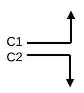

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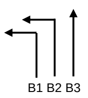


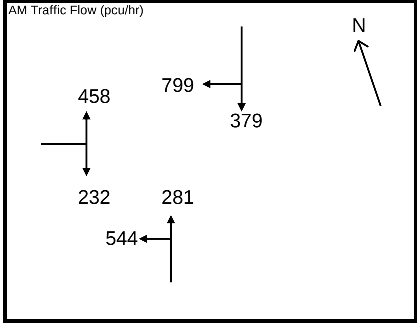
AM	G =	I/G = 6	G =	I/G = 6	G =	I/G = 9	G =	I/G =	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 9	G =	I/G =	G =
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G = 9	G =	I/G =	G =
	G =	I/G =	G =	I/G = 5	G =	I/G = 9	G =	I/G =	G =

Signal Junction Analysis

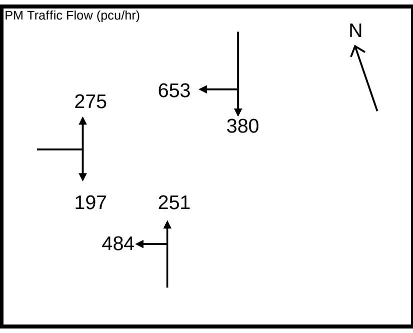
Junction: J02 - Tai Lin Pai Road / Kwai On Road
Job Number: J7345
Scenario: With Proposed Concrete Batching Plant
Page 21
Design Year: 2029
Designed By: ____________
Checked By: ____________
Date: 20 December 2024

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Tai Lin Pai Road SB	SA+RT	A1	1	3.35	21.0		35	1902	585	0.308	0.308	26	1914	514	0.269	
Tai Lin Pai Road SB	RT	A2	1	3.35	18.0		100	1929	593	0.307		100	1929	519	0.269	0.269
Tai Lin Pai Road NB	LT*	B1	3	3.50	7.0		100	1618	255	0.158	0.158	100	1618	227	0.140	0.140
Tai Lin Pai Road NB	LT	B2	3	3.50	10.0		100	1830	289	0.158		100	1830	257	0.140	
Tai Lin Pai Road NB	SA	B3	3	3.50				2105	281	0.133			2105	251	0.119	
Kwai On Road EB	LT	C1	1, 2	3.35	13.0		100	1748	458	0.262		100	1748	275	0.157	
Kwai On Road EB	RT	C2	2	3.35	17.0		100	1921	232	0.121	0.121	100	1921	197	0.103	0.103
pedestrian phase																

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



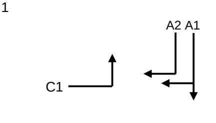
$S = 1940+100(W-3.25)$ $S = 2080+100(W-3.25)$

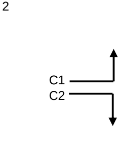
$S_M = S / (1 + 1.5 f/r)$ $S_M = (S - 230) / (1 + 1.5 f/r)$

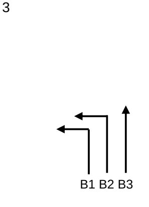
	AM Peak		PM Peak	
	1+2+3	1,2, + 3	1+2+3	1,2 + 3
Sum y	0.586	0.420	0.512	0.298
L (s)	18	12	18	12
C (s)	130	130	130	130
practical y	0.775	0.817	0.775	0.817
R.C. (%)	32%	95%	51%	174%

Note:

