CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Reference Materials


# Logistics and Transport for MiC Projects

www.cic.hk

November 2024

First published, September 2020
Second Edition, December 2021
Third Edition, November 2024

# FOREWORD

The use of Modular Integrated Construction (MiC) is a growing trend worldwide because of the benefits that MiC brings in terms of the controlled engineering processes and enhanced construction safety, quality and productivity. MiC projects are different from convention building projects in that a number of issues need to be resolved at an early stage of the project to decide if MiC can be adopted or not, among which logistics and transport issues are one of them.

This reference material gives information on the logistics and transport considerations for an MiC project, such as establishment of delivery routes for transporting the modules from a loading point to the project site, taking into account locations of the MiC factory and project site, application for delivery of wide loads and conditions imposed on delivery of wide loads, mode of transport, etc. Useful information on the logistics arrangement and delivery routes of some completed MiC projects are presented as case examples for reference.

This reference material was prepared by Ir Dr Thomas Lam under the direction of Ir Dr Richard Pang, the then Director of Industry Development (May 2018 – September 2021). The Architectural Services Department, Civil Engineering and Development Department, Housing Department, Transport Department and Urban Renewal Authority, and many organizations with MiC knowledge and experience (in particular the China State Construction Engineering (HK) Limited, Gammon Construction Limited, Hong Kong Science and Technology Parks Corporation, Hip Hing Engineering Company Limited, JES Logistics Limited and Yau Lee Construction Company Limited) have provided useful information and helpful assistance in the preparation of this publication. These contributions are gratefully acknowledged.

Practitioners are encouraged to send comments and suggestions at any time to the Construction Industry Council on the contents of this reference material, so that improvements can be made to future editions.

Industry Development
Construction Industry Council

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# PREFACE

The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

The CIC appreciates that some improvements and practices can be implemented immediately whilst others may take more time for implementation. It is for this reason that four separate categories of publication have been adopted, the purposes of which are as follows:

| | |
|---|---|
| Alerts | The Alerts are reminders in the form of brief leaflets produced quickly to draw the immediate attention of relevant stakeholders to the need to follow some good practices or to implement some preventive measures in relation to the construction industry. |
| Reference Materials | The Reference Materials are standards or methodologies generally adopted and regarded by the industry as good practices. The CIC recommends the adoption of the Reference Materials by industry stakeholders where appropriate. |
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| Codes of Conduct | The Codes of Conduct set out the principles that all relevant industry participants should follow. Under the Construction Industry Council (Cap 587), the CIC is tasked to formulate codes of conduct and enforce such codes. The CIC may take necessary actions to ensure compliance with the codes. |

If you have read this publication, we encourage you to share your feedback with us. Please take a moment to fill out the Feedback Form attached to this publication in order that we can further enhance it for the benefit of all concerned. With our joint efforts, we believe our construction industry will develop further and will continue to prosper for years to come.

ABBREVIATIONS

| | |
|---|---|
| BD | Buildings Department |
| C&ED | Customs and Excise Department |
| CFS | Container Freight Station |
| CIExpo | Construction Industry Exposition |
| CoP | Code of Practice |
| CP | Contingency Plan |
| EHC | Eastern Harbour Crossing |
| GBA | Greater Bay Area |
| HKCEC | Hong Kong Convention and Exhibition Centre |
| HKPF | Hong Kong Police Force |
| HZMB | Hong Kong-Zhuhai-Macao Bridge |
| HyD | Highways Department |
| JIT | Just-in-time |
| LBCP | Land Boundary Control Point |
| MGCW | Maximum Gross Combined Weight |
| MiC | Modular Integrated Construction |
| PGVW | Permitted Gross Vehicle Weight |
| PRD | Pearl River Delta |
| PCWA | Public Cargo Working Area |
| RMO | Road Management Office |
| SPA | Swept Path Analysis |
| TD | Transport Department |
| TEU | 20-foot Equivalent Unit |
| TIA | Traffic Impact Assessment |
| TMLG | Temporary Management Liaison Group |
| TTM | Temporary Traffic Management |
| WHC | Western Harbour Crossing |
| WLP | Wide Load Permit |

# 1. INTRODUCTION

MiC projects are different from convention building projects in that a number of issues need to be resolved at an early stage of the project to decide if MiC can be adopted or not, among which logistics and transport issues are one of them. Logistics[1], in a broader sense, refers to the planning and execution of the efficient transportation and storage of goods from the point of origin to the point of consumption. Transportation is part of logistics, which involves use of a suitable mode of transport to move the goods.

In Hong Kong, the width of a road lane is typically 3.3 m but may be less than 3 m at some local road sections (see Appendix A). Vehicles delivering a load not wider than 3.0 m could generally be accommodated within a single traffic lane. However, given the size of the modules delivered, speed of travel of the delivery vehicles and presence of road furniture and other road constraints, the delivery could produce some impacts on the traffic flow along the route and at key junctions and intersections. An application for a Wide Load Permit (WLP) from the Transport Department's Licensing Office must be made for vehicles carrying a load wider than 2.5 m, and a Traffic Impact Assessment (TIA) is needed to support the application, in particular for the case of transport of a load width exceeding 3 m.

In this report, the logistics and transport considerations for an MiC project, such as establishment of delivery routes for transporting the modules from a loading point to the project site, taking into account the locations of the MiC factory and project site, application for delivery of wide loads and conditions imposed on delivery of wide loads, mode of transport, etc., are given. The logistics arrangement and delivery routes of some completed MiC projects are presented as case examples for reference.

[1] https://en.wikipedia.org/wiki/Logistics
https://www.encyclopedia.com/management/encyclopedias-almanacs-transcripts-and-maps/logistics-and-transportation

## 2. DELIVERY ROUTE

### 2.1 Route Planning

In MiC projects, modules are delivered to the project site for assembly and installation. Before a decision is made on the use of MiC, it is necessary to establish that there are routes available for transporting the modules from the MiC factory or a loading point to the project site.

A traffic consultant is generally engaged at the project planning/design stage of the project to carry out the feasibility study to establish and plan the delivery routes, taking into account the width of modules, road conditions and constraints for road transport.

The factors that are considered in the route planning are factory location, choice of land boundary control point (LBCP) if land transport is used, choice of container terminal/mid-stream site/River Trade Terminal/Public Cargo Working Area (PCWA) if sea transport is used and arrangement at the project site for receiving the delivery vehicles.

### 2.2 Factory Location

The modules used in the Hong Kong MiC projects so far are produced in the MiC factories in the Greater Bay Area (GBA) (a rebranding of the Pearl River Delta (PRD)[2]) though there are also factories outside the GBA. The GBA covers the 11 cities of Dongguan (東莞), Foshan (佛山), Guangzhou (廣州), Huizhou (惠州), Jiangmen (江門), Shenzhen (深圳), Zhaoqing (肇慶), Zhongshan (中山) and Zhuhai (珠海), including Hong Kong (香港) and Macau (澳門), as shown in Figure 1.

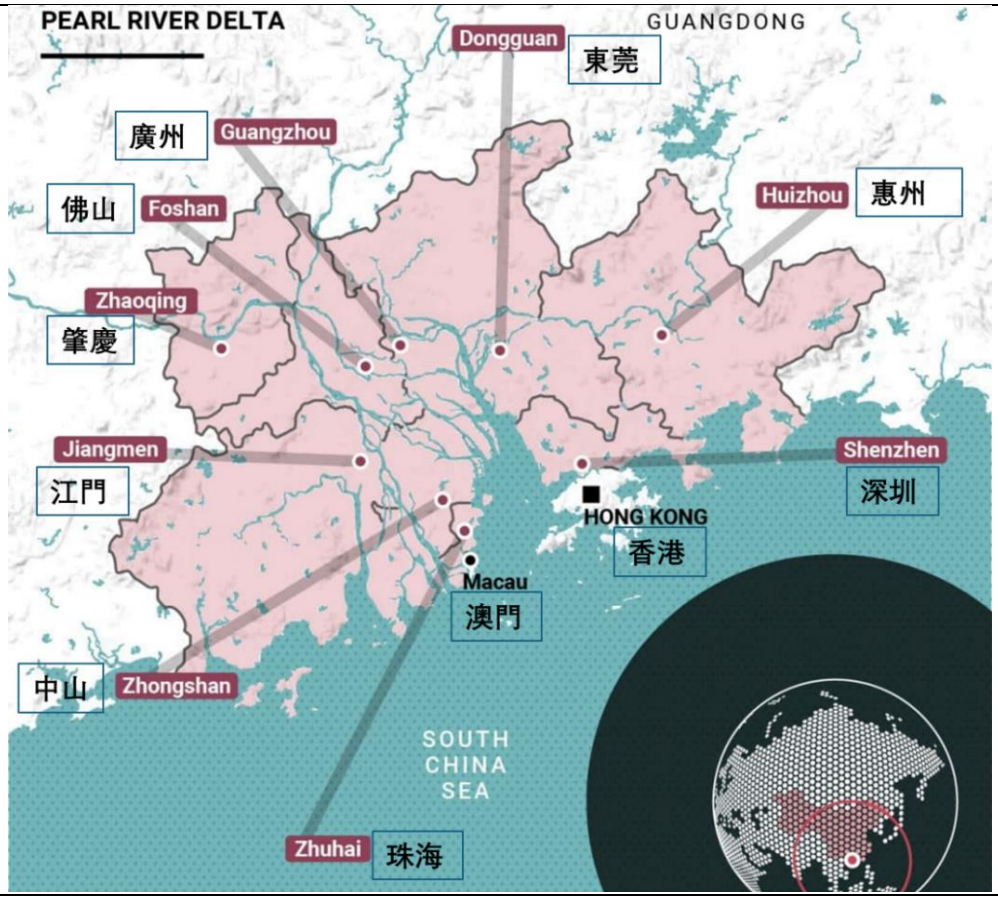



Figure 1 – Greater Bay Area

[2] https://www.1421.consulting/2018/05/greater-bay-area/

As of 13.8.2024, in-principle acceptance (IPA) has been given to 60 steel MiC systems[3] and 42 concrete MiC systems[4] by the Buildings Department (BD), as shown in Tables 1 and 2.

There are 45 steel MiC suppliers and 31 concrete MiC Suppliers in total.

A MiC supplier may have factories in more than one cities. In terms of the number of steel MiC factory in the GBA, Foshan (19) has the most number, followed by Dongguan (5), Jiangmen (5), Huizhou (4), Zhuhai (4), Shenzhen (3), Zhaoqing (3), Guangzhou (2) and Zhongshan (1), as shown in Figure 2. There are 4 steel MiC factories in Jiangsu and 1 in Shanghai.

| Location | No. |
|---|---|
| Foshan 佛山市 | 19 |
| Dongguan 东莞市 | 5 |
| Jiangmen 江门市 | 5 |
| Huizhou 惠州市 | 4 |
| Jiangsu 江苏省 | 4 |
| Zhuhai 珠海市 | 4 |
| Shenzhen 深圳市 | 3 |
| Zhaoqing 肇庆市 | 3 |
| Guangzhou 广州市 | 2 |
| Shanghai 上海市 | 1 |
| Zhongshan 中山市 | 1 |
| | 51 |

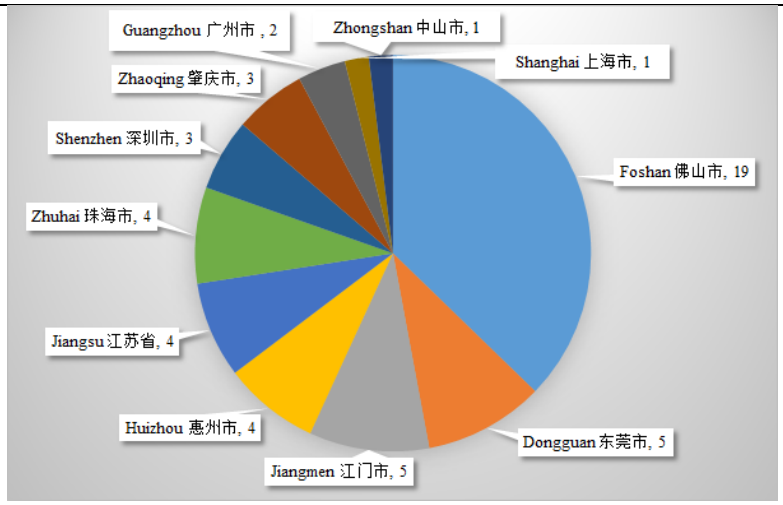



Figure 2 – Number of Steel MiC Factories

In terms of the number of concrete MiC factory in the GBA, Huizhou (13) has the most number, followed by Foshan (4), Dongguan (3), Zhuhai (3), Guangzhou (2), Heyuan (1), Hong Kong (1), Jiangmen (1), Qingyuan (1), Shenzhen (1) and Zhaoging (1), as shown in Figure 3. There is 1 concrete MiC factory in Johor, Malaysia.

| Location | No. |
|---|---|
| Huizhou 惠州市 | 13 |
| Foshan 佛山市 | 4 |
| Dongguan 东莞市 | 3 |
| Zhuhai 珠海市 | 3 |
| Guangzhou 广州市 | 2 |
| Heyuan 河源市 | 1 |
| Hong Kong | 1 |
| Jiangmen 江门市 | 1 |
| Johor, Malaysia | 1 |
| Qingyuan 清远市 | 1 |
| Shenzhen 深圳市 | 1 |
| Zhaoqing 肇庆市 | 1 |
| | 32 |

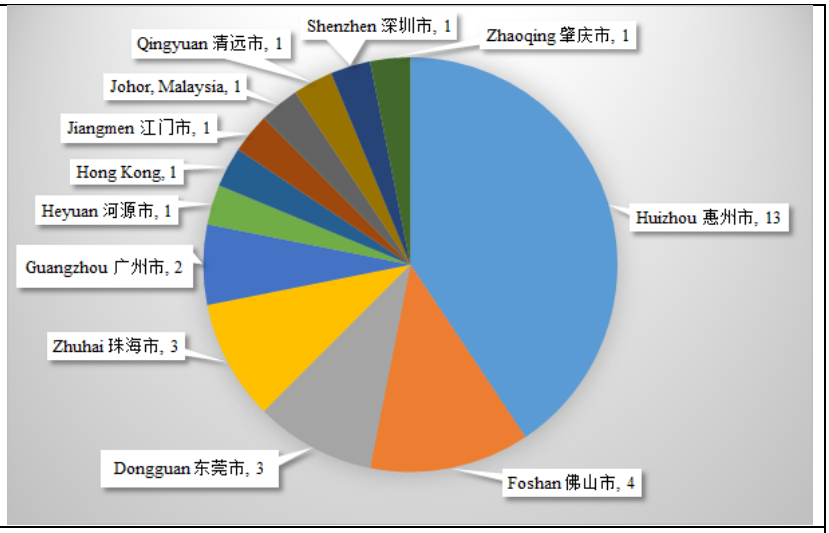



Figure 3 – Number of Concrete MiC Factories

[3] https://www.bd.gov.hk/en/resources/codes-and-references/modular-integrated-construction/mic_steelList.html
[4] https://www.bd.gov.hk/en/resources/codes-and-references/modular-integrated-construction/mic_concreteList.html

Table 1 – List of Steel MiC Systems Pre-accepted by the Buildings Department (as of 2.10.2024)

| Type | Count | Year | BD's Acceptance Ref. No. | MiC Supplier (See Notes) | Location |
|---|---|---|---|---|---|
| Steel | 1 | 2018 | MiC 1/2018 | Unitised Building (Hong Kong) Investment Limited and Unitised Building (Shanghai) Building Technology Company Limited (优必(上海)建筑科技有限公司) | Shanghai 上海市 |
| Steel | 2 | 2018 | MiC 2/2018 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 3 | 2018 | MiC 3/2018 | Guangdong CIMC Building Construction Co. Ltd. | Jiangmen 江门市 |
| Steel | 4 | 2018 | MiC 4/2018 | Nova Deko Modular Building Co. Ltd. | Foshan 佛山市 |
| Steel | 5 | 2019 | MiC 2/2019 | Moderna Homes (HK) Limited | Jiangsu 江苏省 Zhangjiagang 张家港市 |
| Steel | 6 | 2019 | MiC 4/2019 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 7 | 2020 | MiC 1/2020 | China State Hailong Construction Technology Co. Ltd. | Foshan 佛山市 |
| Steel | 8 | 2020 | MiC 2/2020 | Paul Y. - iMax Ltd. | Jiangsu 江苏省 Changshu 常熟市 |
| Steel | 9 | 2020 | MiC 4/2020 | Aggressive Construction Company Limited | Shenzhen 深圳市 (Nanshan 南山区) |
| Steel | 10 | 2020 | MiC 5/2020 | Paul Y. - iMax Ltd. | Foshan 佛山市 and Jiangmen 江门市 |
| Steel | 11 | 2020 | MiC 6/2020 | CR Construction Company Limited | Foshan 佛山市 |
| Steel | 12 | 2020 | MiC 8/2020 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 13 | 2020 | MiC 9/2020 | Chevalier (Construction) Co., Ltd. | Zhongshan 中山市 |
| Steel | 14 | 2020 | MiC 10/2020 | China State Hailong Construction Technology Co. Ltd. | Foshan 佛山市 |
| Steel | 15 | 2020 | MiC 11/2020 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Steel | 16 | 2020 | MiC 12/2020 | Unistress Building Construction Limited | Guangzhou 广州市 (Baiyun 白云区) |
| Steel | 17 | 2020 | MiC 14/2020 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 18 | 2020 | MiC 19/2020 | Paul Y. - iMax Ltd. | Foshan 佛山市 |
| Steel | 19 | 2020 | MiC 20/2020 | Chevalier (Construction) Co., Ltd. | Zhongshan 中山市 |
| Steel | 20 | 2021 | MiC 1/2021 | Brilliant (Man Sau) Engineering Ltd. | Dongguan 东莞市 |
| Steel | 21 | 2021 | MiC 2/2021 | CNQC Intelligent Construction (HK) Limited | Jiangsu 江苏省 Zhangjiagang 张家港市 |
| Steel | 22 | 2021 | MiC 8/2021 | i-Box Modular Housing Limited | Huizhou 惠州市 |
| Steel | 23 | 2021 | MiC 10/2021 | Chinney Construction Co., Ltd. | Foshan 佛山市 |
| Steel | 24 | 2021 | MiC 11/2021 | Chun Wo Construction & Engineering Co., Ltd. | Foshan 佛山市 |
| Steel | 25 | 2021 | MiC 12/2021 | Paul Y. - iMax Ltd. | Jiangsu 江苏省 Changshu 常熟市 |
| Steel | 26 | 2021 | MiC 13/2011 | Markbox Limited | Foshan 佛山市 |
| Steel | 27 | 2021 | MiC 20/2011 | MeCheung Innovative Construction (MiC) Limited | Shenzhen 深圳市 |
| Steel | 28 | 2022 | MiC 2/2022 | Nano and Advanced Materials Institute Limited | Dongguan 东莞市 |
| Steel | 29 | 2022 | MiC 3/2022 | Gammon Construction Limited | Dongguan 东莞市 |
| Steel | 30 | 2022 | MiC 4/2022 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |

| | | | | | |
|---|---|---|---|---|---|
| Steel | 31 | 2022 | MiC 6/2022 | IND. HANS CO. LTD. | Guangzhou 广州市 (Panyu 番禺区) |
| Steel | 32 | 2022 | MiC 7/2022 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 33 | 2022 | MiC 8/2022 | Linker Engineering Limited | Foshan 佛山市 |
| Steel | 34 | 2022 | MiC 9/2022 | China Construction Science and Industry Corporation Ltd. | Foshan 佛山市 |
| Steel | 35 | 2022 | MiC 10/2022 | Konwo Modular House Limited | Dongguan 东莞市 |
| Steel | 36 | 2022 | MiC 11/2022 | Kong Sing Federal Engineering Company Limited | Jiangmen 江门市 |
| Steel | 37 | 2022 | MiC 13/2022 | Nano and Advanced Materials Institute Limited | Dongguan 东莞市 |
| Steel | 38 | 2022 | MiC 14/2022 | Aggressive Construction Company Limited | Foshan 佛山市 |
| Steel | 39 | 2022 | MiC 15/2022 | Unistress Building Construction Limited | Guangzhou 广州市 |
| Steel | 40 | 2022 | MiC 16/2022 | Guangdong CIMC Building Construction Co. Ltd. | Huizhou 惠州市 |
| Steel | 41 | 2022 | MiC 17/2022 | Long Faith Engineering Limited | Jiangsu 江苏省 Taixing 泰兴市 |
| Steel | 42 | 2022 | MiC 18/2022 | The Hong Kong Polytechnic University | Foshan 佛山市 |
| Steel | 43 | 2022 | MiC 19/2022 | China Harbour Engineering Company Limited | Foshan 佛山市 |
| Steel | 44 | 2022 | MiC 22/2022 | China Construction Science and Industry Group Green Technology Co., Ltd | Foshan 佛山市 |
| Steel | 45 | 2022 | MiC 23/2022 | Goldwave Steel Structure Engineering Limited | Jiangmen 江门市 |
| Steel | 46 | 2023 | MiC 1/2023 | China Construction Integrated Building (Hong Kong) Co. Limit | Shenzhen 深圳市 |
| Steel | 47 | 2023 | MiC 5/2023 | Mocon (MiC) Limited | Foshan 佛山市 |
| Steel | 48 | 2023 | MiC 6/2023 | Markbox Innovation Limited | Zhuhai 珠海市 |
| Steel | 49 | 2023 | MiC 9/2023 | Maxful Construction Engineering Limited | Zhuhai 珠海市 |
| Steel | 50 | 2023 | MiC 10/2023 | Sun Fook Kong Construction Limited | Dongguan 东莞市 |
| Steel | 51 | 2023 | MiC 11/2023 | Hip Hing Engineering Company Limited | Jiangmen 江门市 |
| Steel | 52 | 2023 | MiC 17/2023 | China Road and Bridge Corporation | Zhuhai 珠海市 |
| Steel | 53 | 2023 | MiC 18/2023 | Zhuhai Eastern Heavy Industry Co., Limited | Zhuhai 珠海市 |
| Steel | 54 | 2023 | MiC 19/2023 | Opulence Technology Limited | Foshan 佛山市 |
| Steel | 55 | 2023 | MiC 20/2023 | CR Construction Company Limited | Zhaoqing 肇庆市 |
| Steel | 56 | 2023 | MiC 21/2023 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 57 | 2024 | MiC 3/2024 | Aluhouse Technology (GD) Company Limited | Zhaoqing 肇庆市 |
| Steel | 58 | 2024 | MiC 4/2024 | Novadeko Hi-Tech Housing Co. Ltd. | Foshan 佛山市 |
| Steel | 59 | 2024 | MiC 5/2024 | Wui Wing International Development Company Limited | Foshan 佛山市 |
| Steel | 60 | 2024 | MiC 8/2024 | Aluhouse Technology (GD) Company Limited | Zhaoqing 肇庆市 |

