

Building Safety Symposium

MiC Case Study (Quarantine Camps)

20 October 2020





URGENT NEEDS

for Quarantine Camps

Building Safety Webinar 2020

PROJECT LOCATIONS

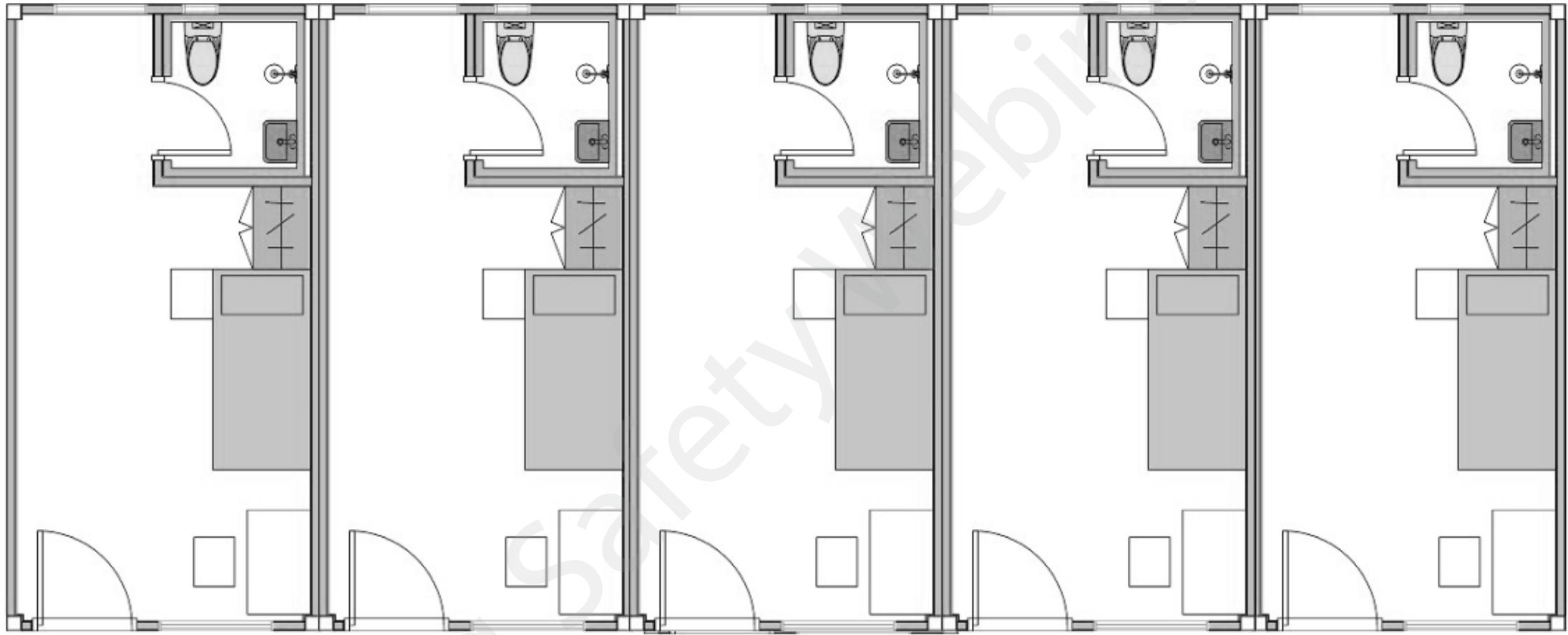




MiC make it possible

MiC was chosen for its key benefit of shortening delivery time and keeping quality output. It is like we are fighting a two-front war, one in the factory, and the other on site.