Further improvement on Scheme proposed by Kwai On Factory Redevelopment

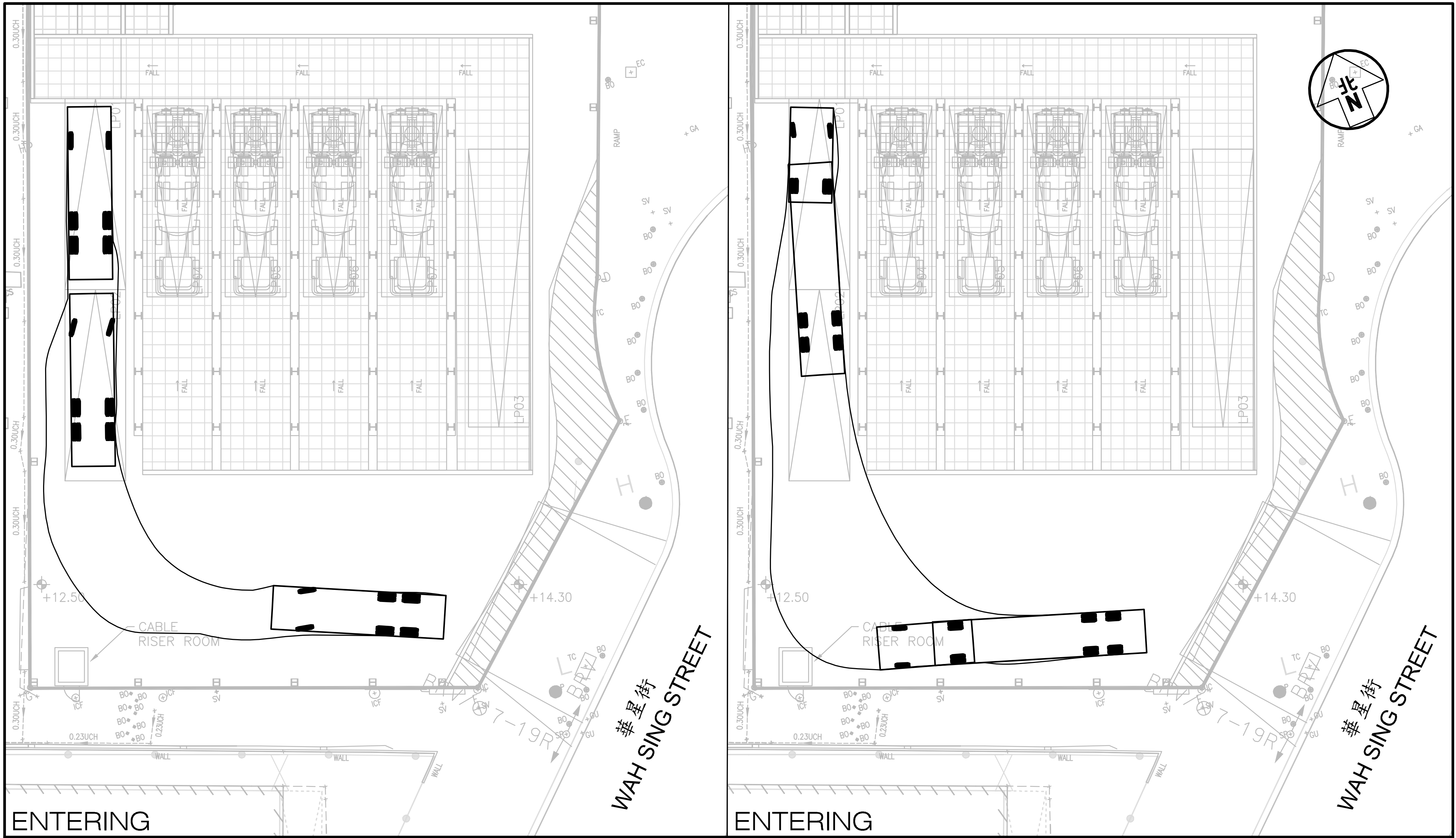






AM	G =	I/G = 6	G =	I/G = 6	G =	I/G = 9	G =	I/G =	G =	
	G =	I/G =	G =	I/G = 5	G =	I/G = 9	G =	I/G =	G =	
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G = 9	G =	I/G =	G =	
	G =	I/G =	G =	I/G = 5	G =	I/G = 9	G =	I/G =	G =	

Appendix B –
Swept Path Analysis


ENTERING
ENTERING
WAH SING STREET
華星街
CABLE
RISER ROOM
+12.50
+14.30
FALL
LP01
LP02
LP03
LP04
LP05
LP06
LP07
RAMP
0.30UCH
0.23UCH
WALL
7-19R
北
N

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

SWEPT PATH OF CONCRETE MIXER TRUCK & CONTAINER
ENTERING THE WAITING SAPCES LP01 & 02

Figure No.	Revision
SP101	B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
1 : 300	20 DEC 2024