Notes:
1. Based on the details given in the BD's List of Pre-accepted MiC Systems/Components (as of 2.10.2024).
2. Those MiC Suppliers with their factories located outside the Greater Bay Area are marked Yellow.

| Table 2 – List of Concrete MiC Systems Pre-accepted by the Buildings Department (as of 2.10.2024) | | | | | |
|---|---|---|---|---|---|
| Type | Count | Year | BD's Acceptance Ref. No. | MiC Supplier (See Notes) | Location |
| Concrete | 1 | 2019 | MiC 1/2019 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 2 | 2019 | MiC 3/2019 | Shunde Lunjiao Quon Hing Construction Material Co. Ltd. | Foshan 佛山市 |
| Concrete | 3 | 2020 | MiC 3/2020 | Orientfunds Precast Limited | Dongguan 东莞市 |
| Concrete | 4 | 2020 | MiC 7/2020 | Chun Wo Construction & Engineering Co., Ltd. | Johor, Malaysia |
| Concrete | 5 | 2020 | MiC 13/2020 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |
| Concrete | 6 | 2020 | MiC 15.2020 | China State Hailong Construction Technology Co. Ltd. | Zhuhai 珠海市 |
| Concrete | 7 | 2020 | MiC 16/2020 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 8 | 2020 | MiC 17/2020 | Unistress Building Company Limited | Huizhou 惠州市 |
| Concrete | 9 | 2020 | MiC 18/2020 | i-Box Modular Housing Limited | Huizhou 惠州市 |
| Concrete | 10 | 2020 | MiC 21/2020 | Urban Renewal Authority | Huizhou 惠州市 |
| Concrete | 11 | 2021 | MiC 3/2021 | Techoy Construction Company Limited | Huizhou 惠州市 |
| Concrete | 12 | 2021 | MiC 4/2021 | Aggressive Construction Company Limited | Huizhou 惠州市 |
| Concrete | 13 | 2021 | MiC 5/2021 | Gammon Construction Limited | Huizhou 惠州市 |
| Concrete | 14 | 2021 | MiC 6/2021 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 15 | 2021 | MiC 7/2021 | China State Hailong Construction Technology Co. Ltd. | Zhuhai 珠海市 |
| Concrete | 16 | 2021 | MiC 9/2021 | Chun Wo Construction & Engineering Co., Ltd. | Johor, Malaysia |
| Concrete | 17 | 2021 | MiC 14/2021 | Shui On Conctruction Company Limited | Zhuhai 珠海市 |
| Concrete | 18 | 2021 | MiC 15/2021 | Dragages Hong Kong Limited | Shenzhen 深圳市 and Dongguan 东莞市 |
| Concrete | 19 | 2021 | MiC 16/2021 | Unistress Building Construction Limited | Huizhou 惠州市 |
| Concrete | 20 | 2021 | MiC 17/2021 | Paul Y. Modular Integrated Construction Limited | Dongguan 东莞市 |
| Concrete | 21 | 2021 | MiC 18/2021 | CNQC Intelligent Construction (HK) Limited | Hong Kong |
| Concrete | 22 | 2021 | MiC 19/2021 | Cheung Kee Fung Cheung Construction Company Limited | Heyuan 河源市 |
| Concrete | 23 | 2022 | MiC 1/2022 | MDM Group Inc. Ltd | Huizhou 惠州市 |
| Concrete | 24 | 2022 | MiC 5/2022 | Gammon Construction Limited | Huizhou 惠州市 |
| Concrete | 25 | 2022 | MiC 12/2022 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 26 | 2022 | MiC 20/2022 | CNQC Intelligent Construction (HK) Limited | Hong Kong |
| Concrete | 27 | 2022 | MiC 21/2022 | Orientfunds Precast Limited | Dongguan 东莞市 |
| Concrete | 28 | 2023 | MiC 2/2023 | China State Construction Engineering (Hong Kong) Limited | Zhuhai 珠海市 |
| Concrete | 29 | 2023 | MiC 3/2023 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |
| Concrete | 30 | 2023 | MiC 4/2023 | Opulence Technology Limited | Huizhou 惠州市 |

| | | | | | |
|---|---|---|---|---|---|
| Concrete | 31 | 2023 | MiC 7/2023 | CIMC MBS Hong Kong Limited | Jiangmen 江门市 |
| Concrete | 32 | 2023 | MiC 8/2023 | Mocon (MiC) Limited | Guangzhou 广州市 |
| Concrete | 33 | 2023 | MiC 12/2023 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 34 | 2023 | MiC 13/2023 | Able Engineering Company Limited | Huizhou 惠州市 |
| Concrete | 35 | 2023 | MiC 14/2023 | CR Construction Company Limited | Zhaoqing 肇庆市 |
| Concrete | 36 | 2023 | MiC 15/2023 | Hip Hing Engineering Company Limited | Foshan 佛山市 |
| Concrete | 37 | 2023 | MiC 16/2023 | Shui On Building Contractors Ltd | Guangzhou 广州市 |
| Concrete | 38 | 2024 | MiC 1/2024 | NW Project Management Limited | Foshan 佛山市 |
| Concrete | 39 | 2024 | MiC 2/2024 | Sun Fook Kong Construction Limited | Qingyuan 清远市 |
| Concrete | 40 | 2024 | MiC 6/2024 | 珠海市睿住建築科技有限公司 | Huizhou 惠州市 |
| Concrete | 41 | 2024 | MiC 7/2024 | Matrix Living International | Foshan 佛山市 |
| Concrete | 42 | 2024 | MiC 9/2024 | Orientfunds Precast Limited | Dongguan 东莞市 |

Notes:
1. Based on the details given in the BD's List of Pre-accepted MiC Systems/Components (as of 2.10.2024).
2. Those MiC Suppliers with their factories located outside the Greater Bay Area are marked Yellow.

The number of factories in the GBA is shown in Figure 4, and details of these suppliers are given in Tables 3 and 4.

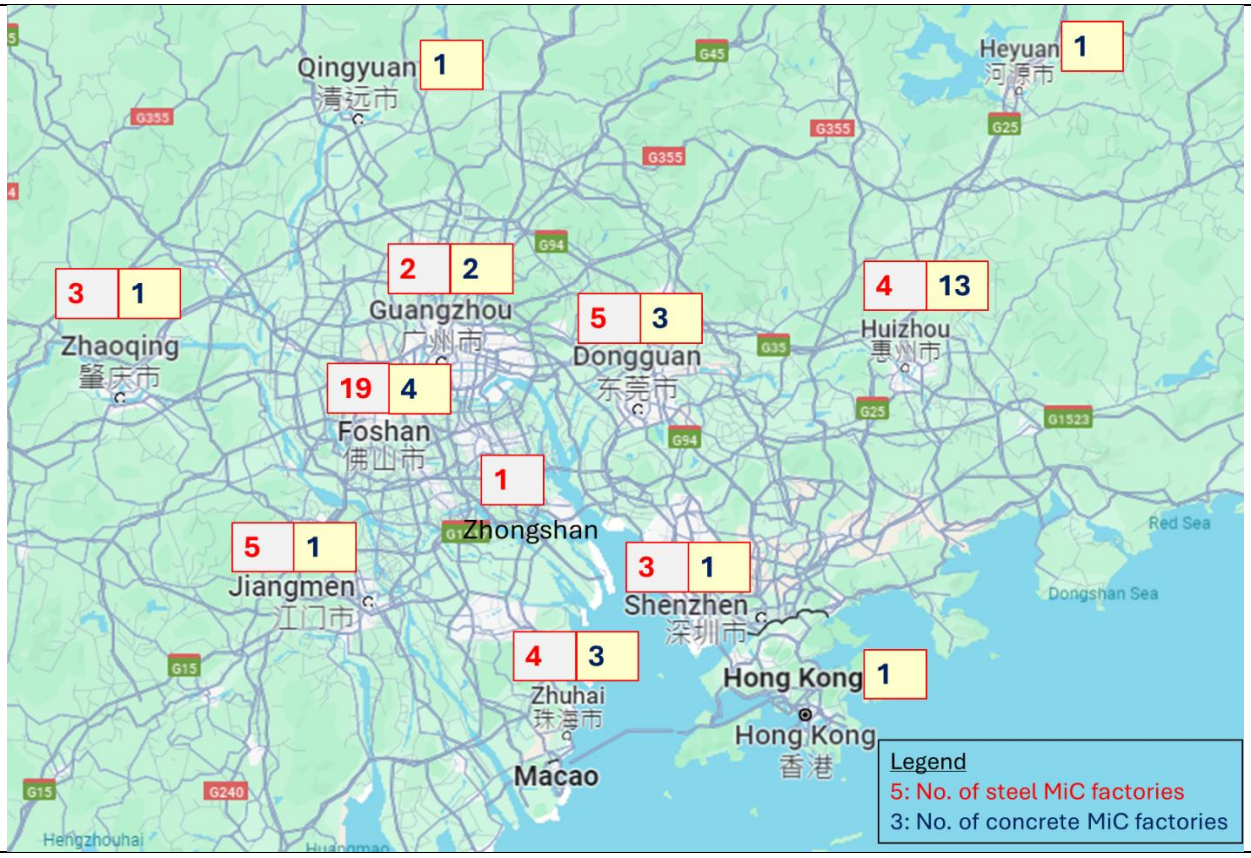



Figure 4 – Number of Factories in Greater Bay Area

| Table 3 – Location of Factories of Steel MiC Pre-accepted Systems (as of 2.10.2024) | | | | | |
|---|---|---|---|---|---|
| Type | Count | Year | BD's Acceptance Ref. No. | MiC Supplier (See Notes) | Location |
| Steel | 20 | 2021 | MiC 1/2021 | Brilliant (Man Sau) Engineering Ltd. | Dongguan 东莞市 |
| Steel | 29 | 2022 | MiC 3/2022 | Gammon Construction Limited | Dongguan 东莞市 |
| Steel | 35 | 2022 | MiC 10/2022 | Konwo Modular House Limited | Dongguan 东莞市 |
| Steel | 28 | 2022 | MiC 2/2022 | Nano and Advanced Materials Institute Limited | Dongguan 东莞市 |
| Steel | 37 | 2022 | MiC 13/2022 | Nano and Advanced Materials Institute Limited | Dongguan 东莞市 |
| Steel | 50 | 2023 | MiC 10/2023 | Sun Fook Kong Construction Limited | Dongguan 东莞市 |
| Steel | 34 | 2022 | MiC 9/2022 | China Construction Science and Industry Corporation Ltd. | Foshan 佛山市 |
| Steel | 44 | 2022 | MiC 22/2022 | China Construction Science and Industry Group Green Technology Co., Ltd | Foshan 佛山市 |
| Steel | 43 | 2022 | MiC 19/2022 | China Harbour Engineering Company Limited | Foshan 佛山市 |
| Steel | 7 | 2020 | MiC 1/2020 | China State Hailong Construction Technology Co. Ltd. | Foshan 佛山市 |
| Steel | 14 | 2020 | MiC 10/2020 | China State Hailong Construction Technology Co. Ltd. | Foshan 佛山市 |
| Steel | 23 | 2021 | MiC 10/2021 | Chinney Construction Co., Ltd. | Foshan 佛山市 |
| Steel | 24 | 2021 | MiC 11/2021 | Chun Wo Construction & Engineering Co., Ltd. | Foshan 佛山市 |
| Steel | 11 | 2020 | MiC 6/2020 | CR Construction Company Limited | Foshan 佛山市 |
| Steel | 33 | 2022 | MiC 8/2022 | Linker Engineering Limited | Foshan 佛山市 |
| Steel | 47 | 2023 | MiC 5/2023 | Mocon (MiC) Limited | Foshan 佛山市 |
| Steel | 4 | 2018 | MiC 4/2018 | Nova Deko Modular Building Co. Ltd. | Foshan 佛山市 |
| Steel | 6 | 2019 | MiC 4/2019 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 12 | 2020 | MiC 8/2020 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 17 | 2020 | MiC 14/2020 | Nova Techoy Modular Construction Company Limited | Foshan 佛山市 |
| Steel | 58 | 2024 | MiC 4/2024 | Novadeko Hi-Tech Housing Co. Ltd. | Foshan 佛山市 |
| Steel | 54 | 2023 | MiC 19/2023 | Opulence Technology Limited | Foshan 佛山市 |
| Steel | 18 | 2020 | MiC 19/2020 | Paul Y. - iMax Ltd. | Foshan 佛山市 |
| Steel | 42 | 2022 | MiC 18/2022 | The Hong Kong Polytechnic University | Foshan 佛山市 |
| Steel | 59 | 2024 | MiC 5/2024 | Wui Wing International Development Company Limited | Foshan 佛山市 |
| Steel | 10 | 2020 | MiC 5/2020 | Paul Y. - iMax Ltd. | Foshan 佛山市 and Jiangmen 江门市 |
| Steel | 38 | 2022 | MiC 14/2022 | Aggressive Construction Company Limited | Foshan 佛山市 |
| Steel | 26 | 2021 | MiC 13/2011 | Markbox Limited | Foshan 佛山市 |
| Steel | 39 | 2022 | MiC 15/2022 | Unistress Building Construction Limited | Guangzhou 广州市 |
| Steel | 16 | 2020 | MiC 12/2020 | Unistress Building Construction Limited | Guangzhou 广州市 (Baiyun 白云区) |
| Steel | 31 | 2022 | MiC 6/2022 | IND. HANS CO. LTD. | Guangzhou 广州市 (Panyu 番禺区) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | 40 | 2022 | MiC 16/2022 | Guangdong CIMC Building Construction Co. Ltd. | Huizhou 惠州市 |
| Steel | 22 | 2021 | MiC 8/2021 | i-Box Modular Housing Limited | Huizhou 惠州市 |
| Steel | 30 | 2022 | MiC 4/2022 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |
| Steel | 15 | 2020 | MiC 11/2020 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Steel | 45 | 2022 | MiC 23/2022 | Goldwave Steel Structure Engineering Limited | Jiangmen 江门市 |
| Steel | 3 | 2018 | MiC 3/2018 | Guangdong CIMC Building Construction Co. Ltd. | Jiangmen 江门市 |
| Steel | 51 | 2023 | MiC 11/2023 | Hip Hing Engineering Company Limited | Jiangmen 江门市 |
| Steel | 36 | 2022 | MiC 11/2022 | Kong Sing Federal Engineering Company Limited | Jiangmen 江门市 |
| Steel | 8 | 2020 | MiC 2/2020 | Paul Y. - iMax Ltd. | Jiangsu 江苏省 Changshu 常熟市 |
| Steel | 25 | 2021 | MiC 12/2021 | Paul Y. - iMax Ltd. | Jiangsu 江苏省 Changshu 常熟市 |
| Steel | 21 | 2021 | MiC 2/2021 | CNQC Intelligent Construction (HK) Limited | Jiangsu 江苏省 Zhangjiagang 张家港市 |
| Steel | 5 | 2019 | MiC 2/2019 | Moderna Homes (HK) Limited | Jiangsu 江苏省 Zhangjiagang 张家港市 |
| Steel | 41 | 2022 | MiC 17/2022 | Long Faith Engineering Limited | Jiangsu 江苏省 Taixing 泰兴市 |
| Steel | 1 | 2018 | MiC 1/2018 | Unitised Building (Hong Kong) Investment Limited and Unitised Building (Shanghai) Building Technology Company Limited (优必(上海)建筑科技有限公司) | Shanghai 上海市 |
| Steel | 27 | 2021 | MiC 20/2011 | MeCheung Innovative Construction (MiC) Limited | Shenzhen 深圳市 |
| Steel | 9 | 2020 | MiC 4/2020 | Aggressive Construction Company Limited | Shenzhen 深圳市 (Nanshan 南山区) |
| Steel | 46 | 2023 | MiC 1/2023 | China Construction Integrated Building (Hong Kong) Co. Limit | Shenzhen 深圳市 |
| Steel | 2 | 2018 | MiC 2/2018 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 32 | 2022 | MiC 7/2022 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 56 | 2023 | MiC 21/2023 | Aluhouse Company Limited | Zhaoqing 肇庆市 |
| Steel | 57 | 2024 | MiC 3/2024 | Aluhouse Technology (GD) Company Limited | Zhaoqing 肇庆市 |
| Steel | 60 | 2024 | MiC 8/2024 | Aluhouse Technology (GD) Company Limited | Zhaoqing 肇庆市 |
| Steel | 55 | 2023 | MiC 20/2023 | CR Construction Company Limited | Zhaoqing 肇庆市 |
| Steel | 13 | 2020 | MiC 9/2020 | Chevalier (Construction) Co., Ltd. | Zhongshan 中山市 |
| Steel | 19 | 2020 | MiC 20/2020 | Chevalier (Construction) Co., Ltd. | Zhongshan 中山市 |
| Steel | 52 | 2023 | MiC 17/2023 | China Road and Bridge Corporation | Zhuhai 珠海市 |
| Steel | 48 | 2023 | MiC 6/2023 | Markbox Innovation Limited | Zhuhai 珠海市 |
| Steel | 49 | 2023 | MiC 9/2023 | Maxful Construction Engineering Limited | Zhuhai 珠海市 |
| Steel | 53 | 2023 | MiC 18/2023 | Zhuhai Eastern Heavy Industry Co., Limited | Zhuhai 珠海市 |