Building Safety Webinar 2020



Block Plan

PROJECT TIMELINE

Lei Yue Mun Park
– Basketball Court



Lei Yue Mun Park
– Football Pitch



Sai Kung Outdoor Recreation Centre



Pat Heung JPC Activity Centre
– Existing Blocks



Pat Heung JPC Activity Centre
– Open Playground



Penny's Bay Ph. 1A & 1B

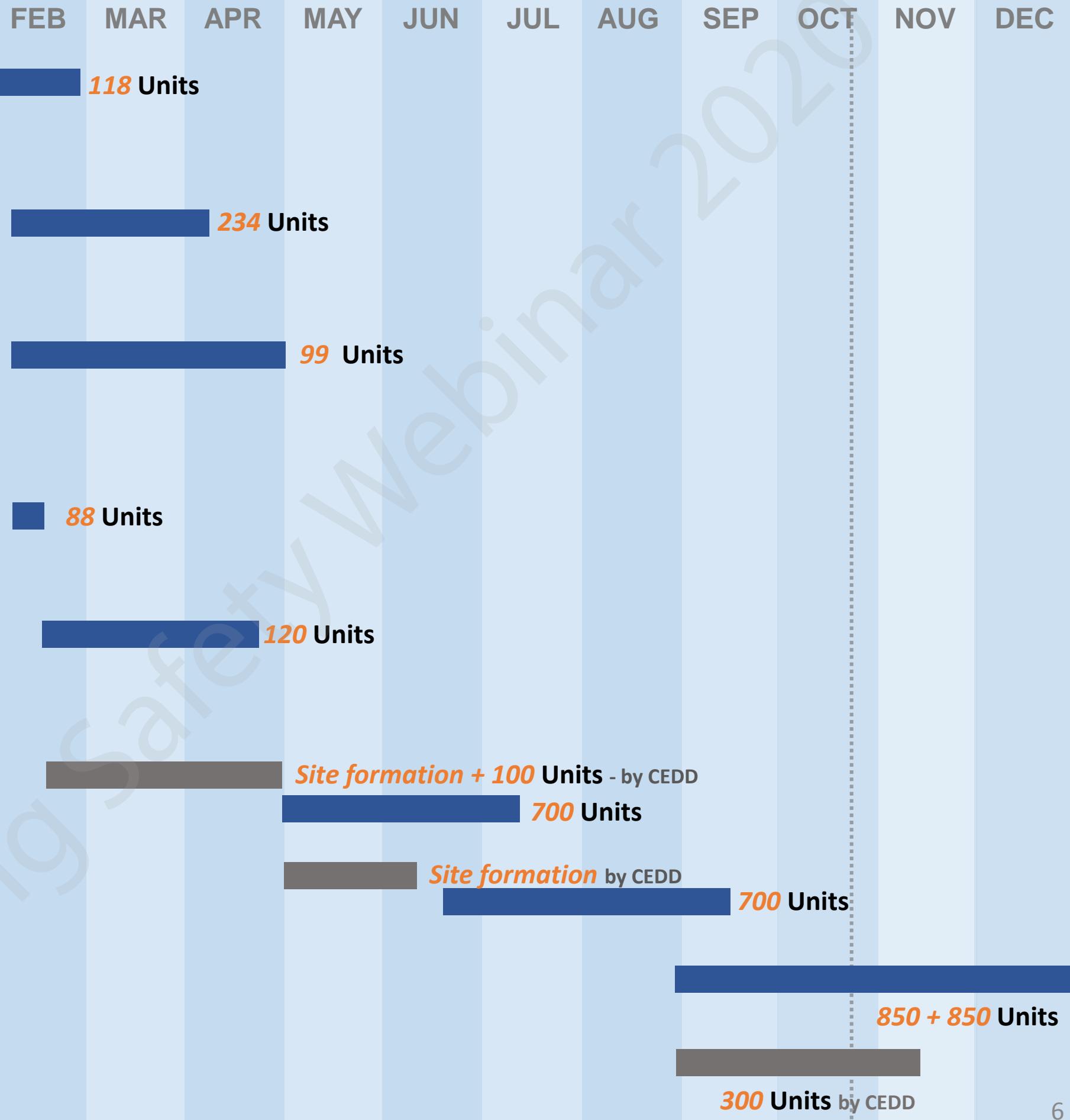


Ph. 2

Penny's Bay Ph. 3A and 3B



Ph. 4



20/10

FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

118 Units

234 Units

99 Units

88 Units

120 Units

Site formation + 100 Units - by CEDD

700 Units

Site formation by CEDD

700 Units

850 + 850 Units

300 Units by CEDD

PROJECT SUMMARY

LEI YUE MUN PARK – BASKETBALL COURT

Contractor

China State Hong Kong

Site Area

5,239 sqm

Nos. of Quarantine Units

118 Units

Nos. of Storey

1 Storey

MiC Unit Manufacturer (Origin)

China State Hailong Construction Technology (Zhuhai, China)