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Traffic and Transportation Planning Consultants
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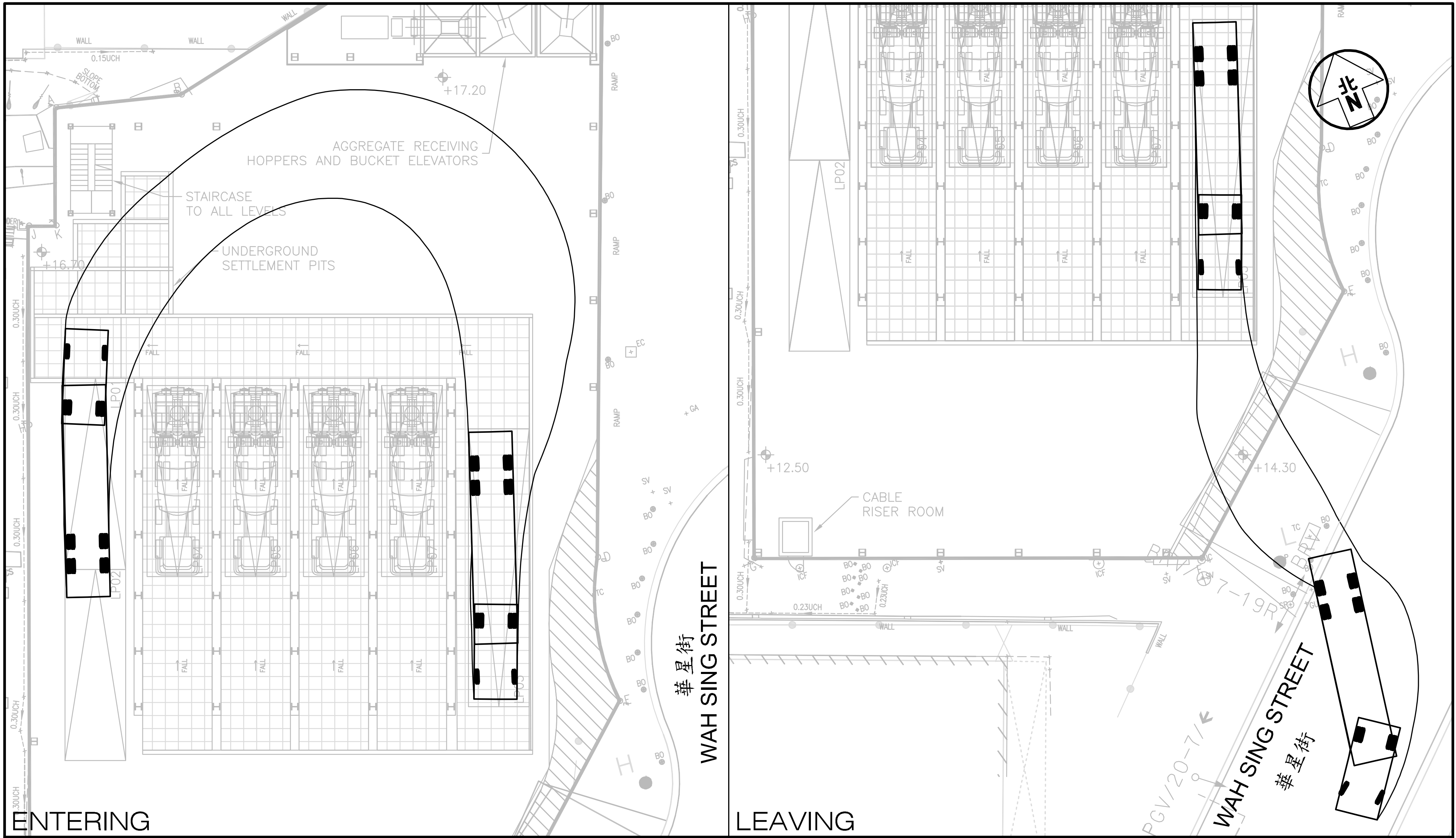
T:\JOB\J7300-J7349\J7345\2024 12\Fig SP101-SP105 RevB.dwg


ENTERING
LEAVING
AGGREGATE RECEIVING
HOPPERS AND BUCKET ELEVATORS
STAIRCASE
TO ALL LEVELS
UNDERGROUND
SETTLEMENT PITS
+17.20
+16.70
+12.50
+14.30
CABLE
RISER ROOM
LP01
LP02
LP03
LP04
LP05
LP06
LP07
FALL
WALL
RAMP
SLOPE BOTTOM
0.15UCH
0.30UCH
0.23UCH
BO
SV
TC
EC
GA
ICF
H
7-19R
PGV/20-7/
WAH SING STREET
華星街
N
北