| Table 4 – Location of Factories of Concrete MiC Pre-accepted Systems (as of 2.10.2024) | | | | | |
|---|---|---|---|---|---|
| Type | Count | Year | BD's Acceptance Ref. No. | MiC Supplier (See Notes) | Location |
| Concrete | 3 | 2020 | MiC 3/2020 | Orientfunds Precast Limited | Dongguan 东莞市 |
| Concrete | 27 | 2022 | MiC 21/2022 | Orientfunds Precast Limited | Dongguan 东莞市 |
| Concrete | 42 | 2024 | MiC 9/2024 | Orientfunds Precast Limited | Dongguan 东莞市 |
| Concrete | 20 | 2021 | MiC 17/2021 | Paul Y. Modular Integrated Construction Limited | Dongguan 东莞市 |
| Concrete | 36 | 2023 | MiC 15/2023 | Hip Hing Engineering Company Limited | Foshan 佛山市 |
| Concrete | 41 | 2024 | MiC 7/2024 | Matrix Living International | Foshan 佛山市 |
| Concrete | 38 | 2024 | MiC 1/2024 | NW Project Management Limited | Foshan 佛山市 |
| Concrete | 2 | 2019 | MiC 3/2019 | Shunde Lunjiao Quon Hing Construction Material Co. Ltd. | Foshan 佛山市 |
| Concrete | 32 | 2023 | MiC 8/2023 | Mocon (MiC) Limited | Guangzhou 广州市 |
| Concrete | 37 | 2023 | MiC 16/2023 | Shui On Building Contractors Ltd | Guangzhou 广州市 |
| Concrete | 22 | 2021 | MiC 19/2021 | Cheung Kee Fung Cheung Construction Company Limited | Heyuan 河源市 |
| Concrete | 21 | 2021 | MiC 18/2021 | CNQC Intelligent Construction (HK) Limited | Hong Kong |
| Concrete | 26 | 2022 | MiC 20/2022 | CNQC Intelligent Construction (HK) Limited | Hong Kong |
| Concrete | 34 | 2023 | MiC 13/2023 | Able Engineering Company Limited | Huizhou 惠州市 |
| Concrete | 12 | 2021 | MiC 4/2021 | Aggressive Construction Company Limited | Huizhou 惠州市 |
| Concrete | 13 | 2021 | MiC 5/2021 | Gammon Construction Limited | Huizhou 惠州市 |
| Concrete | 24 | 2022 | MiC 5/2022 | Gammon Construction Limited | Huizhou 惠州市 |
| Concrete | 9 | 2020 | MiC 18/2020 | i-Box Modular Housing Limited | Huizhou 惠州市 |
| Concrete | 23 | 2022 | MiC 1/2022 | MDM Group Inc. Ltd | Huizhou 惠州市 |
| Concrete | 30 | 2023 | MiC 4/2023 | Opulence Technology Limited | Huizhou 惠州市 |
| Concrete | 11 | 2021 | MiC 3/2021 | Techoy Construction Company Limited | Huizhou 惠州市 |
| Concrete | 8 | 2020 | MiC 17/2020 | Unistress Building Company Limited | Huizhou 惠州市 |
| Concrete | 19 | 2021 | MiC 16/2021 | Unistress Building Construction Limited | Huizhou 惠州市 |
| Concrete | 10 | 2020 | MiC 21/2020 | Urban Renewal Authority | Huizhou 惠州市 |
| Concrete | 5 | 2020 | MiC 13/2020 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |
| Concrete | 29 | 2023 | MiC 3/2023 | Wing Hong Shun Enterprises Limited | Huizhou 惠州市 |
| Concrete | 1 | 2019 | MiC 1/2019 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 7 | 2020 | MiC 16/2020 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 14 | 2021 | MiC 6/2021 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 25 | 2022 | MiC 12/2022 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 33 | 2023 | MiC 12/2023 | Yau Lee Wah Concrete Precast Products Co. Ltd. | Huizhou 惠州市 |
| Concrete | 40 | 2024 | MiC 6/2024 | 珠海市睿住建築科技有限公司 | Huizhou 惠州市 |
| Concrete | 31 | 2023 | MiC 7/2023 | CIMC MBS Hong Kong Limited | Jiangmen 江门市 |
| Concrete | 4 | 2020 | MiC 7/2020 | Chun Wo Construction & Engineering Co., Ltd. | Johor, Malaysia |
| Concrete | 16 | 2021 | MiC 9/2021 | Chun Wo Construction & Engineering Co., Ltd. | Johor, Malaysia |
| Concrete | 39 | 2024 | MiC 2/2024 | Sun Fook Kong Construction Limited | Qingyuan 清远市 |

| | | | | | |
|---|---|---|---|---|---|
| Concrete | 18 | 2021 | MiC 15/2021 | Dragages Hong Kong Limited | Shenzhen 深圳市 and Dongguan 东莞市 |
| Concrete | 35 | 2023 | MiC 14/2023 | CR Construction Company Limited | Zhaoqing 肇庆市 |
| Concrete | 28 | 2023 | MiC 2/2023 | China State Construction Engineering (Hong Kong) Limited | Zhuhai 珠海市 |
| Concrete | 6 | 2020 | MiC 15.2020 | China State Hailong Construction Technology Co. Ltd. | Zhuhai 珠海市 |
| Concrete | 15 | 2021 | MiC 7/2021 | China State Hailong Construction Technology Co. Ltd. | Zhuhai 珠海市 |
| Concrete | 17 | 2021 | MiC 14/2021 | Shui On Conctruction Company Limited | Zhuhai 珠海市 |

In deciding on the mode of transport and logistics arrangement to be used, factory location is an important factor. For factories located inland, such as in Foshan, Guangzhou, Huizhou and Zhaoqing, use of land transport is common. For factories located near the river/coastline, such as Dongguan, Jiangmen, Zhongshan, Zhuhai and Shenzhen, either land transport or sea transport can be used.

## 2.3 Land Boundary Control Points

When land transport is used, vehicles carrying modules will enter Hong Kong through the Land Boundary Control Points (LBCPs).

There are six LBCPs for cross-boundary goods vehicles[5], as shown in Figure 5. They are, from east to west, the Sha Tau Kok, Heung Yuen Wai, Man Kam To, Lok Ma Chau, Shenzhen Bay and Hong Kong-Zhuhai-Macao Bridge (HZMB) (Hong Kong Port) LBPCs. The corresponding ports in the Mainland are also shown in the figure. Heung Yuen Wai is the sixth road boundary crossing which has provided cargo clearance facilities since 26.8.2020.

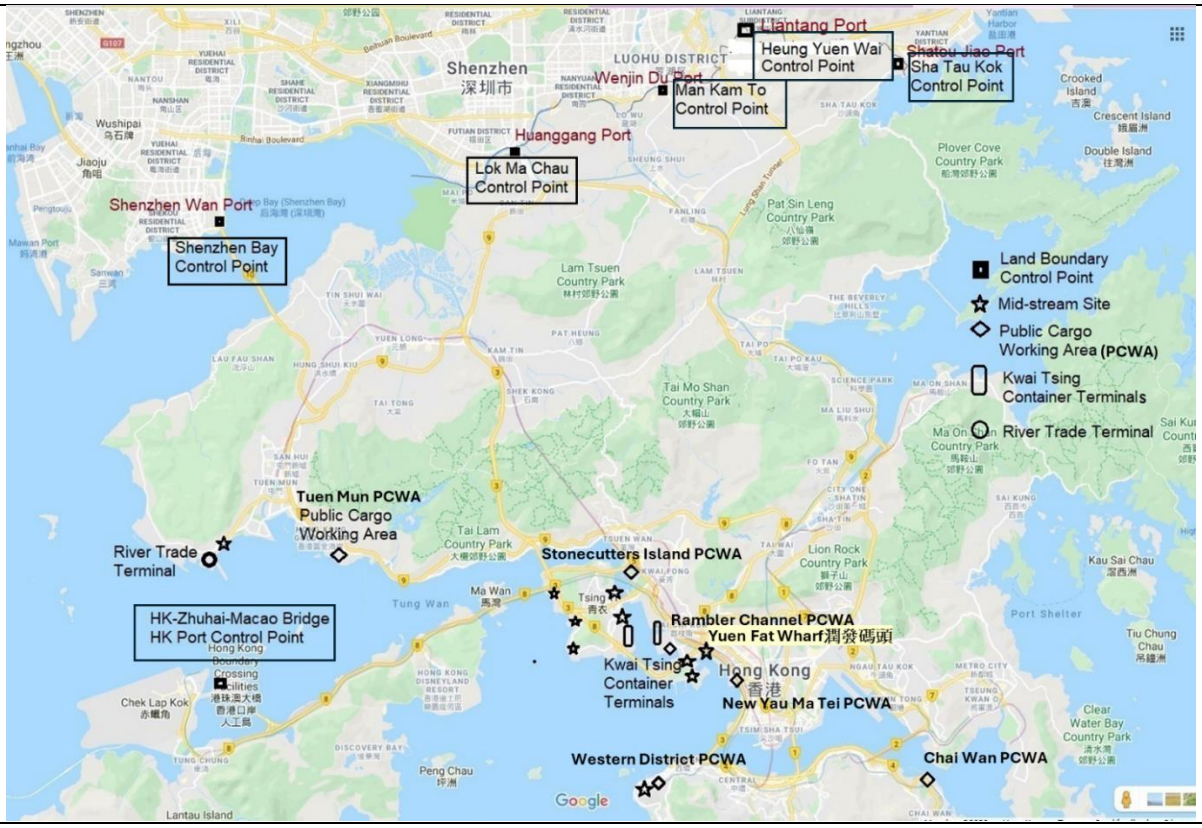



Figure 5 – Locations of Land Boundary Control Points, Kwai Tsing Container Terminals, River Trade Terminal, Mid-stream Sites and Public Cargo Working Areas[6]

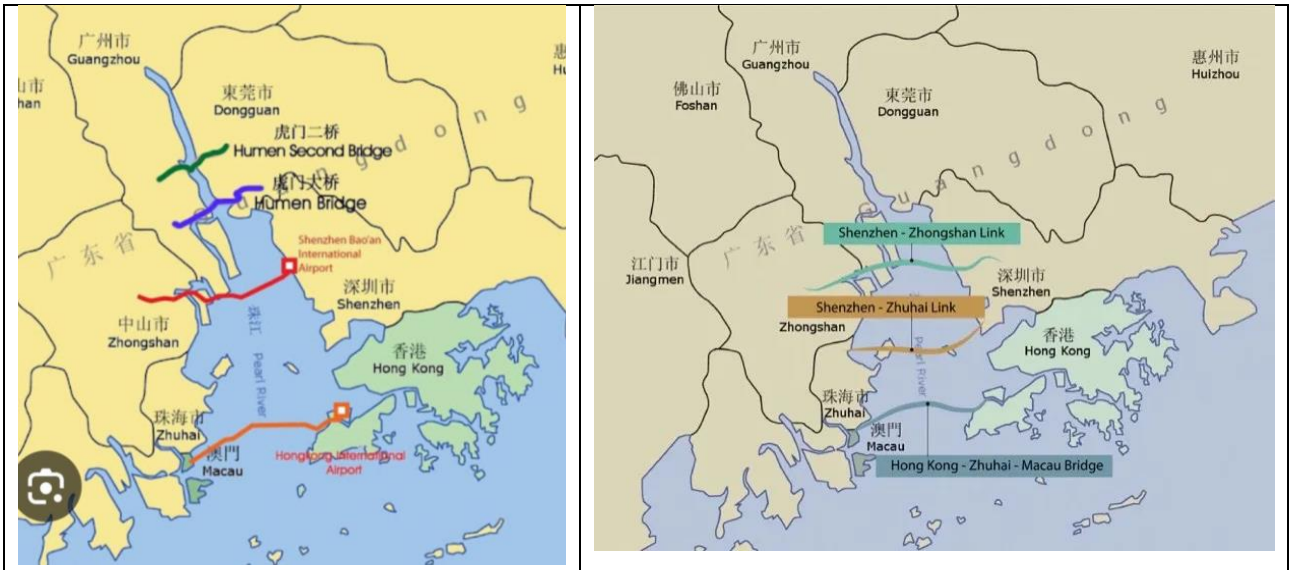
[5] https://www.customs.gov.hk/en/contact_us/passenger_clearance/ index.html
[6] The Hong Kong Maritime and Port Board (https://www.hkmpb.gov.hk/en/port.html).

The choice of the LBCP will depend on its closeness to the factory and/or the project site, hours of operation, etc.

The highway networks in the GBA are shown in Figure 6, and the bridges in the Pearl River Delta in Figure 7.

The Heung Yuen Wai, Man Kam To and Lok Ma Chau LBCPs are close to Shenzhen, and they are connected to Huizhou and Shantou via Shenzhen-Huizhou Expressway and Shenzhen-Shantou Expressway respectively. They are suitable for vehicles from cities on the eastern side of the Pearl River.


Figure 6 – Highway Connectivity Between Major Cities at Pearl River West[7]




(a) (b)

Figure 7 – Bridges in Pearl River Delta

[7] https://www.hzmb.gov.hk/en/

The Sha Tau Kok LBCP is suitable for vehicles from Yantian Harbour in the case that the modules are transported from abroad by sea to Yantian Harbour first.

The Shenzhen Bay LBCP is connected to Zhongshan via the Coastal Expressway. This LBCP is suitable for vehicles from cities on the western side of the Pearl River, and in western Dongguan and Shenzhen. The port is also suitable for sites located in Yuen Long and Tuen Mun districts.

With the operation of the Shenzhen-Zhongshen Link in June 2024, which connects Shenzhen and Zhongshan (Figure 7(a)), the trave time from Zhongshen to Shenzhen is cut from at least two hours to as little as 25 minutes. This will certainly enhance the efficiency of the transportation of MiC modules from the western side of the GBA to Hong Kong through Shenzhen. Another bridge link which is being studied is the Shenzhen-Zuhai Link, as shown in Figure 7(b).

The HZMB LBCP is suitable for vehicles from cities on the western side of the Pearl River. Through its link in Zhuhai, the HZMB connects with three major expressways, namely the Jing-Zhu Expressway, Guang-Zhu West Expressway and Jiang-Zhu Expressway, and then to the Mainland's fast expanding road network. Major cities on the West Bank of the Pearl River like Guangzhou, Zhongshan, Jiangmen, etc., can be reached easily.

The total number of vehicle trips recorded at the Sha Tau Kok, Heung Yuen Wai, Man Kam To, Lok Ma Chau, Shenzhen Bay and HZMB (Hong Kong Port) LBCPs are 30,000, 310,000, 580,000, 530,000, 1,160,000 and 220,000 respectively[8] in 2022.

The operation details of the LBCP are given in Table 5. The Lok Ma Chau and HZMP (Hong Kong Port) LBCPs are operated on a 24-hr basis. The Sha Tau Kok, Heung Yuen Wai and Man Kam To LBCPs are opened from 7 am to 10 pm, whereas the Shenzhen Bay LBCP is opened from 6:30 am to 12 mid-night. There is generally no restriction in the size of modules processed at the LBCPs. The Customs and Excise Department (C&ED) adopts a risk management approach to identify and select cargoes/vehicles/drivers/passengers for inspection at the LBCPs. As and when necessary, the cargoes/vehicles/drivers/passengers will be selected for inspection at the LBCPs. The inspection methods/equipment used include physical checks, vehicle searches, use of detector dogs, Mobile X-ray Vehicle Scanning Systems and Vehicle X-ray Inspection Systems, etc.

Table 5 – Operational Details of LBCPs

| | ***Port/* LBCP** | **Hours of Operation** | **Total Number of Vehicle Trips (in 2022)** |
|---|---|---|---|
| 1. | *Shatou Jiao/* Sha Tau Kok | 7 am to 10 pm | 30,000 |
| 2. | *Liantang Port/* Heung Yuen Wai | 7 am to 10 pm | 310,000 |
| 3. | *Wenjin Du/* Man Kam To | 7 am to 10 pm | 580,000 |
| 4. | *Huanggang/* Lok Ma Chau | 24 hours | 530,000 |
| 5. | *Shenzhen Wan Port/* Shenzhen Bay | 6:30 am to 12 mid-night | 1,160,000 |
| 6. | Hong Kong-Zhuhai-Macao Bridge (Hong Kong Port) | 24 hours | 220,000 |

8 https://www.td.gov.hk/en/publications_and_press_releases/publications/free_publications/fact_sheet_on_transport/index.html
https://www.td.gov.hk/filemanager/en/content_4761/2022_Transport_en_0519.pdf

2.4 Container Terminals/ Mid-stream Sites/ River Trade Terminal/ Public Cargo Working Areas

Either sea transport or river transport can be used if the modules are delivered to Hong Kong by sea.

Major port facilities in Hong Kong include container terminals, mid-stream sites, River Trade Terminal and PCWAs, as shown in Figure 5. The Hong Kong container terminals are renowned for their efficiency. In year 2023, Kwai Tsing Port handled over 11.0 million TEUs[9], representing about 80% of the total container throughput of Hong Kong. The remaining 20% was handled by mid-stream sites, River Trade Terminal, PCWAs, buoys and anchorages, and other wharves. Details of these facilities are given below:

(a) Container terminals[10] [11]. The container terminals are located at the Kwai Chung-Tsing Yi Basin. There are nine container terminals and they are operated by five operators, occupying 279 hectares of land, providing 24 berths and 7,694 m of deep water frontage. The five operators are: Hongkong International Terminals (HIT) Limited, Modern Terminals Limited, COSCO-HIT Terminals (Hong Kong) Limited, Asia Container Terminals (ACT) Limited and Goodman DP World, as shown in Figure 8. Each operator independently undertakes its own commercial arrangements with its shipping line customers. The water depth of the Kwai Tsing Container Basin is 15 m. There are altogether 24 container berths with a total quay length of 7,794 meters and terminal area 279 hectares in Kwai Tsing Port, providing an estimated capacity over 20 million TEUs per annum.

(b) Mid-stream sites[12]. Mid-stream operation is the loading and unloading of containers while the container ship is at sea, with barges or dumb steel lighters performing the transfer, distribution or landing of containers to piers nearby. There are now 10 mid-stream sites in Hong Kong, occupying a total land area of 33 hectares and a water frontage of about 3,310 m. They are either under long term or short term tenancies. There are around 250 container barges involved in providing the mid-stream services.

(c) River Trade Terminal[13]. There is only one River Trade Terminal in Hong Kong. It is located near Pillar Point, just to the west of Tuen Mun. The terminal is managed by River Trade Terminal Co. Ltd. (RTT) which is a 50/50 joint venture between Hutchison Port Holdings Limited and Sun Hung Kai Properties Limited. River Trade Terminal Co. Ltd. offers comprehensive container and cargo handling and storage services, marine shuttle lighters, cargo handling and storage in a well-equipped Container Freight Station (CFS), etc. The terminal is the largest river trade container terminal in the PRD, providing 65 hectares of terminal area and 45 hectares of stacking area with 49 berths along a total quay length of 3,000 m, as shown in Figure 9. The terminal has 25 quay cranes, 12 rubber-tyred gantry cranes, 11 reach stackers and 15 front loaders. Its main function is to consolidate bulk cargo shipped between Hong Kong and the ports in the PRD.

[9] TEU stands for 20-foot equivalent unit, which is an unit of cargo capacity used to describe the capacity of container ships and container terminals. It is based on the volume of a 20-foot-long (6.1 m), 8 ft (2.44 m) wide intermodal container.
[10] https://www.mardep.gov.hk/en/public-services/shipping-directory/contterm/index.html
[11] Hong Kong Container Terminal Operators Association Limited (HKCTOA)
http://www.hkctoa.com/facilities
[12] The Hong Kong Mid-stream Operators Association Ltd. (HKMOA)
[13] River Trade Terminal Co. Ltd. (RTTC)
https://www.rttc.com.hk/rtt/eng/fac_layout_ter.html

(d) Public Cargo Working Areas[14] [15]. The PCWAs are managed by the Marine Department. The operation of the PCWAs involves short-term allocation of berths and waterfront working areas for loading and unloading of cargo, including bulk cargo and containerised cargo, to and from barges. There are six PCWAs and they are located in Chai Wan, Western District, Rambler Channel, New Yau Ma Tei, Stonecutters Island and Tuen Mun, providing a combined total quay length of 4,852 m.

For modules carried by international container sea freight, both terminal and mid-stream operations are feasible. Mid-stream operation is more affected by weather and is lower in cost as compared with terminal operation. Modules are also more susceptible to damage since more lifting/handling is involved. Nevertheless, mid-stream operation is commonly used for transferring modules from the container ship originating from ports in the GBA to mid-stream sites by barge.

A comparison of the terminal and mid-stream operations, in terms of charges, speed of operation, effect of weather change, time limit of operation, etc., is given in Table 6.

If the factory is located near Hong Kong (e.g. on the western side of the PRD), modules can be transported using barges, mid-stream sites, River Trade Terminal and PCWAs. The River Trade Terminal is more suitable for use by project sites located at Tuen Mun, Yuen Long and Tin Shui Wai. For project sites located on Hong Kong Island, use of the Chai Wan and Western District PCWAs is recommended because use of cross-harbour tunnel can be avoided. However, there are limited operation space, storage area and operation devices for lifting of modules in the PWCAs.