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

SWEPT PATH OF CONTAINER
ENTERING AND LEAVING THE RAW MATERIAL UNLOADING BAY LP03

Figure No.		Revision
SP102		B
Designed by	Drawn by	Checked by
C Y Y	S C Y	K C
Scale in A4	Date	
1 : 300	20 DEC 2024	

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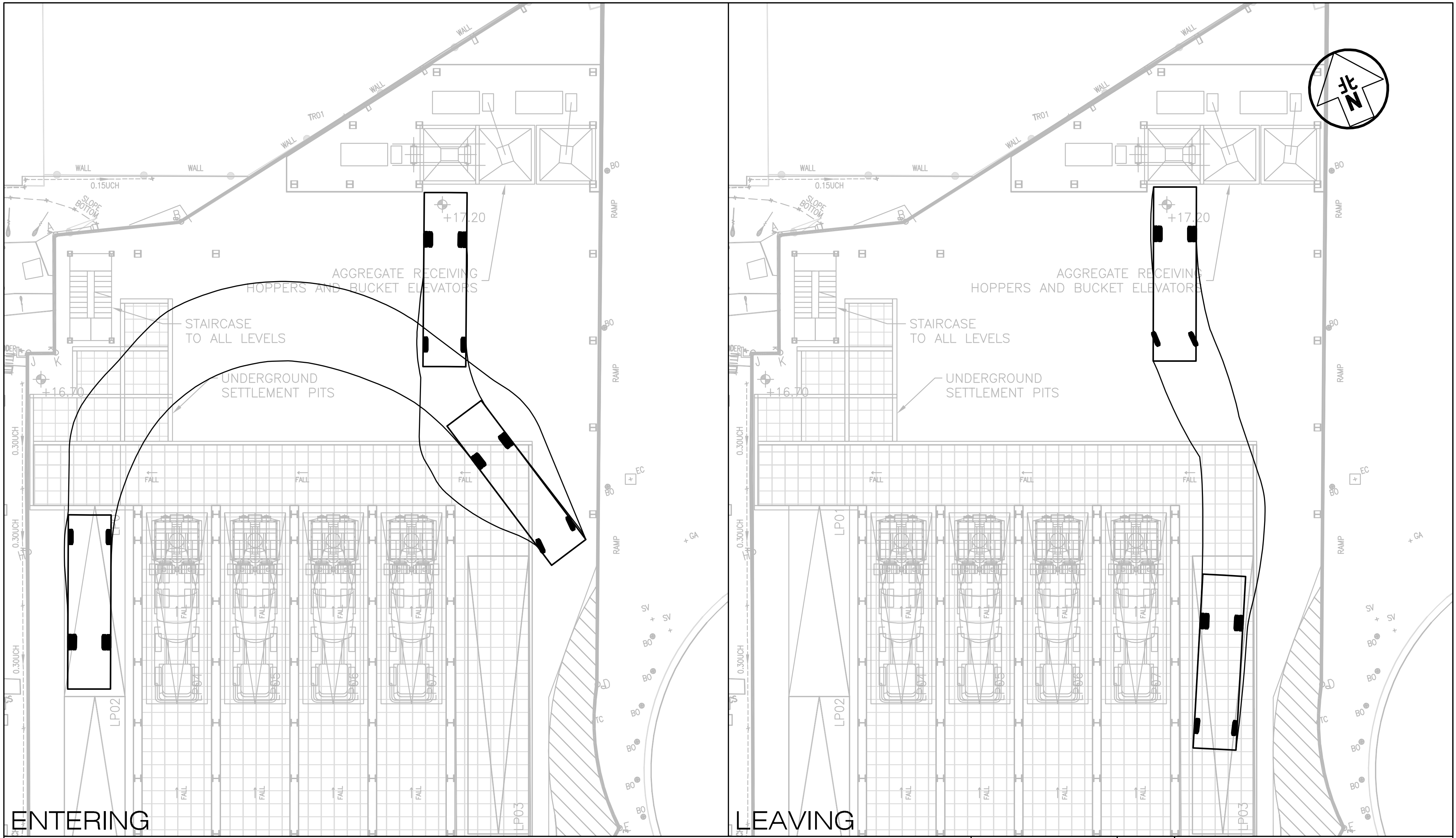
T:\JOB\J7300-J7349\J7345\2024 12\Fig SP101-SP105 RevB.dwg