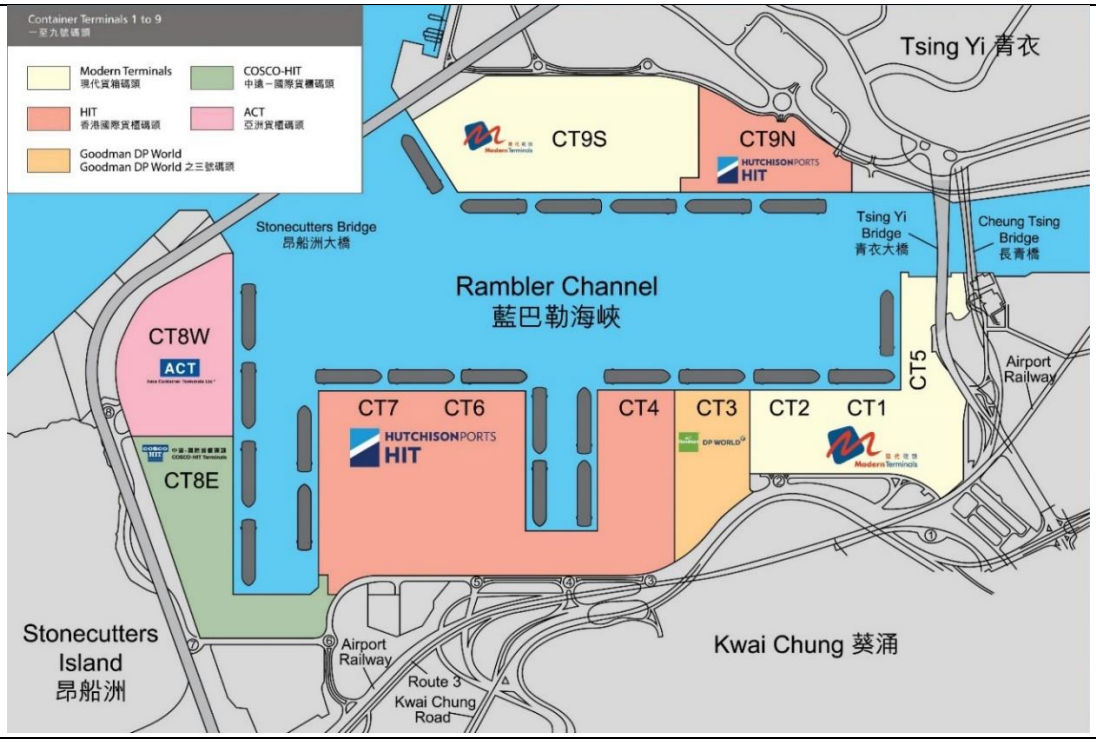



Figure 8 – Container Terminals at Kwai Chung-Tsing Yi Basin

[14] https://www.mardep.gov.hk/en/public-services/port-services/pcwa/index.html
[15] https://www.mardep.gov.hk/en/pub_services/ocean/pcwa.html

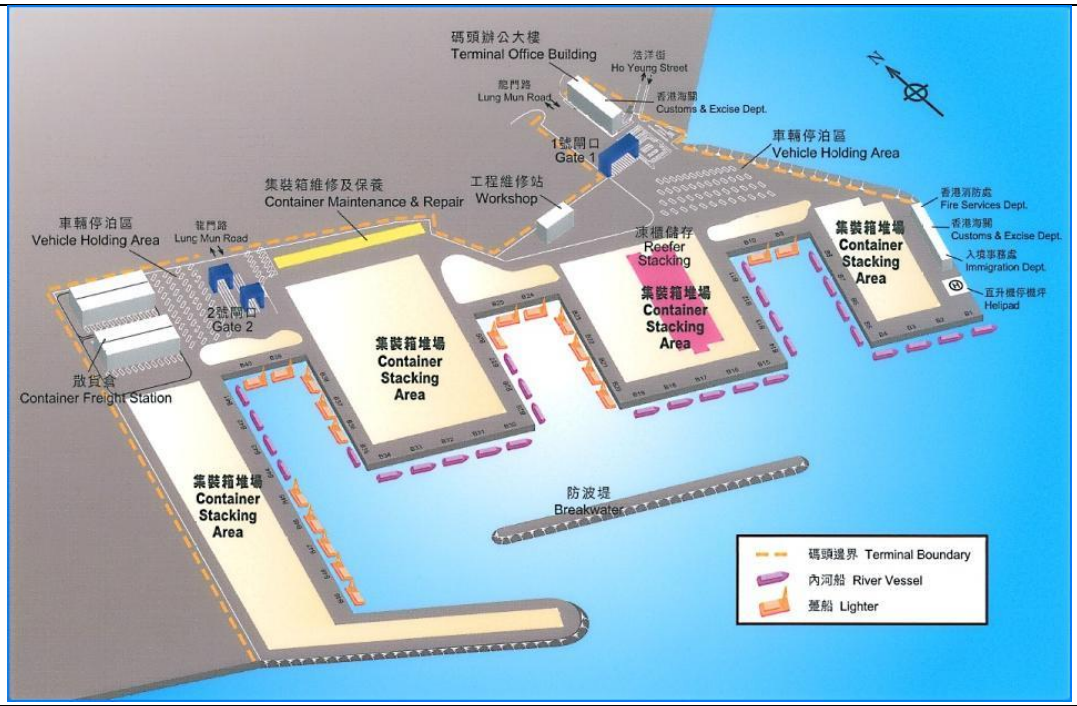



Figure 9 – River Trade Terminal at Pillar Point, Tuen Mun

| Table 6 – Comparison of Terminal Operation and Mid-stream Operation (after HKU, 2019) | | |
|---|---|---|
| **Item** | Terminal operation | Mid-stream operation |
| **Charges** | High | Low |
| **Speed of Operation** | Fast | Slow |
| **Working Method** | Gantry crane | Derrick on barge |
| **Effect of Weather Change (e.g. rain, wind and wave)** | Low | High |
| **Time Limit of Operation** | 24-hour | 24-hour (additional charge during night time) |
| **Pick-up Time** | 24-hour | 0800 hr-1900 hr |
| **Damage to Cargo** | Low | High |
| **Demurrage & Detention Charges**[16] | Strict | Flexible |

## 2.5 Arrangement at Project Site

At the entry/exit of the project site, adequate sight line should be maintained for the motorists and pedestrians at all times. Provision of two gantries to allow one way traffic flow within the site is recommended. Examples of use of two gantries in MiC projects are InnoCell at Tai Po and FSD Quarters at Pak Shing Kok (see Sections 6.2.3 and 6.2.4). If this is not feasible due to site constraints, a wider gantry, say 7.5 m or 8.5 m (as in the case of the URA project at Tonkin Street/ Fuk Wing Street (see Section 6.2.13)), or a width determined by a detailed swept path analysis, should be allowed for.

To facilitate just-in-time (JIT) delivery in the MiC operation, temporary loading bay, contingency parking place, etc., close to the site should be identified. For some larger sites, an internal site area assigned for holding a limited stock of modules in case the JIT delivery breaks down should be considered.

Affected residents, road users, shops and other concerned parties should be informed prior to carrying out the delivery.

[16] Demurrage refers to the charge that the merchant pays for the use of the container within the terminal beyond the free time period. Detention refers to the charge that the merchant pays for the use of the container outside of the terminal or depot, beyond the free time period.

## 3. APPLICATION FOR DELIVERY OF WIDE LOADS

At the early project planning stage/design stage, a traffic consultant (in collaboration with a MiC logistics company) should be engaged to conduct a traffic study to assess and establish whether there is any route for transporting the modules from the MiC factory to the project site, taking into account the ports and marine unloading points for marine transport (as mentioned in Secrtion 2), road conditions and constraints for road transport, and the need for traffic impact assessments at different stages of the project, etc.

The assessment of traffic impact on the proposed delivery routes should be carried out in consultation with the relevant Traffic Engineering (TE) Division/Regional Office of TD and the Road Management Office (RMO)/Hong Kong Police Force (HKPF). Contacts of the TE Divisions and RMOs are given in Appendix B.

The 'Just-in-time delivery' of the modules to the project site is the best approach. However, if this is not feasible, the feasibility study should include identification of temporary parking space and/or storage locations for the modules. Early advice from experienced MiC logistics companies and trailer drivers on the logistics of delivery should be sought.

Road users must apply for a Wide Load Permit (WLP) from the Transport Department's (TD's) Licensing Office if the total width of the load delivered is in excess of 2.5 m. A vehicle may be driven loaded within the limits prescribed in the WLP issued under Regulation 54 of the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E).

Details of the WLP application can be found in the Guidelines on Application for Wide Load Permit[17] (TD, 2022A) and the Reference Material on the Statutory Requirements for MiC Projects[18] (CIC, 2023).

The applicant should duly complete the application form (TD 290)[19] (TD, 2022B) and submit it to the TD's Licensing Offices. The information and documents required by TD 290 for the WLP application include the following:

(b) Particulars of Applicant

(i) Name of the registered owner of the vehicle under WLP application;
(ii) Identity document/ Certificate of Incorporation of the registered owner;
(iii) Residential/ Company and correspondence address with acceptable proof of address issued not more than three months from the date of application; and
(iv) Contact phone number.

(b) Particulars of Vehicle

(i) Registration mark, class, make, overall width and length of vehicle; and
(ii) Vehicle Registration Document of the vehicle.

[17] https://www.td.gov.hk/en/publications_and_press_releases/publications/free_publications/index_categoryid_8.html https://www.td.gov.hk/filemanager/en/publication/guidelines%20on%20application%20for%20long_wide%20load%20permit_jul%202022%20version.pdf
[18] https://www.cic.hk/files/page/51/20231030%20Statutory%20Requirements%20for%20MiC%20Projects.pdf
[19] https://www.td.gov.hk/filemanager/common/td290_chi.pdf

(c) Valid third party insurance certificate or cover note in respect of the vehicle in the name of the registered owner for the entire period of the permit being sought.

(d) Particulars of Operation

(i) Reason for application;
(ii) Projection of loads: front projection, rear projection, overall projection beyond both sides, total width of loads, total weight of loads, and total length of loads; and
(iii) Details of routes, including delivery period and time schedule.

Width of traffic lane in Hong Kong is typically 3.3 m but may be less than 3 m at some local road sections. Vehicle delivering a load of width not exceeding 3 m may generally be accommodated within a single traffic lane. In contrast, vehicle delivering a load of width exceeding 3 m may encroach upon the adjacent or opposite traffic lane, which will impose significant traffic impact and road safety concern. Applicant should critically review if the width of load exceeding 3 m is essential for his purpose.

In order to facilitate consideration by the TD, the following supporting information will usually be required for the WLP application, such as for delivering MiC units, in particular for the case of a load of length exceeding 16 m and / or of width exceeding 3 m:

(a) Swept path analysis to demonstrate the maneuverability of the vehicle at critical road section such as narrow road segments, sharp bends, junctions, vehicular ingress and egress to destination, etc.;

(b) Traffic impact assessment or traffic review to demonstrate the practicability of the delivery proposal, particularly on the time of delivery and its impact on road and junction capacities;

(c) Temporary traffic management schemes for the modulus transportation, if any, to illustrate the escort and road / lane closure arrangement, temporary loading bay, and contingency parking place, etc.; and

(d) Contingency plan to handle emergency situation, including the rescue arrangement for breakdown of transportation vehicle, evacuation proposal when delivery route being blocked by other vehicles, and procedures for reporting incidents to relevant personnel, etc.

TD will inform the applicant of the application result in writing within 25 working days upon receipt of the duly completed application with all required documents. The application fee for WLP is $240.

## 4. CONDITIONS IMPOSED ON DELIVERY OF WIDE LOADS

### 4.1 General

According to Regulation 55 of the Road Traffic (Traffic Control) Regulations (Cap. 374G), no driver shall drive on a road a vehicle that is so loaded that the load (a) in the case of a vehicle other than a trailer, extends more than 1.5 m from the foremost part of the vehicle; (b) extends backwards more than 1.4 m behind the rearmost part of the vehicle; or (c) extends sideways so that the total width of the load is in excess of 2.5 m, as shown in Figure 10. A WLP is needed for a vehicle delivering a load wider than 2.5 m. In granting a WLP for delivery of wide loads, conditions will be imposed by the TD's Licensing Office. The important conditions stated in the WLP that logistics practitioners should follow are given in the sections below.

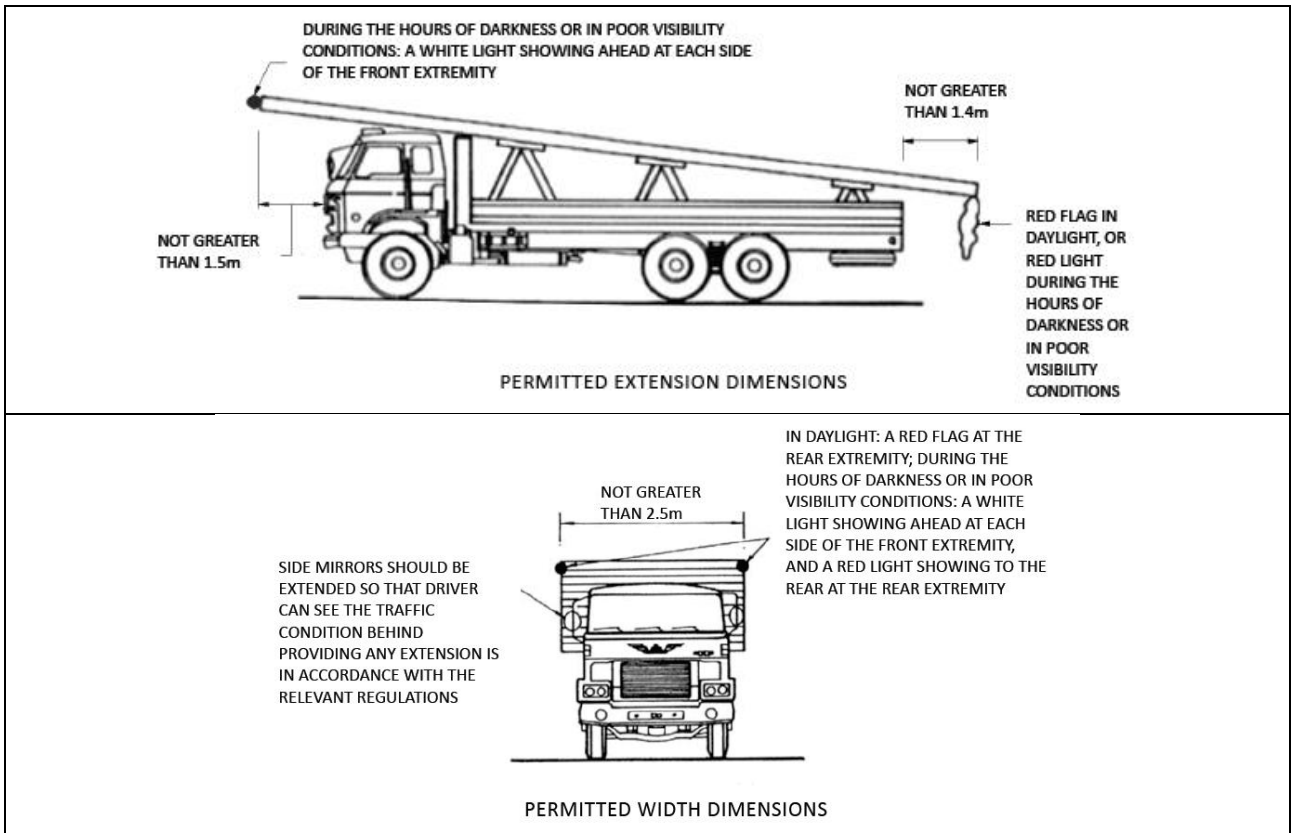



Figure 10 – Permitted Wide and Long Loads
(as extracted from Diagram 5.9.1 of the CoP for Loading of Vehicles (TD, 2019)

### 4.2 Length of Delivery Vehicles

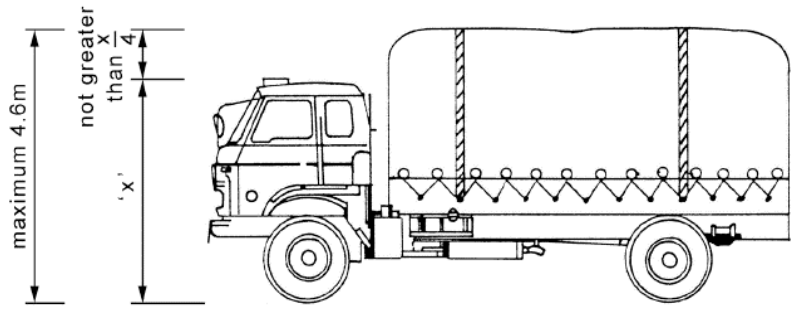
According to Section 5.9.5 of the Code of Practice (CoP) for the Loading of Vehicles[20] (TD, 2019B), , the vehicle under application shall be a medium goods vehicle or heavy goods vehicle, whether or not articulated with a trailer, the total length of which shall not be less than 9.1 m.

Loads should normally be positioned on the vehicle so that they do not overhang more than 2 m to the front, and/or more than 3 m to the rear, of the vehicle. However, where this cannot be avoided, the vehicle on which the load is being carried shall not be less than 10 m in length.

[20] https://www.td.gov.hk/filemanager/en/publication/cop_loading_of_vehicles_eng.pdf

## 4.3 Height of Load

According to Section 5.9.5 of the CoP for the Loading of Vehicles, even for vehicles with a wide or long load permit, the total height of the load with a medium/heavy goods vehicle must not exceed 4.6 m above the road surface, as shown in Figure 11. The height of the load should not be disproportionate to the vehicle, causing instability to the vehicle. Such loaded vehicle is particularly vulnerable to overturning at bends, in high wind situations such as typhoon conditions, or in exposed locations such as the Tsing Ma Bridge where even under relatively normal conditions, high cross winds can be experienced (Section 2.3.11 of the CoP for the Loading of Vehicles (TD, 2019)).




Note: Height of load should not normally extend above the roof of the cab by more than ¼ of the height of the cab from the ground, except in the case of specially designed and enclosed vehicles. Also, the load must not extend beyond the specified overall height of the vehicle (i.e. 4.6 m for medium/heavy goods vehicle or 3.5 m for light goods vehicle).

Figure 11 – Restricting Height of Loads
(as extracted from Diagram 2.3.3 of the CoP for Loading of Vehicles (TD, 2019))

## 4.4 Use of Road Bridges

In Hong Kong, the headroom of new and existing overbridges, vehicle underpasses and footbridges is 5.1 m or 5.0 m (HyD, 2013). The headroom for new and existing sign gantries is 5.5 m and 5.4 m respectively. However, beneath some overbridges, underpasses, footbridges, gantries and other structures, the clearance provided may be less than the standard minimum requirement, or even less than the maximum permitted vehicle height of 4.6 m (see Section 2.3.11 of the Code of Practice for the Loading of Vehicles (TD, 2019)). In such situations, regulatory and/or warning traffic signs are erected to inform drivers of the restriction/prohibition. Drivers transporting high loads should pay particular attention to such traffic signs, as shown in Figure 12. On-site investigation is required in planning the logistics route to evaluate the influence of road bridges.


'Height limit' regulatory sign – no vehicles over height shown

'Height restricted ahead' warning sign – restricted headroom on road ahead

'Height restriction' warning sign – mounted on structure with restricted headroom over a road

Figure 12 – Height Limit/Restriction Traffic Signs
(as extracted from Section 2.3.11 of the CoP for Loading of Vehicles (TD, 2019)

## 4.5 Use of Road Tunnels

There are 26 road tunnels, including 3 immersed-tube cross-harbour tunnels, in Hong Kong, as shown in Figure 13. The latest road tunnel constructed was Tseung Kwan O-Lam Tin Tunnel, connecting Tseung Kwan O and East Kowloon, which was opened on 11.12.2022. Contact details of the tunnel and control area operators who should be consulted are given in the TD's website[21].

According to Condition No. 9 given in Form TD 290 (for WLP application), the WLP holder is required to seek approval from the relevant authority prior to carrying the load in any area or private road of which the management authority or owner may restrict the access of the vehicle. The height restriction in most tunnels is 4.55 m.

For the tunnels under the jurisdiction of the Road Tunnels (Government) Ordinance (Cap. 368), a permit should be obtained for the passage of the vehicle if the width of the vehicle exceeds 2.5 m (see Regulation 14 of the Road Tunnels (Government) Regulations (Cap. 368A)). Application for the permit shall be made to the respective tunnel operators at least 48 hours before the intended passage, and shall contain the following particulars:

(a) details of the vehicle and its load; and
(b) the time, date and direction of the proposed passage.

For other tunnels shown in Figure 13, the applicant is required to approach directly and apply to the respective tunnel and control area operators for approval of transporting the modules across the tunnel.

For reference, the details required for seeking approval for use of the Eastern Harbour Crossing/Western Harbour Crossing in transporting modules wider than 2.5 m in particular are given in the Reference Material on the Statutory Requirements for MiC Projects (CIC, 2023).

## 4.6 Self-arranged Escort Vehicles

A condition of issuing a wide or long load permit is that the vehicle carrying the load must be escorted by a vehicle at the front and a vehicle at the rear each displaying a sign "Wide Load" (see Section 5.9.6 of the CoP for the Loading of Vehicles (TD, 2019)).

The self-arranged escort vehicle arrangement for transporting wide loads is shown in Figure 14. The escort vehicle should be equipped with an amber flashing light in accordance with Regulation 111 of the Road Traffic (Construction and Maintenance of Vehicle) Regulations (Cap. 374A), and shall display in a prominent position a sign conforming with the details as those given in the figure, either at the front, rear or on the roof of the vehicle (but such that the flashing light is not obscured). On the leading escort vehicle, the sign shall be displayed to the front so as to face oncoming vehicles, and on the trailing escort vehicle, the sign shall be displayed to the rear to face following vehicles. When mounted on the roof of an escort vehicle, signs may be double-sided. Approval for the installation of amber flashing lights on a vehicle must however be obtained from TD.

As mentioned in Section 5.9.7 of the CoP for the Loading of Vehicles (TD, 2019), the Road Management Office (RMO)/Police must always be consulted as to the exact duties of the escort vehicles, and RMO/Police at times may require that they provide or assist in the escorting of wide or long loads. This is particularly relevant in respect of abnormally wide loads, as it may be necessary to direct other

[21] https://www.td.gov.hk/filemanager/en/content_5010/contact_tunnels_control_areas_operators_revised.pdf (as of 1.6.2024)

traffic and only the police have the authority to do this. Contacts of the RMO/Police are given in Appendix B.

It is recommended that adequate securing, safety and delivery support measures are provided for delivery of MiC modules, if necessary.


| | |
|---|---|
| Notes: | 1. The tunnels with their names shown in yellow background are under the jurisdiction of the Road Tunnels (Government) Ordinance (Cap. 368).<br>2. The Lantau Link, Cheung Tsing Tunnel and Ting Kau Bridge are within the Tsing Ma Control Area, which form part of Route 3.<br>3. The Eagle's Nest Tunnel, the Sha Tin Heights Tunnel and the Tai Wai Tunnel, the Nam Wan Tunnel and the Stonecutters Bridge are within the Tsing Sha Control Area, which form part of Route 8.<br>4. Tseung Kwan O – Lam Tin Tunnel and Cross Bay Link was opened on 11.12.2022. |

Figure 13 – Location Plan of the Road Tunnels in Hong Kong[22]

[22] https://www.td.gov.hk/en/transport_in_hong_kong/tunnels_and_bridges_n/index.html

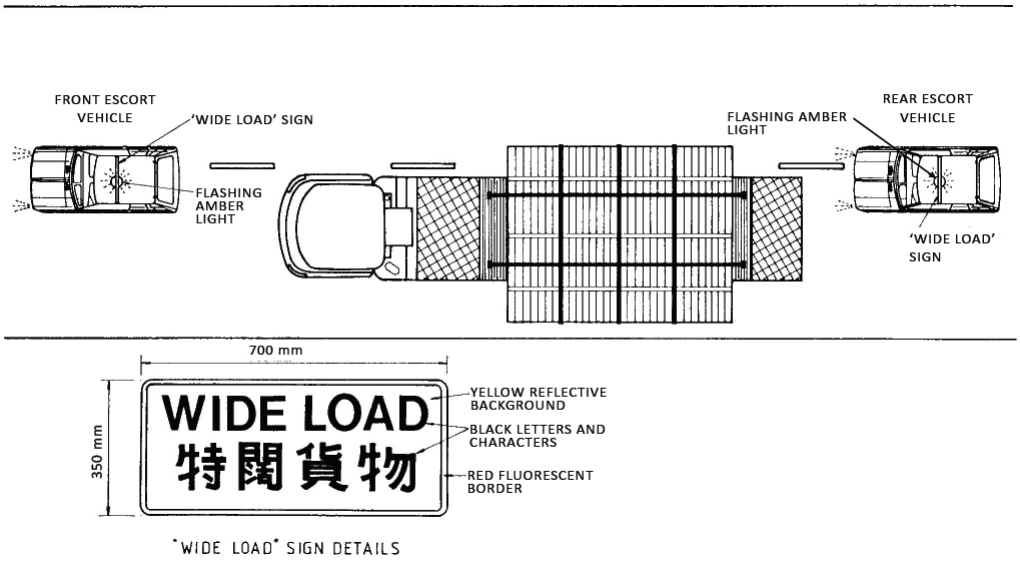



Figure 14 – Transport of Wide Loads
(as extracted from Diagram 5.9.3 of the CoP for Loading of Vehicles (TD, 2019))

4.7 Temporary Traffic Management Schemes

A temporary traffic management (TTM) scheme may be needed for narrow road segments, sharp bends, junctions, vehicular ingress and egress to destinations, etc., specific to the project, which should be highlighted in the TIA. The TTM schemes put in place for the project should be designed in accordance with the CoP for the Lighting, Signing and Guarding of Road Works (HyD, 2017).

When a TTM scheme is involved, early liaison with TD and RMO is needed. TD and RMO will be able to provide comment on the submitted TTM scheme within 2 to 3 weeks depending on the complexity of the proposal. Traffic police will only be needed on a case-by-case basis to assist in the setup of a TTM scheme and supervise its operation.

4.8 Mock-up Trial Run

A mock-up trial run is normally required to ensure that there is adequate carriageway width for smooth maneuvering of the vehicles applied. A trial run using the largest size module for establishing the transport route feasibility is recommended. Liaison with TD and RMO is required, and the trial run should be conducted at the permitted time to minimize the disruption to traffic flow at the affected public road network.

In the case that temporary alteration of existing traffic aids and street furniture is needed, comments from TD and HyD should be sought. The applicant should also consult/inform the affected locals/shopkeepers/concerned parties/cycling associations (where appropriate) prior to carrying out the operation.

## 5. TRANSPORT OF MIC MODULES

### 5.1 Land Transport

Vehicles that can be used for delivery of modules are: Medium Goods Vehicle (Class Code 18), Heavy Goods Vehicle (Class Code 19), and Articulated Vehicle (Class Code 20). An articulated vehicle consists of a tractor and a trailer. Overall dimensions of these vehicles are given in Table 7.

Table 7 – Overall Dimensions of Medium/Heavy Goods Vehicles and Articulated Vehicles

| Vehicles[23] | Overall Length (m) | Overall Width (m) | Overall Height (m) | Maximum Gross Vehicle Weight (tonnes) |
|---|---|---|---|---|
| Medium Goods Vehicle | 11 | 2.5 | 4.6 | 24 |
| Heavy Goods Vehicle | | | | |
| Rigid | 11 | 2.5 | 4.6 | 38 |
| Articulated | 16 | 2.5 | 4.6 | 38 |

The maximum gross combined weight (MGCW)[24] of articulated vehicles are given in Figure 15.

| | Type of Combination of Articulated Vehicles | *Inner Axle Spacing (Metres) | Maximum Gross Combined Weight (MGCW) |
|---|---|---|---|
|  | 2 axled tractor with 1 axled trailer | Less Than 2.1<br>At least 2.1<br>At least 3.1 | 20 tonnes<br>22 tonnes<br>24 tonnes |
|  | 2 axled tractor with 2 axled trailer | Less than 2.9<br>At least 2.9<br>At least 3.1<br>At least 3.6<br>At least 4.0 | 24 tonnes<br>26 tonnes<br>29 tonnes<br>32 tonnes<br>34 tonnes |
|  | 2 axled tractor with 3 or more axled trailer | At least 4.2 | 38 tonnes |
|  | 3 or more axled tractor with 1 axled trailer | Less than 2.0<br>At least 2.0<br>At least 2.7<br>At least 3.0<br>At least 4.0<br>At least 4.4 | 22 tonnes<br>24 tonnes<br>26 tonnes<br>28 tonnes<br>30 tonnes<br>32 tonnes |
|  | 3 or more axled tractor with 2 or more axled trailer | Less than 2.0<br>At least 2.0<br>At least 2.3<br>At least 3.2<br>At least 4.0 | 24 tonnes<br>26 tonnes<br>30 tonnes<br>34 tonnes<br>38 tonnes |
|  | 3 or more axled tractor with 3 or more axled trailer | At least 4.7<br>At least 5.2<br>At least 5.7 | 40 tonnes<br>42 tonnes<br>44 tonnes |

Note: Inner axle spacing is the spacing between the rearmost axle of a tractor and the foremost axle of the trailer.

Figure 15 – Maximum Gross Combined Weights (MGCW) for Articulated Vehicles
(as extracted from Diagram 1.3.1 of the CoP for the Loading of Vehicles (TD, 2019))

[23] First and Second Schedule of the Road Traffic (Construction and Maintenance of Vehicle) Regulations (Cap. 374A).

[24] Maximum Gross Combined Weight (MGCW) is the combined weight of a tractor and trailer. In addition to not exceeding the maximum gross vehicle weights and maximum axle weights of the tractor and trailer when measured individually, the combined weight of tractor and trailer together must not exceed the MGCW (Section 1.3.7 of the CoP for Loading of Vehicles (TD, 2019)).

The common types of trailers used are flatbed and low-bed trailers because of their versatility, as shown in Figure 16. The main advantage of these trailers is that modules can be vertically lifted by a crane from the top of the trailer or uploaded horizontally by other equipment.

Flat-bed Trailer

Low-bed Trailer

Figure 16 – Flat-bed and Low-bed Trailers

A flatbed/low-bed trailer is typically up to 12 m long and depending on the number of axles of the trailer, it can carry a load of up to 44 tonnes. The standard height of a flatbed and low-bed trailer is 1.5 m and 0.9 m from the ground respectively. Given a vehicle height limit of 4.6 m, the maximum height of module that a flatbed and low-bed trailer can accommodate is 3.1 m and 3.7 m respectively, as shown in Figure 17.

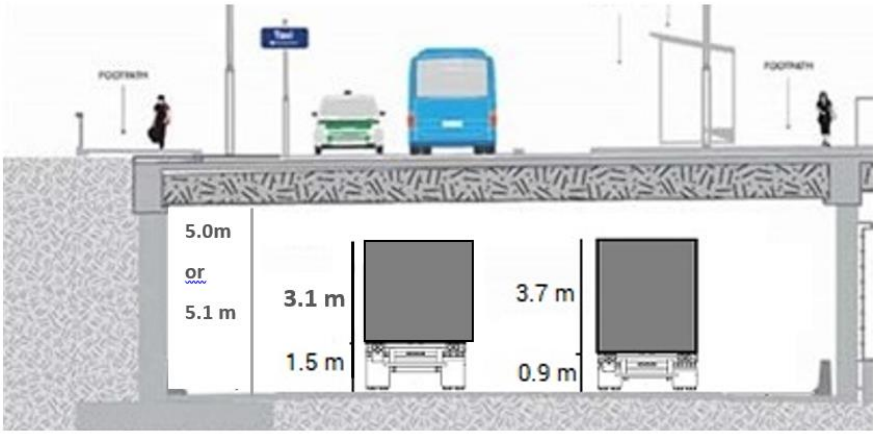



Figure 17 – Headroom of Overbridges

The operation/loading of flatbed/low-bed trailers should follow that given in the CoP for the Loading of Vehicles (TD, 2019).

The number of licensed medium goods, heavy goods and articulated vehicles in Hong Kong (as of April 2024)[25] is given in Table 8. There are some 33,000 licensed medium goods vehicles, 7,500 heavy goods vehicles, 6,500 tractors and 11,000 trailers available in the market.

25

https://www.td.gov.hk/en/transport_in_hong_kong/transport_figures/monthly_traffic_and_transport_digest/index.html
https://www.td.gov.hk/en/transport_in_hong_kong/transport_figures/monthly_traffic_and_transport_digest/2024/202404/index.html

| Table 8 – Registered and Licensed Medium/Heavy Goods Vehicles and Articulated Vehicles (as of April 2024) in Hong Kong | | | | |
|---|---|---|---|---|
| Vehicle | | | No. Registered | No. Licensed |
| Medium Goods Vehicles | | | 34165 | 32947 |
| Heavy Goods Vehicles | | | 7900 | 7439 |
| Articulated Vehicles | Tractor | 2 axles | 5524 | 5188 |
| | | More than 2 axles and unclassified | 1379 | 1320 |
| | Trailer | - | 13966 | 10748 |

## 5.2 Marine Transport

There are different types of barges with different shipping capacities, e.g. 96, 120, 150, 300 and 350 tonnes in terms of load, and 300 to 500 TEU in terms of volume. A summary of the TEU capacities for common container sizes is given in Table 9. A typical 96-tonne barge is capable of taking 15 to 20 modules per delivery (Figure 18).

The maritime transport of MiC modules is similar to that of containers. For example, the T system module of a company can be transported using patented U-type frames. These frames cradle the modules to protect them from transportation damage and allow the module to be stacked aboard shipping vessels. Designed to be reused, the U-type frames can be packed into standard shipping containers from the destination and returned to the factories for reuse.

Table 9 – TEU Capacities for Common Container Sizes[26]

| Length | Width | Height | Internal Volume | TEU |
|---|---|---|---|---|
| 20 ft (6.1 m) | 8 ft (2.44 m) | 8 ft 6 in (2.59 m) | 1172 $ft^3$ (33.2 $m^3$) | 1 |
| 40 ft (12.2 m) | 8 ft (2.44 m) | 8 ft 6 in (2.59 m) | 2389 $ft^3$ (67.6 $m^3$) | 2 |
| 48 ft (14.6 m) | 8 ft (2.44 m) | 8 ft 6 in (2.59 m) | 3264 $ft^3$ (92.4 $m^3$) | 2.4 |
| 53 ft (16.2 m) | 8 ft (2.44 m) | 8 ft 6 in (2.59 m) | 3604 $ft^3$ (102.1 $m^3$) | 2.65 |
| High cube | | | | |
| 20 ft (6.1 m) | 8 ft (2.44 m) | 9 ft 6 in (2.9 m) | 1520 $ft^3$ (43 $m^3$) | 1 |
| Half height | | | | |
| 20 ft (6.1 m) | 8 ft (2.44 m) | 4 ft 3 in (1.3 m) | 680 $ft^3$ (19.3 $m^3$) | 1 |

Figure 18 – Transport Using Barges

As compared with barges, container ships have larger capability of transporting modules, and their volumes are usually higher than 3,000 TEU, and can be as high as 19,000 TEU (Figure 19).

Figure 19 – Transport Using Container Ships

[26] https://en.wikipedia.org/wiki/Twenty-foot_equivalent_unit

## 6. CASE EXAMPLES

### 6.1 General

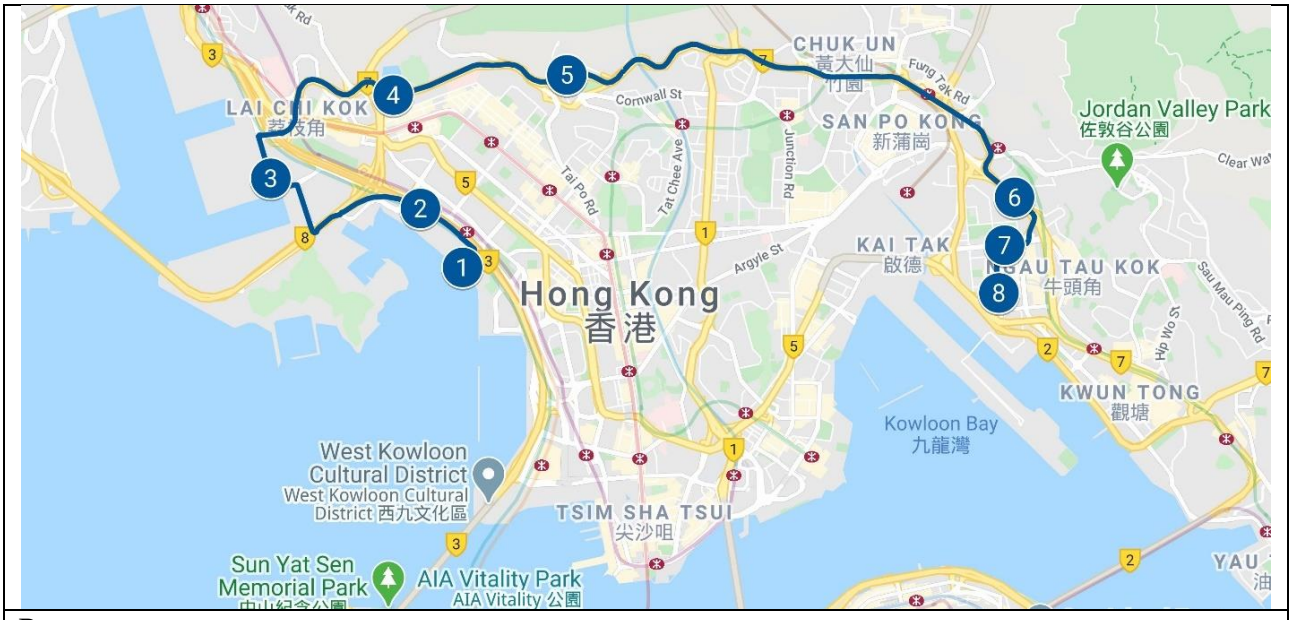
The delivery routes and logistics arrangement of the following 13 projects have been examined:

(1) MiC Display Centre at Kowloon Bay
(2) CIExpo2019 at Wanchai
(3) Innocell at Tai Po
(4) FSD Quarters at Pak Shing Kok
(5) Quarantine Facilities at Lei Yue Mun Park and Holiday Village (Sites A and B)
(6) Quarantine Camp at Penny's Bay (Phase 1A)
(7) Quarantine Camp at Penny's Bay (Phase 1B)
(8) Quarantine Camp at Penny's Bay (Phase 2)
(9) Quarantine Camp at Penny's Bay (Phase 3A)
(10) Quarantine Camp at Penny's Bay (Phase 3B)
(11) North Lantau Hospital Hong Kong Infection Control Centre at Lantau
(12) Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7
(13) URA Project SSP-015 at Tonkin Street/ Fuk Wing Street, Sham Shui Po

The details are given in Figures 19 to 31 and in Appendix C.

### 6.2 Projects

#### 6.2.1 MiC Display Centre at Kowloon Bay




Route:
1) Yuen Fat Wharf 潤發碼頭➔ 2) Lin Cheng Road ➔ 3) Container Port Road South ➔ 4) Ching Cheung Road ➔ 5) Lung Cheung Road ➔ 6) Kwun Tong Road ➔ 7) Kai Cheung Road ➔ 8) MiC Display Centre

Details:
The MiC Display Centre is located within the CIC-Zero Carbon Park complex in Kowloon Bay and is the first building constructed using MiC in Hong Kong. The Centre functions as a visitor centre and exhibits flats built using MiC. The Centre is also used to showcase compliance of each of the modules' specific functions with the relevant Hong Kong building requirements.

The Centre has a 14 m wide x 17 long footprint. It is a 2-storey 9.8 m high building with a gross floor area (GFA) of 334.9$m^2$. The Centre consists of five types of show flats, including a hotel unit, hostel unit, elderly home unit, a 1-bedroom residential flat and a 3-bedroom residential flat.

The Centre consists of 10 modules. All the modules are rectangular in shape, up to 7.2 m long and 4.5 m wide. The modules on the ground floor have a height of 3.3 m, while those on the first floor are 3.45 m high.

The MiC supplier was CIMC at Jiangmen.

A traffic management liaison group (TMLG) meeting was held on 15.6.2018 prior to the delivery to discuss the logistics arrangement. Representatives from TD, RMO/HKPF, contractor and traffic consultant attended the meeting, and traffic items, including method, route and time of delivery, and Temporary Traffic Management (TTM) schemes were discussed. Due to shortage in storage space at the site, only one module was delivered to the site at one time while the second piece was stored at Sheung Yee Street adjacent to the site vehicular access enclosed by the TTM scheme.

A contingency plan was put in place, including use of standby rescue mobile cranes and trailers, and special traffic arrangement to deal with breakdown scenarios.

The modules were delivered by a 96-tonne barge from Jiangmen to Yuen Fat Wharf (a mid-stream site) at Cheung Sha Wan on 31.7.2018, which were then delivered by a 16.5 m long articulated vehicle with low-bed trailers to the building site.