ENTERING
LEAVING
北 N
WALL
TR01
0.15UCH
SLOPE BOTTOM
AGGREGATE RECEIVING HOPPERS AND BUCKET ELEVATORS
STAIRCASE TO ALL LEVELS
UNDERGROUND SETTLEMENT PITS
+17.20
+16.70
0.30UCH
FALL
RAMP
BO
EC
GA
SV
TC
LP01
LP02
LP03
LP04
LP05
LP06
LP07

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure No.
SP103

Revision
B

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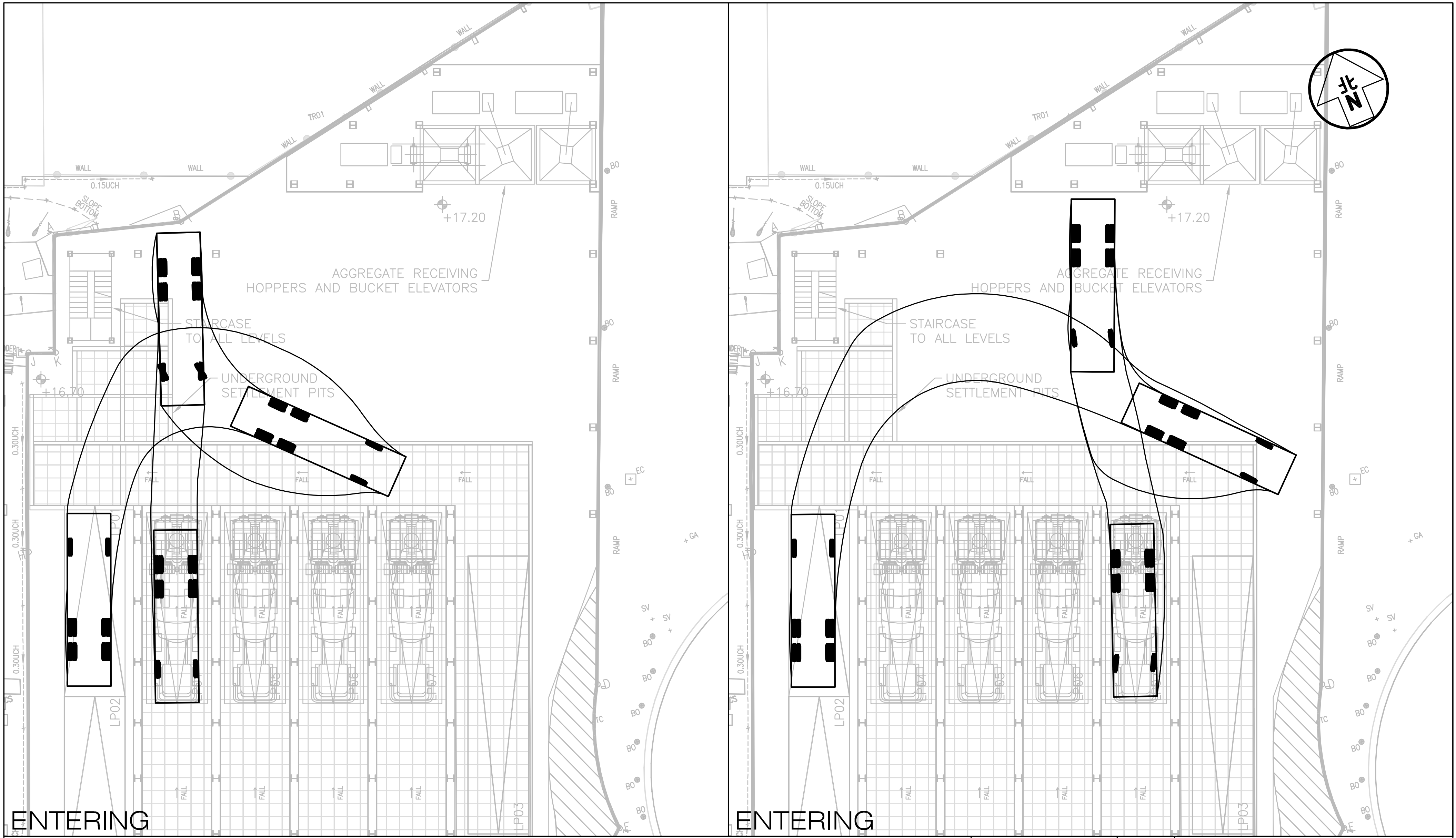
Figure Title