The modules were delivered on 2.8.2018 between 0100 hr and 0500 hr. The total length of the route was about 16 km. The travelling speed of the vehicle was about 30 to 40 km/h throughout the entire delivery, giving a total delivery time of about 120 minutes.

One mobile crane with a maximum lifting capacity of 100 tonnes was used to lift the modules.

Figure 20 – Delivery Route of Modules for MiC Display Centre at Kowloon Bay

6.2.2 CIExpo 2019 at Wanchai


Land Route:
WHC (In - Red Route): 1) Man Kam To ➔ 2) Ho Sheung Heung Road ➔ 3) Castle Peak Road (Chau Tau) ➔ 4) San Tin Highway ➔ 5) Yuen Long Highway ➔ 6) Tuen Mun Road ➔ 7) Tsuen Wan Road ➔ 8) Tsing Kwai Highway ➔ 9) Western Harbour Crossing➔ 10) Central Wan Chai Bypass ➔ 11) HKCEC
WHC (Out - Purple Route): 1) HKCEC ➔ 2) Western Harbour Crossing ➔ 3) Tsuen Wan Road ➔ 4) Tuen Mun Road ➔ 5) Shenzhen Bay
EHC (In and out - Blue Route): 1) Ho Sheung Heung Road ➔ 2) Kwu Tung ➔ 3) Fanling Highway ➔ 4) Tolo Highway ➔ 5) Tai Po Road ➔ 6) Lung Cheung Road ➔ 7) Kwun Tong Bypass ➔ 8) Eastern Harbour Crossing ➔ 9) HKCEC

Details:
The CIExpo 2019 was held from 17 to 20.12.2019 at the Hong Kong Convention and Exhibition Centre (HKCEC) in Wanchai.

For the event, 10 MiC modules were delivered to HKCEC for display. Five modules were provided by Paul Y at Kwu Tung, Sheung Shui. One module each was provided by Hailong and CIMC at Shenzhen and Dongguan respectively, and three by Aluhouse at Foshan. The modules are up to 8.7 m long and 3.4 m wide.

Ten articulated trucks with 10 to 11 m long, 6-axle low-bed trailers with a maximum gross combined weight of 40 tonnes were used. The maximum vehicle height was 4.34 m, which was within the height limit of the HKCEC Phase 2 Truck Marshalling Area of 4.55 m. Self-arranged front and rear escort vehicles were provided for each delivery vehicle as required by the WLP.

The modules from CIMC (1 no.) and Aluhouse (3 no.) were delivered from Dongguan and Foshan respectively to HKCEC via the Western Harbour Crossing (WHC) (Red Route). The trucks entered Hong Kong via the Man Kam To LBCP (Red Route) and left Hong Kong via the Shenzhen Bay LBCP (Purple Route). There was no customs inspection for the trucks going through the Man Kam To and Shenzhen Bay LBCPs at that time. The modules from Paul Y. and Hailong were delivered to HKCEC via the Eastern Harbour Crossing (EHC) (Blue Route).

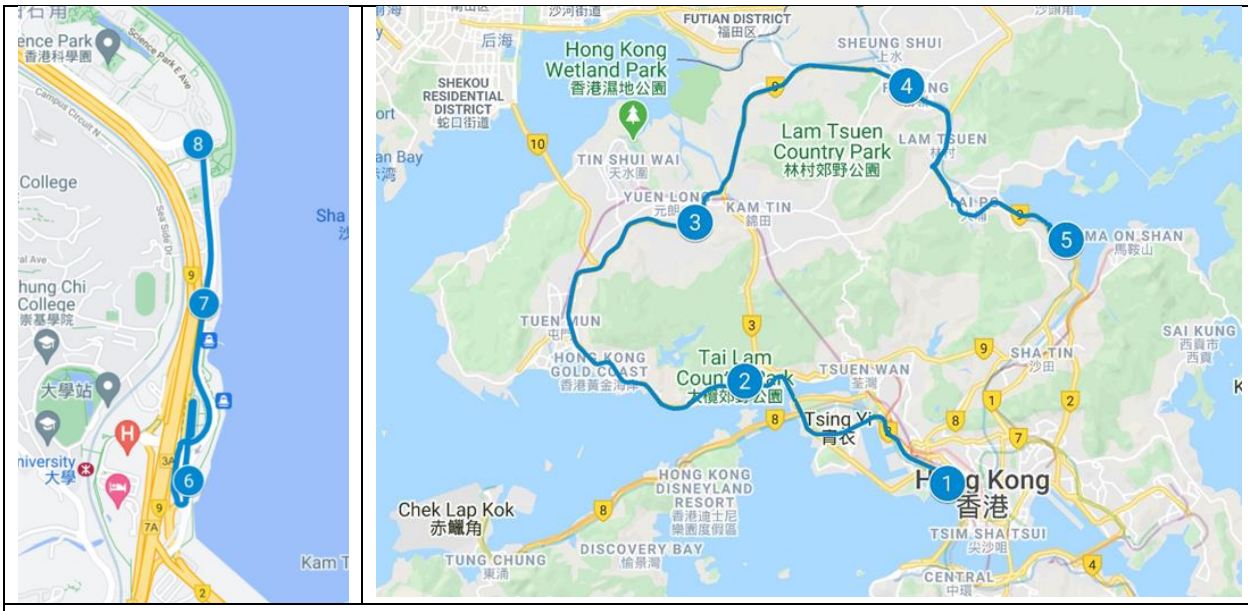
Application to WHC and EHC was made in advance prior to the use of the tunnels. Application letter, vehicle/ trailer registration details, WLP of the vehicle and 3rd party insurance of the vehicle/ trailer were submitted (see Section 4.5).

The modules reached Hong Kong on 16.12.2019 at 2:00 am to 3:00 am, arriving at HKCEC at around 4:00 am to 5:00 am. On the return trip, the modules left HKCEC on 21.12.2019 at 12:00 am.

Two mobile cranes with a maximum lifting capacity of 45 tonnes were used to lift the modules.

Figure 21 – Delivery Route of Modules for CIExpo 2019 at Wanchai

### 6.2.3 Innocell at Tai Po




Sea then Land Route:

1) Yuen Fat Wharf ➔ 2) Tuen Mun Road ➔ 3) Yuen Long Highway ➔ 4) Fanling Highway ➔ 5) Tolo Highway ➔ 6) Sui Cheung Street ➔ 7) Science Park Road➔ 8) InnoCell Site, Tai Po

Details:

InnoCell is a pilot project of using MiC in Hong Kong. It is located in the Hong Kong Science Park at Tai Po. The development consists of a 17-storey high building on a 2,990 $m^2$ site adjacent to the southeast entrance of the Hong Kong Science Park. It provides a minimum of 500 bedspaces with supporting ancillary facilities, including recreational and shared living/working space integrated with the residential units.

For the development, a total of 418 steel modules providing 5 types of rooms were used. The maximum width of the module is 3.1 m.

The MiC supplier was CIMC at Jiangmen.

The modules were delivered by barge from Jiangmen to Yuen Fat Wharf at Cheung Sha Wan. Each barge took on average 23 modules. From Yuen Fat Wharf, the modules were delivered by land transport to the building site.

Five medium goods vehicles were used. Self-arranged front and rear escort vehicles were provided for each delivery vehicle as required by the WLP. Trial run was carried out prior to the delivery.

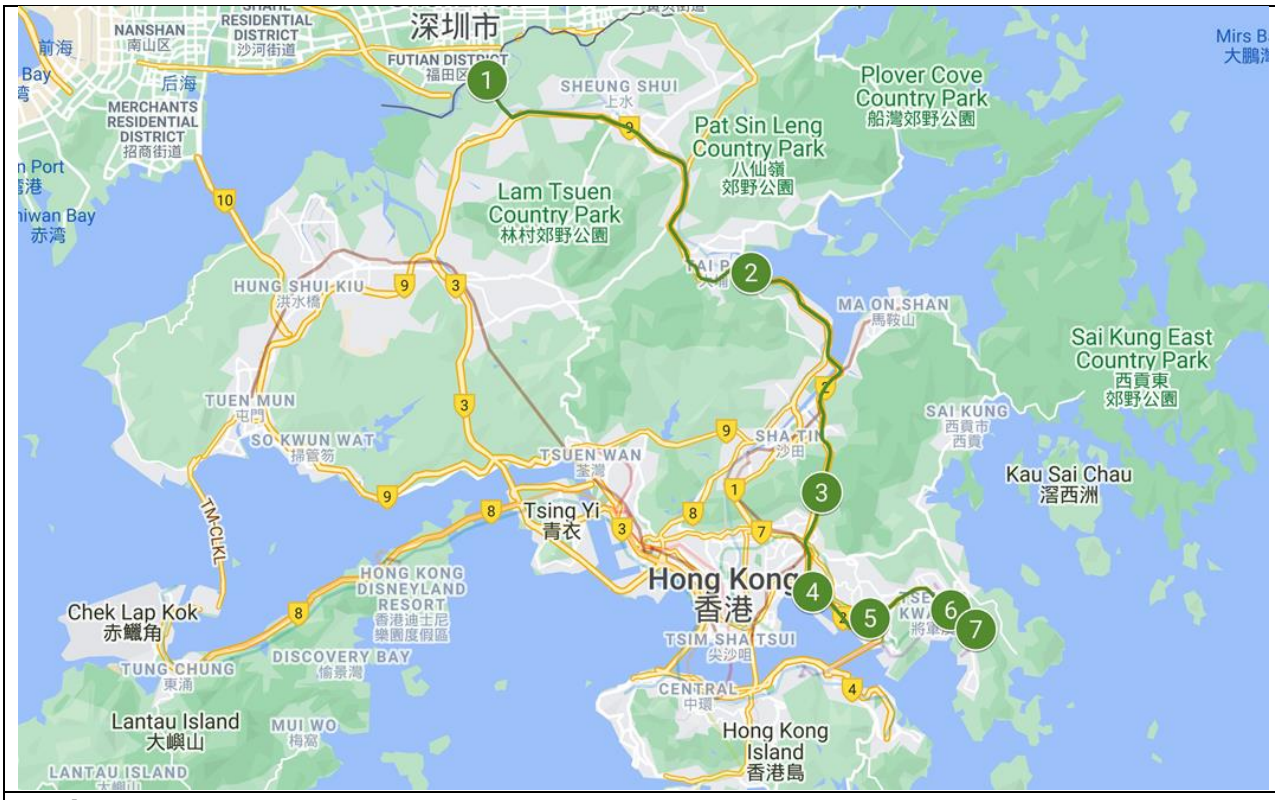
To achieve just-in-time (JIT) delivery, a temporary lay-by area at Sui Cheung Street, which is 2.1 km from the site and allowed parking of 5 vehicles, was provided for the project.

The land delivery from Yuen Fat Wharf commenced on 1.1.2020 and was completed in May 2020. The delivery was made between 1000 hr and 1600 hr.

Two tower cranes with a maximum lifting capacity of 27 tonnes at 25 m jib length were used to lift the modules. On average, it took 25 to 35 minutes to lift and install one module, and 10 to 12 modules were installed per day. At the building site, two gantries were provided, and both gantries were 7.5 m wide.

Figure 22 – Delivery Route of Modules for InnoCell at Tai Po

### 6.2.4 FSD Quarters at Pak Shing Kok




Land Route:

1) Lok Ma Chau ➔ 2) Fanling Highway/ Tolo Highway ➔ 3) Tate's Cairn Tunnel ➔ 4) Kwun Tong Bypass ➔ 5) Tseung Kwan O Road ➔ 6) Wan Po Road ➔ 7) Pak Shing Kok Road / FSD Quarters at Pak Shing Kok

Details:

The project comprises five quarters blocks: four blocks are 16-storey high and one is 17-storey high. There are 8 units on each floor. The quarters provide a total of 648 nos. 3-bedroom units of 50 $m^2$ in size. The development also comprises ancillary facilities, including a Building Management Office, a Multi-Function Room, outdoor children playground and covered walkway, etc.

A total of 3,726 MiC modules of 9 different types were used. The maximum weight of the module is 24 tonnes and the maximum width is 2.5 m.

The MiC supplier was Yau Lee Wah Concrete Precast Products, Co. Ltd. at Huizhou.

The modules were delivered by land transport from Huizhou to Lok Ma Chau LBCP, and then to the building site. Thirteen articulated vehicles were used per day.

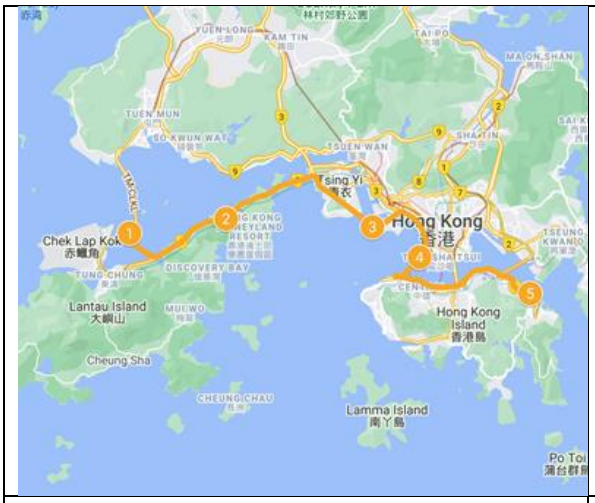
An area nearby was used for temporary storage to achieve just-in-time delivery of the modules.

The delivery commenced in September 2019 and was completed in July 2020. The delivery was made between 0700 hr and 1900 hr.

Five tower cranes with a maximum lifting capacity of 25 tonnes at 19.8 m jib were used. The average operating time for each module lifting and installation is approximately 15 mins.

Figure 23 – Delivery Route of Modules for the FSD Quarters at Pak Shing Kok

6.2.5 Quarantine Facilities at Lei Yue Mun Park and Holiday Village (Sites A and B)





| Land Route: | Sea then Land Route: |
|---|---|
| 1) HZMB (HK Port) LBCP ➔ 2) North Lantau Highway ➔ 3) Tsing Sha Highway ➔ 4) Western Harbour Crossing ➔ 5) Lei Yue Mun Park and Holiday Village | 1) Tuen Mun Pier Head ➔ 2) Tuen Mun Road ➔ 3) Ting Kau Bridge ➔ 4) Tsing Kwai Highway ➔ 5) Western Harbour Crossing ➔ 6) Central-Wanchai Bypass ➔ 7) Lei Yue Mun Park and Holiday Village |

Details:

Steel MiC modules were used. The maximum weight of the steel modules is 16.5 tonnes, and the maximum width is 3.5 m. A total number of 352 modules were used.

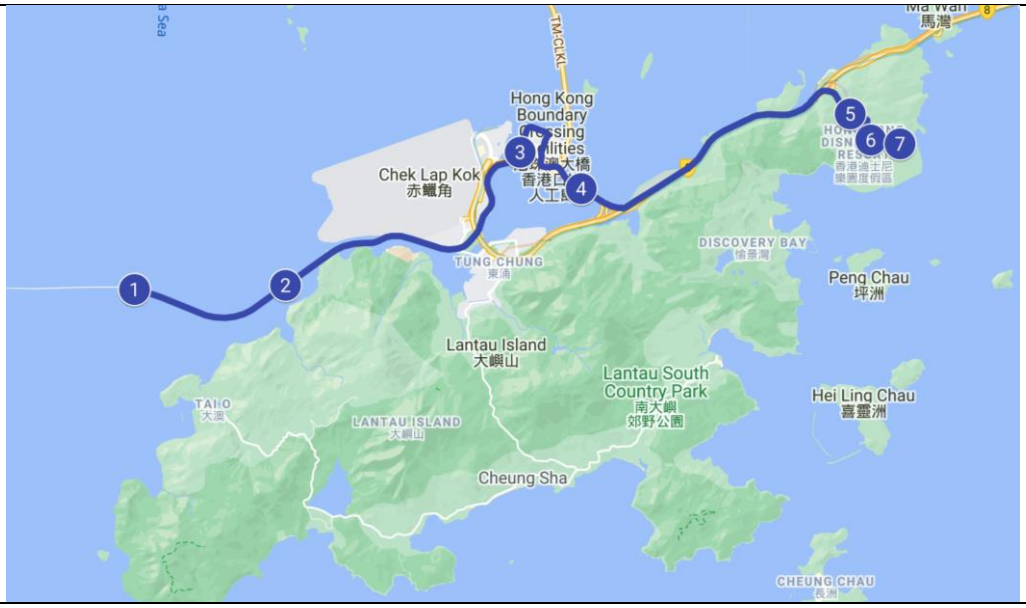
The MiC supplier was China State Hailong Construction Technology Co., Ltd. at Zhuhai.

Two routes were used for delivering the modules. In route 1, the modules were delivered by land transport from Zhuhai to the site via the HZMB (HK Port). In route 2, the modules were delivered by container ship to Tuen Mun Pier Head, and then by land transport to the site via Western Harbour Crossing and Central-Wanchai Bypass. The container ship carried 150 modules in on shipment. Articulated vehicles and low bed trailers were used.

The delivery commenced on 8.2.2019 and was completed on 29.4.2019.

Figure 24 – Delivery Route of Modules for Quarantine Facilities and Holiday Village at Lei Yue Mun (Sites A and B)

### 6.2.6 Quarantine Camp at Penny's Bay (Phase 1A)




Land Route:

1) HK-Zhuhai-Macao Bridge ➔2) HK-Zhuhai-Macao Bridge - Hong Kong Link Road ➔ 3) Shun Long Road ➔ 4) North Lantau Highway ➔ 5) Penny's Bay Highway ➔ 6) Fantasy Road ➔ 7) Penny's Bay Quarantine Camp

Details:

The Penny's Bay Quarantine Centre is located at Penny's Bay, occupying an area of 7 hectares (Phase 1). A total of 800 quarantine units were built. The development consists of 2-storey high building units on a 7-hectare site.

For Phase 1A of this project, a total of 110 modules were used. The maximum weight of the module is 11.5 tonnes and the maximum width is 3.0 m. The MiC supplier was Aluhouse at Zhaoqing.

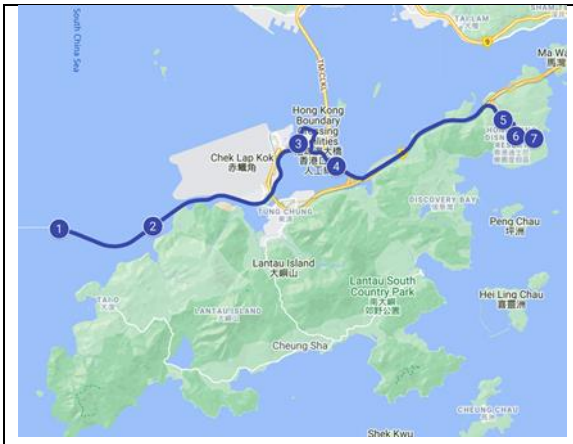
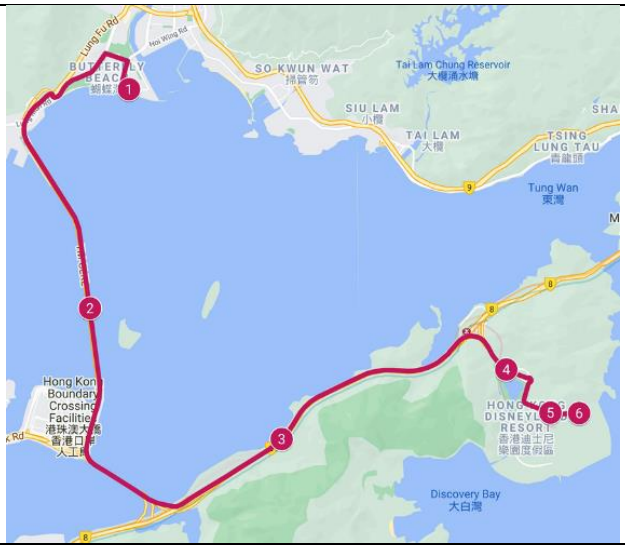
The modules were delivered from the MiC factory at Zhaoqing to the building site via Zhuhai and the HZMB Port.

Four articulated vehicles with a 3-axle low-bed trailer of 12 m long and 1.325 m high were used.
The delivery commenced on 14.3.2020 and was completed on 6.4.2020 (23 days). The deliveries were made in between 1000 hr and 1600 hr, and took 5 to 6 hrs from the factory to the site.