SWEPT PATH OF RAW MATERIAL DELIVERY TRUCK ENTERING AND LEAVING THE RAW MATERIAL UNLOADING AREA

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
1 : 300	20 DEC 2024

T:\JOB\J7300-J7349\J7345\2024 12\Fig SP101-SP105 RevB.dwg


WALL
TR01
0.15UCH
SLOPE BOTTOM
+17.20
AGGREGATE RECEIVING
HOPPERS AND BUCKET ELEVATORS
STAIRCASE
TO ALL LEVELS
UNDERGROUND
SETTLEMENT PITS
+16.70
0.30UCH
FALL
RAMP
BO
EC
GA
SV
LP02
LP03
北
N
ENTERING
ENTERING

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

SWEPT PATH OF CONCRETE MIXER TRUCK
ENTERING THE CONCRETE LOADING POINTS LP04 & 07

Figure No. SP104		Revision B
Designed by C Y Y	Drawn by S C Y	Checked by K C
Scale in A4 1 : 300	Date 20 DEC 2024	

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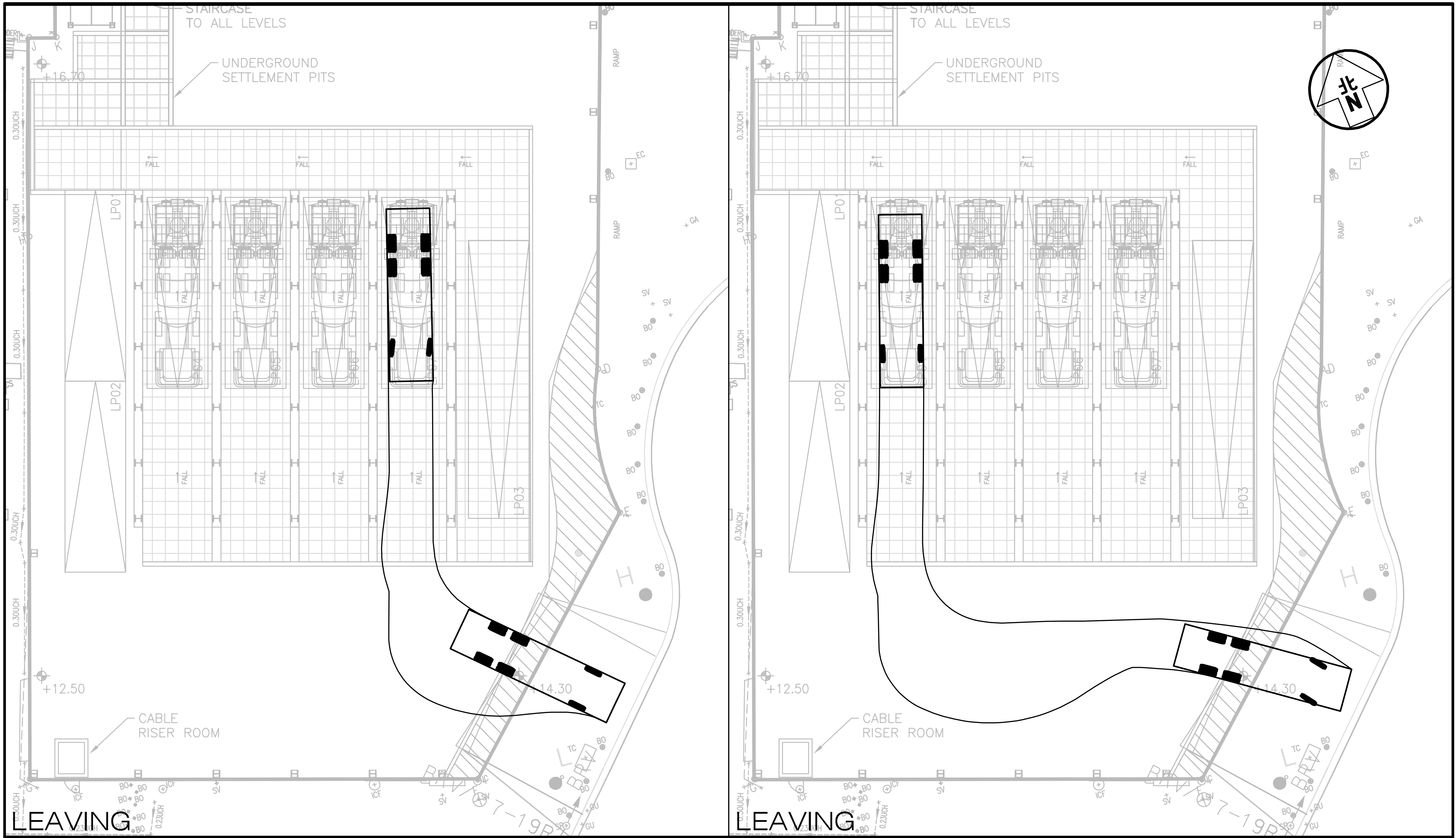
T:\JOB\J7300-J7349\J7345\2024 12\Fig SP101-SP105 RevB.dwg