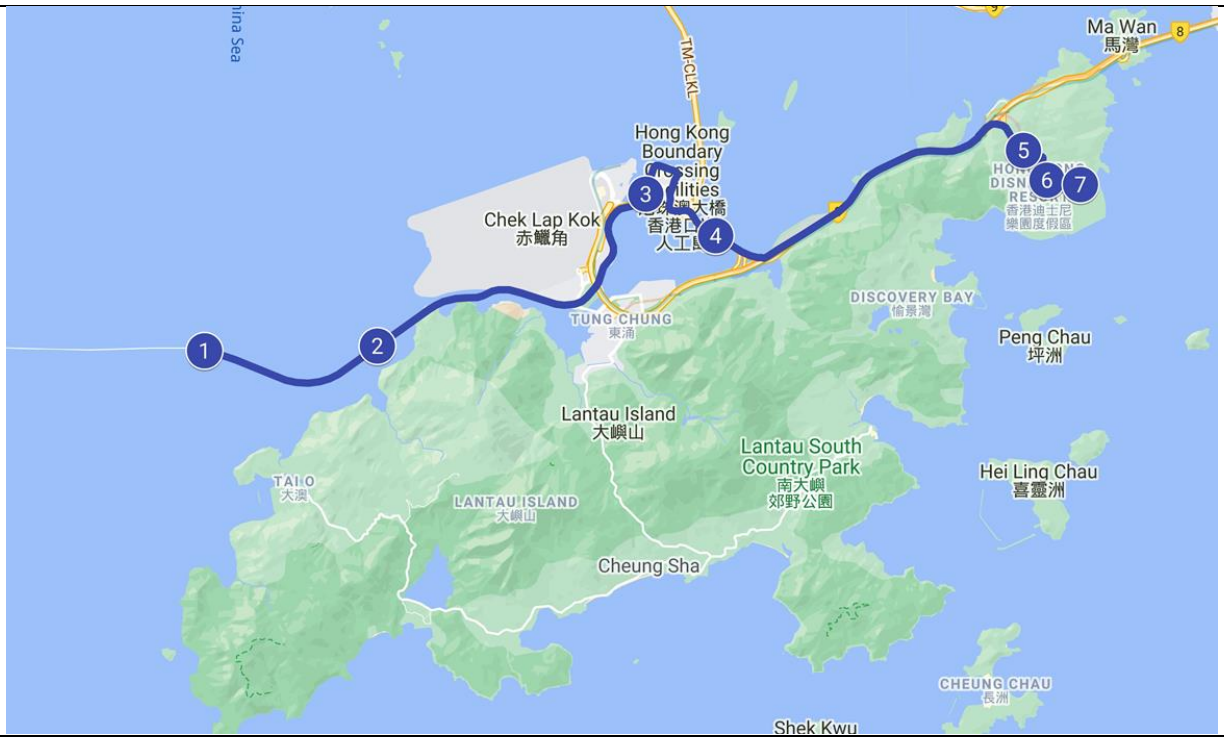
One mobile crane with a maximum lifting capacity of 100 tonnes was used to lift the modules. On an average day, 16 modules were delivered and installed on site, and it took on average 20 minutes to lift and install one module.

Figure 25 – Delivery Route of Modules for Quarantine Camp at Penny's Bay (Phase 1A)

6.2.7 Quarantine Camp at Penny's Bay (Phase 1B)

<table>
<tr>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td><u>Land Route:</u><br>1) HK-Zhuhai-Macao Bridge ➔2) HK-Zhuhai-Macao Bridge - Hong Kong Link Road ➔ 3) Shun Long Road ➔ 4) North Lantau Highway ➔ 5) Penny's Bay Highway ➔ 6) Fantasy Road ➔ 7) Penny's Bay Quarantine Camp</td>
<td><u>Sea then Land Route:</u><br>1) Tuen Mun Pier Head ➔ 2) Tuen Mun ➔ 3) Chek Lap Kok Tunnel Road ➔ 4) North Lantau Highway ➔ 5) Penny's Bay Highway Fantasy Road ➔ 6) Penny's Bay Quarantine Camp</td>
</tr>
<tr>
<td colspan="2"><u>Details:</u><br>Steel and concrete MiC modules were used. The maximum weight of the steel modules and concrete modules is 10 tonnes and 13.5 tonnes respectively, and the maximum width is 3.025 m. A total number of 1546 modules were used.<br><br>The MiC supplier was China State Hailong Construction Technology Co., Ltd. at Zhuhai.<br><br>Two routes were used for delivering the modules. In route 1, the modules were delivered by land transport from Zhuhai to the site via HZMB. In route 2, the modules were delivered by container ship to Tuen Mun Pier Head, and then by land transport to the site via Tuen Mun-Chek Lap Kok Link. The container ship carried 150 modules in on shipment. Articulated vehicles and low bed trailers were used.<br><br>The delivery commenced on 24.5.2020 and was completed on 6.7.2020.</td>
</tr>
<tr>
<td colspan="2">Figure 26 – Delivery Route of Modules for Quarantine Camp at Penny's Bay (Phase 1B)</td>
</tr>
</table>

6.2.8 Quarantine Camp at Penny's Bay (Phase 2)




Land Route:
1) Hong Kong–Zhuhai–Macao Bridge ➔ 2) Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road ➔ 3) Shun Long Road ➔ 4) North Lantau Highway ➔ 5) Penny's Bay Highway ➔ 6) Fantasy Road ➔ 7) Penny's Bay Quarantine Camp

Details:
A total of 707 steel MiC modules were used. The maximum weight of the module is 11.5 tonnes and the maximum width is 3.0 m.

The MiC supplier was Aluhouse Co., Ltd. at Zhaoqing.

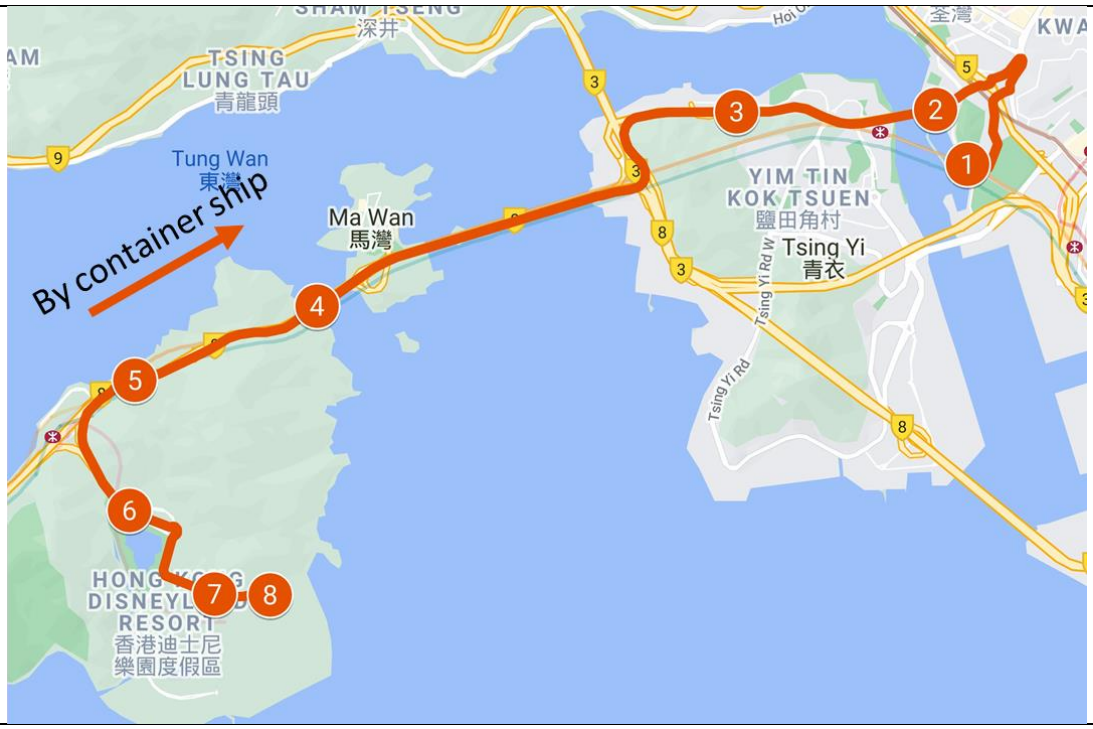
The modules were delivered by land transport from Zhaoqing to the site via HZMB. Ten articulated vehicles and low bed trailers were used.

The delivery commenced on 26.7.2020 and was completed on 26.8.2020.

Two mobile cranes with a maximum lifting capacity of 13.5 tonnes at 16 m jib were used. The average operating time for each module lifting and installation is approximately 25 mins.

Figure 27 – Delivery Route of Modules for the Quarantine Camp at Penny's Bay (Phase 2)

6.2.9 Quarantine Camp at Penny's Bay (Phase 3A)




Sea then Land Route:
1) Rambler Channel Public Cargo Working Area ➔ 2) Tsing Tsuen Road ➔ 3) Tsing Yi North Coastal Road ➔ 4) Lantau Link ➔ 5) North Lantau Highway ➔ 6) Penny's Bay Highway ➔ 7) Fantasy Road ➔ 8) Penny's Bay Quarantine Camp

Details:
A total of 901 steel MiC modules were used. The maximum weight of the module is 13 tonnes and the maximum width is 3.0 m.

The MiC supplier was Guangdong CIMC Building Co., Ltd. at Jiangmen.

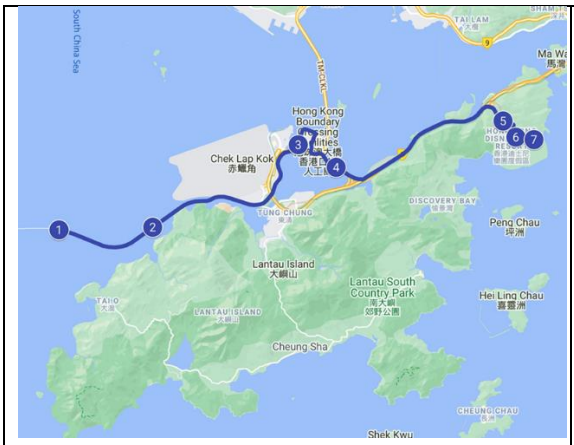
The modules were delivered by container ship to the Rambler Channel PCWA, and then by land transport to the site. The container ship carried 44 modules in on shipment. Twenty articulated vehicles and low bed trailers were used.

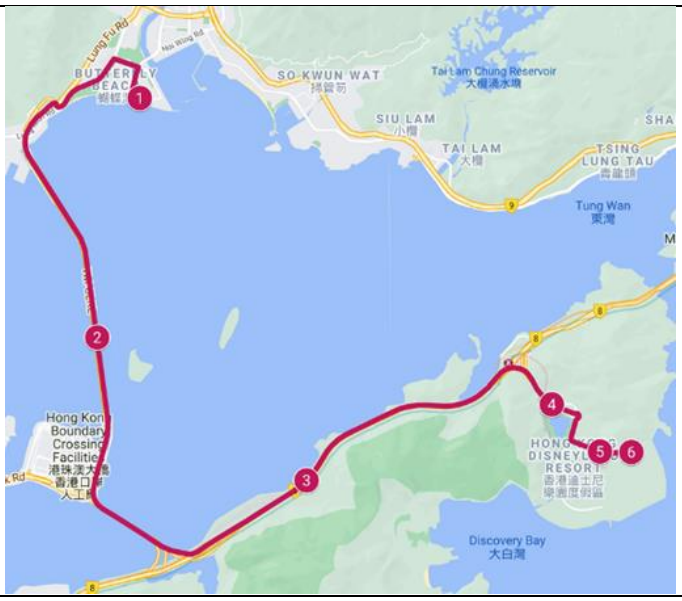
The delivery commenced on 1.10.2020 and was completed on 7.11.2020.

Two mobile cranes with a maximum lifting capacity of 14 tonnes at 16 m jib were used. The average operating time for each module lifting and installation is approximately 15 to 20 mins.

Figure 28 – Delivery Route of Modules for the Quarantine Camp at Penny's Bay (Phase 3A)

6.2.10 Quarantine Camp at Penny's Bay (Phase 3B)




| | |
|---|---|
| Land Route:<br>1) HK-Zhuhai-Macao Bridge ➔ 2) HK-Zhuhai-Macao Bridge - Hong Kong Link Road ➔ 3) Shun Long Road ➔ 4) North Lantau Highway ➔ 5) Penny's Bay Highway ➔ 6) Fantasy Road ➔ 7) Penny's Bay Quarantine Camp | Sea then Land Route:<br>1) Tuen Mun Pier Head ➔ 2) Tuen Mun Chek Lap Kok Tunnel Road➔ 3) North Lantau Highway ➔ 4) Penny's Bay Highway ➔ 5) Fantasy Road ➔ 6) Penny's Bay Quarantine Camp |

Details:

Steel and concrete MiC modules were used. The maximum weight of the steel modules and concrete modules is 10 tonnes and 13.5 tonnes respectively, and the maximum width is 3.3 m. A total number of 2089 modules were used.

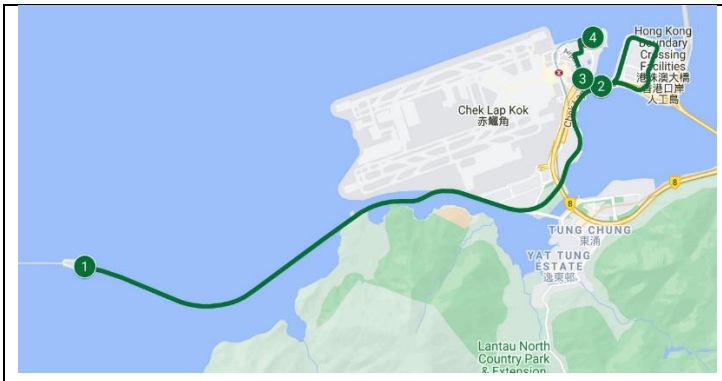
The MiC supplier was China State Hailong Construction Technology Co., Ltd. at Zhuhai.

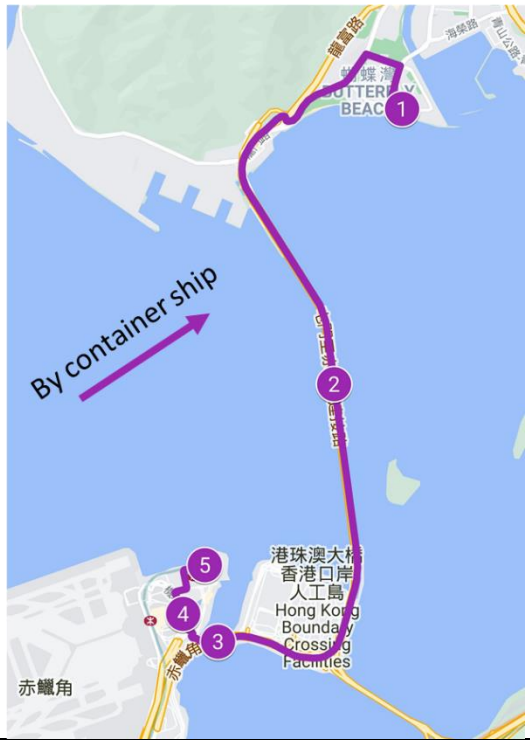
Two routes were used for delivering the modules. In route 1, the modules were delivered by land transport from Zhuhai to the site via HZMB. In route 2, the modules were delivered by container ship to Tuen Mun Pier Head, and then by land transport to the site via Tuen Mun-Chek Lap Kok Link. The container ship carried 150 modules in on shipment. Articulated vehicles and low bed trailers were used.

The delivery commenced on 20.9.2020 and was completed on 26.10.2020.

Figure 29 – Delivery Route of Modules for Quarantine Camp at Penny's Bay (Phase 3B)

6.2.11 North Lantau Hospital Hong Kong Infection Control Centre at Lantau




| Land Route: | Sea then Land Route: |
|---|---|
| 1) Hong Kong–Zhuhai–Macau Bridge Hong Kong Link Road ➔ 2) Chek Lap Kok Road ➔ 3) SkyCity Road ➔ 4) North Lantau Hospital Hong Kong Infection Control Centre | 1) Tuen Mun Pier Head ➔2) Tuen Mun Chek Lap Kok Tunnel Road ➔ 3) Chek Lap Kok Road ➔ 4) Sky City Road ➔ 5) North Lantau Hospital Hong Kong Infection Control Centre |

Details:

Steel MiC modules were used. The maximum weight of the module is 24.4 tonnes and the maximum width is 2.980 m.

The MiC supplier was China State Hailong Construction Technology Co., Ltd. at Zhuhai.

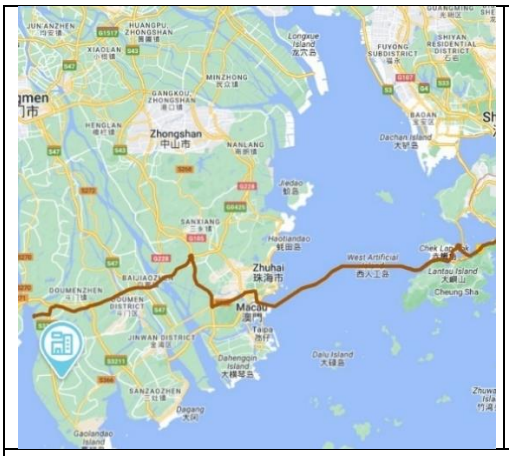
Two routes were used for delivering the modules. In route 1, the modules were delivered by land transport from Zhuhai to the site via HZMB. In route 2, the modules were delivered by container ship to Tuen Mun Pier Head, and then by land transport to the site via Tuen Mun-Chek Lap Kok Tunnel Road. The container ship carried 9 modules in on shipment. Articulated vehicles and low bed trailers were used.

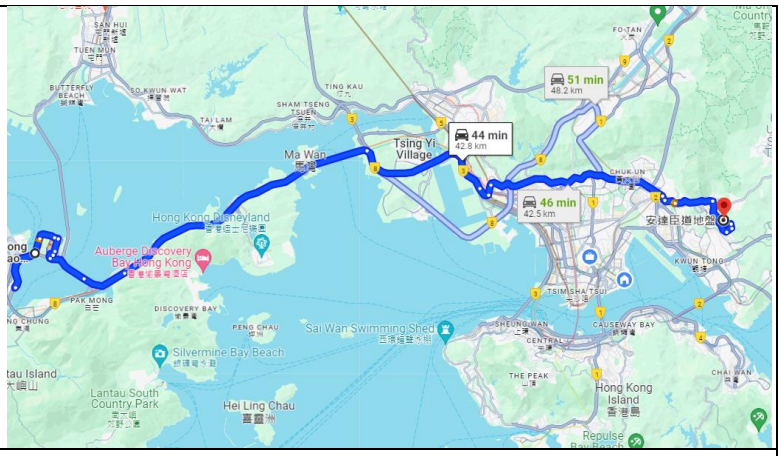
The delivery commenced on 24.10.2020 and was completed on 23.11.2020.

Twelve mobile cranes with a maximum lifting capacity of 20 tonnes at 22.5 m jib were used. The average operating time for each module lifting and installation is approximately 30 mins.

Figure 30 – Delivery Route of Modules for the North Lantau Hospital Hong Kong Infection Control Centre at Lantau

6.2.12 Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7




Land Route:
Zhuhai ➔ HZMB ➔ Route 8 to Route 3 and Route 7 to Lung Cheung Road➔ Clear Water Bay Road, On Sau Road and On Kin Road ➔ Anderson Road Quarry Sites

Details:
The project is located in Anderson Road Quarry Site Area. It comprises construction of two 28-storey building blocks of 990 flats at Site R2-6; and one 18-storey building block of 420 flats at Site R2-7.

The client is the Hong Kong Housing Authority. The registered contractor is Shui On Building Contractors Limited, and the MiC supplier is China State Hailong Construction Technology Co. Ltd. Located at Zhuhai.

The modules were delivered by land transport from Zhuhai to the site via the HZMB (Hong Kong Port) to the building site. Thirty heavy goods vehicles were used per day.

The delivery commenced in July 2023 and would be completed in August 2024. The delivery was made between 0700 hr and 1900 hr.

Two tower cranes for each block were used.

Figure 31 – Delivery Route of Modules for the Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7

6.2.13 URA Project SSP-015 at Tonkin Street/ Fuk Wing Street, Sham Shui Po



Land Route:
Guangzhou ➔ Shenzhen Bay Control Point ➔ Yuen Long San Tin Barracks 62 Chuk Yau Rd (元朗新田軍營 & 元朗區竹攸路 62 號) ➔ New Territories Circular Road/San Tin Highway ➔ Tsing Long Highway/Route 3 and Route 5 ➔ Cheung Sha Wan Road ➔Castle Peak Rd to Tonkin St

Details:
The project is located at Tonkin Street/ Fuk Wing Street, Shum Shui Po. This is a composite development project comprising a 6-storey podium and a 22-storey residential tower with 198 residential units, club house, covered landscape and a basement carpark.

The client is the Urban Renewal Authority and Wider Loyal Limited. The contractor is Gammon Engineering and Construction Company Limited, and the MiC supplier is 廣州建築灣區智造科技有限公司 located at 黃埔区西基岛金博园. The logistic company is 龍潤邦國際物流(香港)有限公司 (LRB International Logistics (H.K.) Limited) and 旭昇中港物流有限公司 (Xusheng Zhonggang Logistics Co., Ltd.)[27],

Concrete MiC modules were used. The maximum weight of the concrete modules is 24.7 tonnes, and the maximum width is 3150 mm. A total number of 726 modules were used.

The modules were delivered by land transport from Guangzhou to the site via Shenzhen Bay to the building site. Articulated vehicles with 2 and 3 axled low-bed trailers were used.

The delivery commenced in March 2023 and was completed in January 2024. The delivery was made between 0700 hr and 1900 hr.

A Potain MR608 tower crane with a maximum lifting capacity of 32 tons at 22.6 m jib was used.

Figure 32 – Delivery Route of Modules for the Private Residential Developments at at Tonkin Street/ Fuk Wing Street, Sham Shui Po

[27] http://www.zhonggangwuliu.com/

6.3 Discussions

The following observations were made from the logistics arrangement of the 13 MiC projects:

(a) A summary of the mode of transport used in the delivery of the modules from the MiC factories is given in Table 10. The following points are noted:

(i) For MiC factories located inland, e.g. at Huizhou, Foshan, Guangzhou, Zhaoqing, etc., land transport alone was used. MiC modules were transported all the way from the factory to the building site via a control point. Lok Ma Chau LBCP is used for factories located on the eastern side of Hong Kong, e.g. at Huizhou, and the HZMB (HK Port) and Shenzhen Bay LBCPs are used for factories located on the western side of Hong Kong, since they are closer to the factories concerned.

(ii) For factories located at Jiangmen, Zhuhai, etc., where there is access to sea transport, a combination of sea and land transport is used. MiC modules were first transported by barge or container ship from the factory to a mid-stream site (e.g. Yuen Fat Wharf) or a PWCA (e.g. Rambler Channel PWCA) in Hong Kong, which were then picked up and transported by a land transport (e.g. articulated vehicles with low-bed trailers, medium good vehicles, etc.) to the building site.

(iii) To transport the modules from Kowloon to Hong Kong side, harbour crossings (e.g. Western Harbour Crossing, Eastern Harbour Crossing) were used with suitable prior arrangement made with the tunnel operators.

(b) A summary of the dimensions of the modules delivered and the measures adopted at site to facilitate delivery of the modules is given in Table 11. The following points are noted:

(i) The maximum width of the modules that had been delivered is 4500 mm. On average, the width of the modules delivered is 3000 mm. Trial run was arranged for the URA Project SSP-015 at Sham Shui Po, Innocell at Tai Po and one of the Quarantine Camps at Penny's Bay. Self-arranged escort vehicles were arranged in most cases. Articulated vehicles with low-bed trailers were commonly used.

(ii) Two gantries was only provided in two building sites, due possibly to the space constraints, but a wide gantry is often used.

## Table 10 - Mode of Transport Used in Delivery of Modules

| MiC Project | Project Name | Location of Factory | Mode of Transport | By |
|---|---|---|---|---|
| 2 | CIExpo2019 at Wanchai | 1 Dongguan 东莞市 and Foshan 佛山市<br>2 Kwu Tung and Shenzhen | Route 1: Land<br>Route 2: Land | Route 1: Dongguan 东莞市 & Foshan 佛山市 to Wanchai<br>Articulated vehicles (via Man Kam To and Western Harbour Crossing)<br>Route 2: Kwu Tung & Shenzhen to Wanchai<br>Articulated vehicles (via Eastern Harbour Crossing) |
| 13 | URA Project SSP-015 at Tonkin Street/ Fuk Wing Street, Sham Shui Po | Guangzhou 广州市 黄埔区西基岛金博园 | Land | Guangzhou 广州市 to Sham Shui Po<br>Articulated vehicles (via Shenzhen Bay) |
| 4 | FSD Quarters at Pak Shing Kok | Huizhou 惠州市 | Land | Huizhou 惠州市 to Pak Shing Kok<br>Articulated vehicles (via Lok Ma Chau) |
| 1 | MiC Display Centre at Kowloon Bay | Jiangmen 江门市 | Sea and Land | Jiangmen 江门市 to Kowloon Bay<br>Barge (to Yuen Fat Wharf), and then articulated vehicles |
| 3 | Innocell at Tai Po | Jiangmen 江门市 | Sea and Land | Jiangmen 江门市 to Tai Po<br>Barge (to Yuen Fat Wharf), and then medium goods vehicles |
| 9 | Quarantine Camp at Penny's Bay (Phase 3A) | Jiangmen 江门市 | Sea and Land | Jiangmen 江门市 to Penny's Bay<br>Container ships (to Rambler Channel PWCA), and then articulated vehicles |
| 6 | Quarantine Camp at Penny's Bay (Phase 1A) | Zhaoqing 肇庆市 | Land | Zhaoqing 肇庆市 to Penny's Bay<br>Articulated vehicles (via Zhuhai and HZMB (HK Port)) |
| 8 | Quarantine Camp at Penny's Bay (Phase 2) | Zhaoqing 肇庆市 | Land | Zhaoqing 肇庆市 to Penny's Bay<br>Articulated vehicles (via Zhuhai and HZMB (HK Port)) |
| 5 | Quarantine Facilities and Holiday Village at Lei Yue Mun (Sites A and B) | Zhuhai 珠海市 | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Lei Yue Mun<br>Articulated vehicles (via HZMB (HK Port) and Western Harbour Crossing)<br>Route 2: Zhuhai 珠海市 to Lei Yue Mun<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Western Harbour Crossing and Central -Wanchai Bypass) |
| 7 | Quarantine Camp at Penny's Bay (Phase 1B) | Zhuhai 珠海市 | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) |
| 10 | Quarantine Camp at Penny's Bay (Phase 3B) | Zhuhai 珠海市 | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) |
| 11 | North Lantau Hospital Hong Kong Infection Control Centre at Lantau | Zhuhai 珠海市 | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) |
| 12 | Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7 | Zhuhai 珠海市 | Land | Zhuhai 珠海市 to Anderson Road Quarry Sites<br>Heavy goods vehicles (via HZMB (HK Port)) |

| Table 11 - Dimensions of Modules Delivered | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MiC Project | Project Name | Module Type | Max. Width (mm) | Max. Length (mm) | Max. Height (mm) | Max. Weight (tonnes) | Trial Run | Self-arranged Escort Vehicles | Temp. Loading Bay, contingency parking, etc. | Provision of 1st Gantry (Width) | Provision of 2nd Gantry (Width) |
| 1 | MiC Display Centre at Kowloon Bay | Steel | 4500 | 7240 | 3300 | NA | N | Y | Y | - | - |
| 5 | Quarantine Facilities and Holiday Village at Lei Yue Mun (Sites A and B) | Steel | 3500 | 8000 | 3020 | 16.5 | N | Y | N | N | N |
| 2 | CIExpo2019 at Wanchai | Steel | 3440 | 8680 | 3.3 | 13.5 | N | Y | N | - | - |
| 13 | URA Project SSP-015 at Tonkin Street/ Fuk Wing Street, Sham Shui Po | Concrete | 3148 | 6570 | 3240 | 24.7 | Y | N | N | Y (8.5m) | N |
| 3 | Innocell at Tai Po | Steel | 3100 | 7350 - 9560 | 3050 | NA | Y | Y | Y | Y (7.5m) | Y (7.5m) |
| 9 | Quarantine Camp at Penny's Bay (Phase 3A) | Steel | 3000 | 12192 | 3848 | 13 | Y | Y | N | Y (6m) | N |
| 6 | Quarantine Camp at Penny's Bay (Phase 1A) | Steel & Concrete | 3000 | 6000 | 3000 | 11.5 | N | N | N | N | N |
| 8 | Quarantine Camp at Penny's Bay (Phase 2) | Steel | 3000 | 6000 | 3160 | 11.5 | N | N | N | Y | N |
| 7 | Quarantine Camp at Penny's Bay (Phase 1B) | Steel & Concrete | 2980 | 8150 | 3025 | 13.5 | N | Y | N | N | N |
| 10 | Quarantine Camp at Penny's Bay (Phase 3B) | Steel & Concrete | 2980 | 12000 | 3025 | 13.5 | N | Y | N | N | N |
| 11 | North Lantau Hospital Hong Kong Infection Control Centre at Lantau | Steel | 2980 | 9980 | 3905 | 24.4 | N | Y | N | N | N |
| 4 | FSD Quarters at Pak Shing Kok | Concrete | 2525 | 5460 | 3300 | 17 | N | N | Y | Y | Y |
| 12 | Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7 | Concrete | 2500 | 6400 | 2500 | 15 | N | N | N | N | N |

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APPENDIX A – WIDTH OF ROADS IN HONG KONG

In Hong Kong, roads are classified based on the areas they serve (PlanD, 2018). In urban areas (including Hong Kong, Kowloon and New Towns), the road hierarchy comprises: (a) expressways and trunk roads, (b) primary distributor roads, (c) district distributor roads, and (d) local distributor roads. In rural areas, the road hierarchy comprises: (a) expressways and trunk roads (same classification in urban areas), (b) rural roads A, (c) rural roads B, (d) feeder roads; and (e) single track access roads.

A summary of the road widths for different road types in Hong Kong is given in the Table A.1 below.

Table A.1 - Minimum Carriageway Widths in Hong Kong[28]

| **Road type** | **Urban Areas** | | **Road type** | **Rural Areas** | |
|---|---|---|---|---|---|
| | ***Single Carriageway*#** | ***Dual Carriageway**** | | ***Single Carriageway*** | ***Dual Carriageway*** |
| **Expressway and Trunk Road** | - | 7.3 m (2-lane)<br>11.0 m (3-lane)<br>14.6 m (4-lane) | **Expressway and Trunk Road** | - | 7.3 m (2-lane)<br>11.0 m (3-lane)<br>14.6 m (4-lane) |
| **Primary Distributor Road** | - | 6.75 m (2-lane)<br>10.0 m (3-lane)<br>13.5 m (4-lane) | **Rural Road A** | 7.3 m (2-lane)<br>10.3 m (3-lane) | 7.3 m (2-lane) |
| **District Distributor Road** | 7.3 m (2-lane)<br>10.3 m (3-lane)<br>13.5 m (4-lane) | 6.75 m (2-lane)<br>10.0 m (3-lane) | **Rural Road B** | 6.75 m (2-lane)<br>10.3 m (3-lane) | 7.3 m (2-lane) |
| **Local Distributor Road** | 7.3 m (2-lane)<br>10.3 m (3-lane)<br>13.5 m (4-lane) | 6.75 m (2-lane) | **Feeder Road** | 6.0 m (2-lane) | - |
| | | | **Single Track Access Road** | 3.5 m (1-lane) | - |
| | | | | Widened to 6 m at passing bays | |
| | | | | 6.0 m (2-lane) | - |

Notes:
#A single carriageway is a road with only one lane in each direction without central divider.
*A dual carriageway is a road for traffic in two directions with a dividing strip between the traffic in opposite directions and with usually two or more lanes in each direction.

[28] Tables 1 & 4 of Chapter 8 of HKPSG (https://www.pland.gov.hk/pland_en/tech_doc/hkpsg/full/pdf/ch8.pdf).

## APPENDIX B – CONTACTS OF TRANSPORT DEPARTMENT'S TRAFFIC ENGINEERING DIVISIONS AND HONG KONG POLICE FORCE'S ROAD MANAGEMENT OFFICE

Table B.1 – Contacts of Traffic Engineering Divisions of Transport Department

| Traffic Engineering Division | Address | Telephone | Fax Number |
|---|---|---|---|
| **Traffic Engineering (HK) Division**<br>Urban Regional Office | 37/F, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong | 2829 5815 | 2824 0399 |
| **Traffic Engineering (Kowloon) Division**<br>Urban Regional Office | 8/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon | 2399 2193 | 2397 8046 |
| **Traffic Engineering (NTE) Division**<br>NT Regional Office | 9/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon | 2399 2194 | 2381 3799 |
| **Traffic Engineering (NTW) Division**<br>NT Regional Office | 7/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon | 2399 2194 | 2381 3799 |
| **Traffic Survey & Support Division**<br>Islands Section and Tsuen Wan Section | 9/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon | 2399 2194 | 2381 3799 |

Table B.2 – Contacts of Road Management Offices of Hong Kong Police Force

| Road Management Office | Address | Telephone | Fax Number |
|---|---|---|---|
| **Traffic Management Division**<br>**Traffic Management and Prosecutions Bureau, Traffic Branch HQs** | 32/F, Arsenal House, Police Headquarters, No.1, Arsenal Street, Wan Chai, Hong Kong | 2860 6263 | 2200 4377 |
| **Road Management Office (HK Island)**<br>Enforcement & Control Division, Traffic HK Island, HK Island Regional HQs | 60 Sing Woo Road, Happy Valley, Hong Kong | 3660 1893 | 2834 4699 |
| **Road Management Office (Kowloon West)**<br>Enforcement & Control Division, Traffic Kowloon West, Kowloon West Regional HQs | 8 Wai Wan Lane, Hung Hom, Kowloon | 3661 9000 | 2789 8214 |
| **Road Management Office (Kowloon East)**<br>Enforcement & Control Division, Traffic Kowloon East, Kowloon East Regional HQs | 105 Concorde Road, Kai Tak, Kowloon | 3661 0306 | 2758 0609 |
| **Road Management Office (New Territories South)**<br>Enforcement & Control Division, Traffic New Territories South, New Territories South Regional HQs | 8 Shing Mun Road, Tsuen Wan, New Territories | 3661 1364 | 2200 4662 |
| **Road Management Office (New Territories North)**<br>Enforcement & Control Division, Traffic New Territories North, New Territories North Regional HQs | East Operational Base<br>1st and 3rd floors, Sheung Shui Police Station, Fanling Roundabout, Fanling, New Territories<br><br>Tai Hing Operational Base<br>1st and 2nd floors, Tai Hing Police Operational Base, 80, Tsun Wen Road, Tuen Mun, New Territories | 3661 3877<br><br>3661 3977 | 2683 1801<br><br>2464 4044 |

# APPENDIX C – DETAILS OF MIC PROJECTS EXAMINED

| MiC Project | Project Name | Contractor | MiC Supplier | Traffic Consultant | Logistics Company | Mode of Transport | By | No. of Modules | Module Type | Max. Width (mm) | Max. Length (mm) | Max. Height (mm) | Max. Weight (tonnes) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MiC Display Centre at Kowloon Bay | - | CIMC | - | JES Logistics Ltd. | Sea and Land | Jiangmen 江门市 to Kowloon Bay<br>Barge (to Yuen Fat Wharf), and then articulated vehicles | 10 | Steel | 4500 | 7240 | 3300 | NA |
| 2 | CIExpo2019 at Wanchai | - | Paul Y./ China State Hailong Construction Technology Co. Ltd./ CIMC/ Aluhouse Co. Ltd. | - | - | Route 1: Land<br>Route 2: Land | Route 1: Dongguan 东莞市 & Foshan 佛山市 to Wanchai<br>Articulated vehicles (via Man Kam To and Western Harbour Crossing)<br>Route 2: Kwu Tung & Shenzhen to Wanchai<br>Articulated vehicles (via Eastern Harbour Crossing) | 10 | Steel | 3440 | 8680 | 3.3 | 13.5 |
| 3 | Innocell at Tai Po | Hip Hing Engineering Co. Ltd. | CIMC | MVA Hong Kong Ltd. & Mannings | Ah Ngau Engineering Ltd. & Kanson Crane & Heavy Transport. Co., Ltd. | Sea and Land | Jiangmen 江门市 to Tai Po<br>Barge (to Yuen Fat Wharf), and then medium goods vehicles | 418 | Steel | 3100 | 7350 - 9560 | 3050 | NA |
| 4 | FSD Quarters at Pak Shing Kok | Yau Lee Construction Co. Ltd. | Yau Lee Wah Concrete Precast Products Co. Ltd. | Meinhardt Infrastructure & Environment Ltd. | Yau Lee Wah Concrete Precast Products Co. Ltd. | Land | Huizhou 惠州市 to Pak Shing Kok<br>Articulated vehicles (via Lok Ma Chau) | 3726 | Concrete | 2525 | 5460 | 3300 | 17 |
| 5 | Quarantine Facilities and Holiday Village at Lei Yue Mun (Sites A and B) | China State Construction Engineering (HK) Ltd. | China State Hailong Construction Technology Co. Ltd. | Ho Wang SPB Ltd. | Profit Logistics (International) Ltd. | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Lei Yue Mun<br>Articulated vehicles (via HZMB (HK Port) and Western Harbour Crossing)<br>Route 2: Zhuhai 珠海市 to Lei Yue Mun<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Western Harbour Crossing and Central -Wanchai Bypass) | 352 | Steel | 3500 | 8000 | 3020 | 16.5 |
| 6 | Quarantine Camp at Penny's Bay (Phase 1A) | - | AluHouse Co. Ltd. | - | Ming Jun Heavy Transport Co. Ltd. | Land | Zhaoqing 肇庆市 to Penny's Bay<br>Articulated vehicles (via Zhuhai and HZMB (HK Port)) | 110 | Steel & Concrete | 3000 | 6000 | 3000 | 11.5 |
| 7 | Quarantine Camp at Penny's Bay (Phase 1B) | China State Construction Engineering (HK) Ltd. | China State Hailong Construction Technology Co. Ltd. | Ho Wang SPB Ltd. | Profit Logistics (International) Ltd. | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) | 1546 | Steel & Concrete | 2980 | 8150 | 3025 | 13.5 |
| 8 | Quarantine Camp at Penny's Bay (Phase 2) | Gammon Construction Ltd. | AluHouse Co. Ltd. | MVA Hong Kong Ltd. | Crown Link Asia Construction Ltd. | Land | Zhaoqing 肇庆市 to Penny's Bay<br>Articulated vehicles (via Zhuhai and HZMB (HK Port)) | 707 | Steel | 3000 | 6000 | 3160 | 11.5 |
| 9 | Quarantine Camp at Penny's Bay (Phase 3A) | Hip Hing Engineering Co. Ltd. | Guangdong CIMC Building Construction Co. Ltd. | - | Chi Kan Woodworks Co. Ltd. | Sea and Land | Jiangmen 江门市 to Penny's Bay<br>Container ships (to Rambler Channel PWCA), and then articulated vehicles | 901 | Steel | 3000 | 12192 | 3848 | 13 |
| 10 | Quarantine Camp at Penny's Bay (Phase 3B) | China State Construction Engineering (HK) Ltd. | China State Hailong Construction Technology Co. Ltd. | Ho Wang SPB Ltd. | Profit Logistics (International) Ltd. | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) | 2089 | Steel & Concrete | 2980 | 12000 | 3025 | 13.5 |
| 11 | North Lantau Hospital Hong Kong Infection Control Centre at Lantau | China State Construction Engineering (HK) Ltd. | China State Hailong Construction Technology Co. Ltd. | Ho Wang SPB Ltd. | Profit Logistics (International) Ltd. | Route 1: Land<br>Route 2: Sea and Land | Route 1: Zhuhai 珠海市 to Penny's Bay<br>Articulated vehicles (via HZMB (HK Port))<br>Route 2: Zhuhai 珠海市 to Penny's Bay<br>Container ships (to Tuen Mun Pier Head), and then articulated vehicles (via Tuen Mun-Chek Lap Kok Link) | | Steel | 2980 | 9980 | 3905 | 24.4 |
| 12 | Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7 | Shui On Building Contractrors Ltd. | China State Hailong Construction Technology Co. Ltd. | - | - | Land | Zhuhai 珠海市 to Anderson Road Quarry Sites<br>Heavy goods vehicles (via HZMB (HK Port)) | | Concrete | 2500 | 6400 | 2500 | 15 |
| 13 | URA Project SSP-015 at Tonkin Street/ Fuk Wing Street, Sham Shui Po | Gammon Engineeering and Construction Co. Ltd. | 廣州建築灣區智造科技有限公司 | Tin Lee Consulting (HK) Ltd. | 龍潤邦國際物流(香港)有限公司 & 旭昇中港物流有限公司 | Land | Guangzhou 广州市 to Sham Shui Po<br>Articulated vehicles (via Shenzhen Bay) | 726 | Concrete | 3148 | 6570 | 3240 | 24.7 |

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