STAIRCASE
TO ALL LEVELS
UNDERGROUND
SETTLEMENT PITS
+16.70
FALL
RAMP
EC
GA
SV
BO
TC
LP01
LP02
LP03
LP04
LP05
LP06
LP07
0.30UCH
+12.50
+14.30
CABLE
RISER ROOM
ICF
0.23UCH
GU
7-19
LEAVING
LEAVING
北
N

Project Title

PROPOSED CONCRETE BATCHING PLANT AT 13 – 17 WAH SING STREET, KWAI CHUNG

J7345

Figure Title

SWEPT PATH OF CONCRETE MIXER TRUCK
LEAVING THE CONCRETE LOADING POINTS LP04 & 07

Figure No.	Revision
SP105	B

Designed by	Drawn by	Checked by
C Y Y	S C Y	K C

Scale in A4	Date
1 : 300	20 DEC 2024

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Traffic and Transportation Planning Consultants

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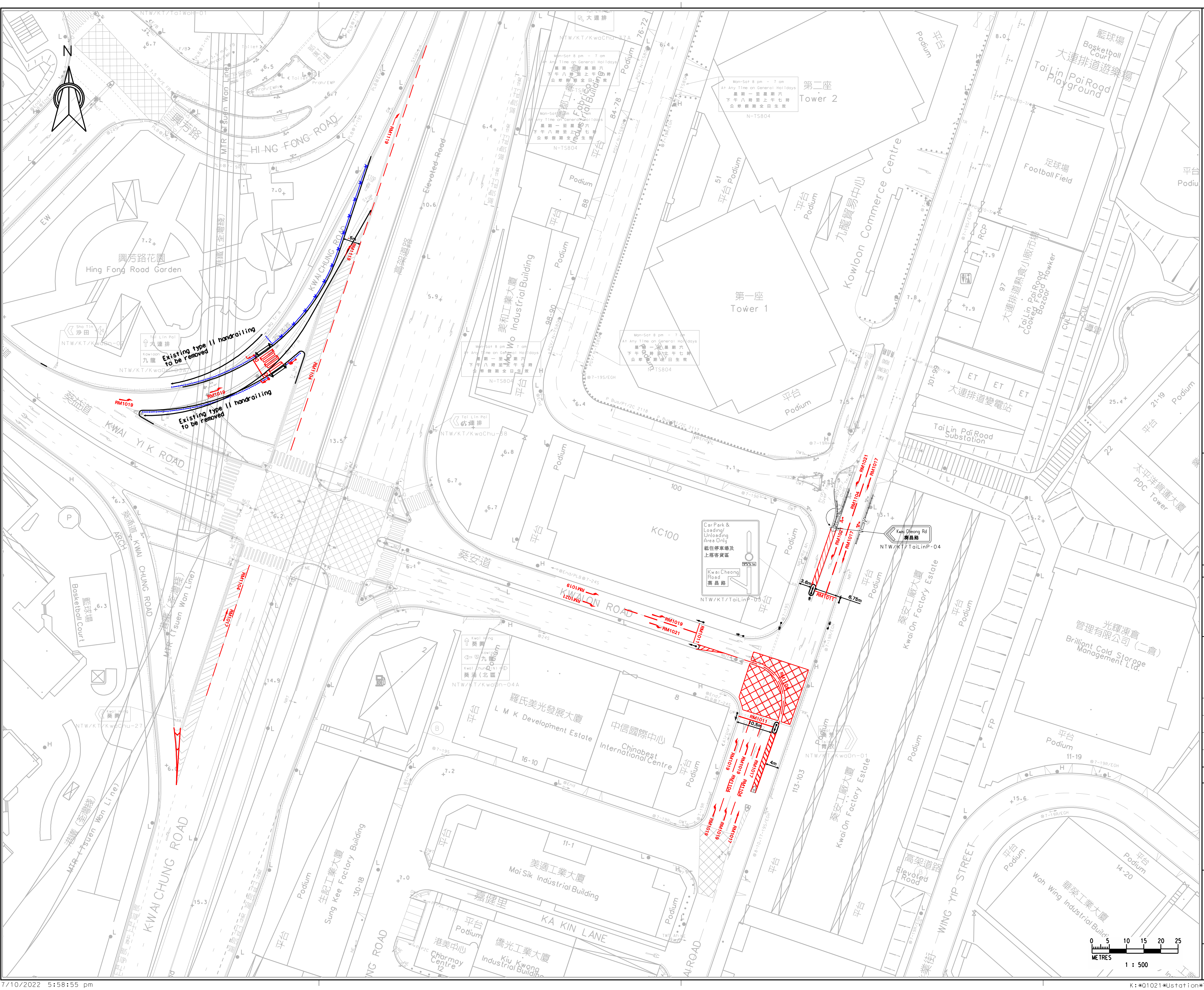
Appendix C –
Junction Improvement Scheme proposed by Kwai On Factory Redevelopment


N
HING FONG ROAD
興芳路
興芳路花園
Hing Fong Road Garden
KWAI CHUNG ROAD
葵涌道
KWAI YIK ROAD
葵益道
KWAI ON ROAD
葵安道
Kwai Cheong Rd
葵昌路
Existing type II handrailing to be removed
Existing type II handrailing to be removed
5m
3.6m
6.75m
10.5m
4m
RM1019
RM1021
RM1011
RM1017
RM1104
RM1119
MTR (Tsuen Wan Line)
Elevated Road
高架道路
第一座
Tower 1
第二座
Tower 2
九龍貿易中心
Kowloon Commerce Centre
KC100
Car Park & Loading/Unloading Area Only
美和工業大廈
Mei Wo Industrial Building
羅氏美光發展大廈
L M K Development Estate
中信國際中心
Chinabest International Centre
美適工業大廈
Mai Sik Industrial Building
生記工業大廈
Sung Kee Factory Building
僑光工業大廈
Kiu Kwong Industrial Building
港美中心
Charmay Centre
嘉健里
KA KIN LANE
葵安工廠大廈
Kwai On Factory Estate
光輝凍倉管理有限公司(二倉)
Brilliant Cold Storage Management Ltd.
華榮工業大廈
Wah Wing Industrial Building
WING YIP STREET
籃球場
Basketball Court
大連排道遊樂場
Tai Lin Pai Road Playground
足球場
Football Field
大連排道變電站
Tai Lin Pai Road Substation
大連排道熟食小販市場
Tai Lin Pai Road Cooked Food Hawker Bazaar
太平洋貿易大廈
PDC Tower
Podium
平台
0 5 10 15 20 25
METRES
1 : 500

Legend

▨ Proposed site

Proposed type II handrailing

Proposed corrugated beam barrier

Rev.	Description of Revision	Date	Ckd.

Client

HONG KONG HOUSING AUTHORITY

Consultants

MANNINGS (Asia) Consultants Limited

Scale in A3 1:1000	Date	
Designed	Drawn	Checked
Design Team Leader	Date	
Approved	Date	

Project

HKHA TERM ENGINEERING CONSULTANCY SERVICES 2018-2020 FOR KOWLOON CENTRAL & WEST AND ISLANDS REGION

Title

JUNCTION IMPROVEMENT LAYOUT PLAN

Drawing No.	Stage	Rev.
FIGURE 10	P	