MiC Unit Size

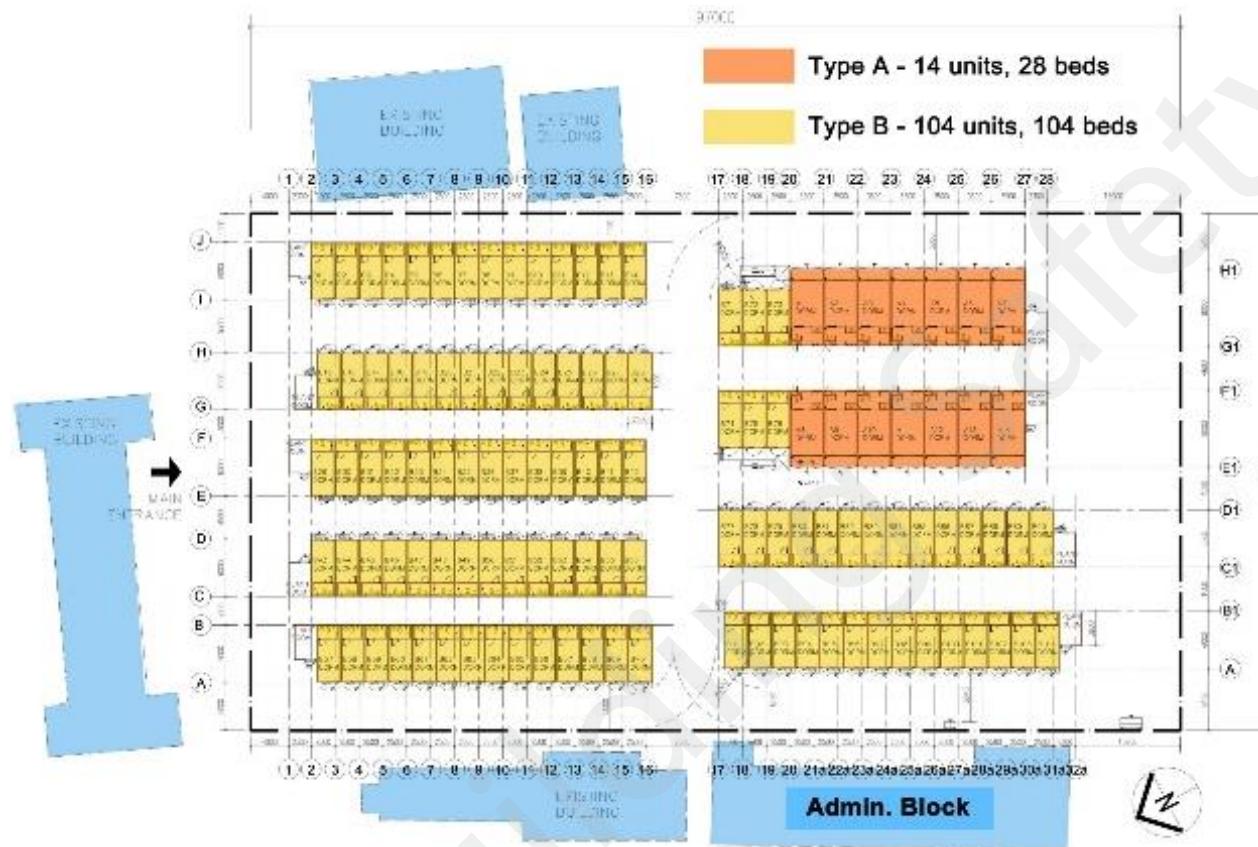
2.5m x 6m x 3m (104 nos.), 3.5m x 8m x 3m (14 nos.)

Commencement

3 Feb 2020

Target Completion

28 Feb 2020



Site Layout Plan



Site Photo (completed on 28 Feb 2020)

TEMPORARY QUARANTINE CAMP AT UPPER LEI YUE MUN PARK – BASKETBALL COURT



PROJECT SUMMARY

LEI YUE MUN PARK – FOOTBALL PITCH

Contractor

China State Hong Kong

Site Area

9,883.5 sqm

Nos. of Quarantine Units

234 Units

Nos. of Storey

1 Storey for 74 Units, 2 Storey for 160 Units

MiC Unit Manufacturer (Origin)

China State Hailong Construction Technology (Zhuhai, China)

MiC Unit Size

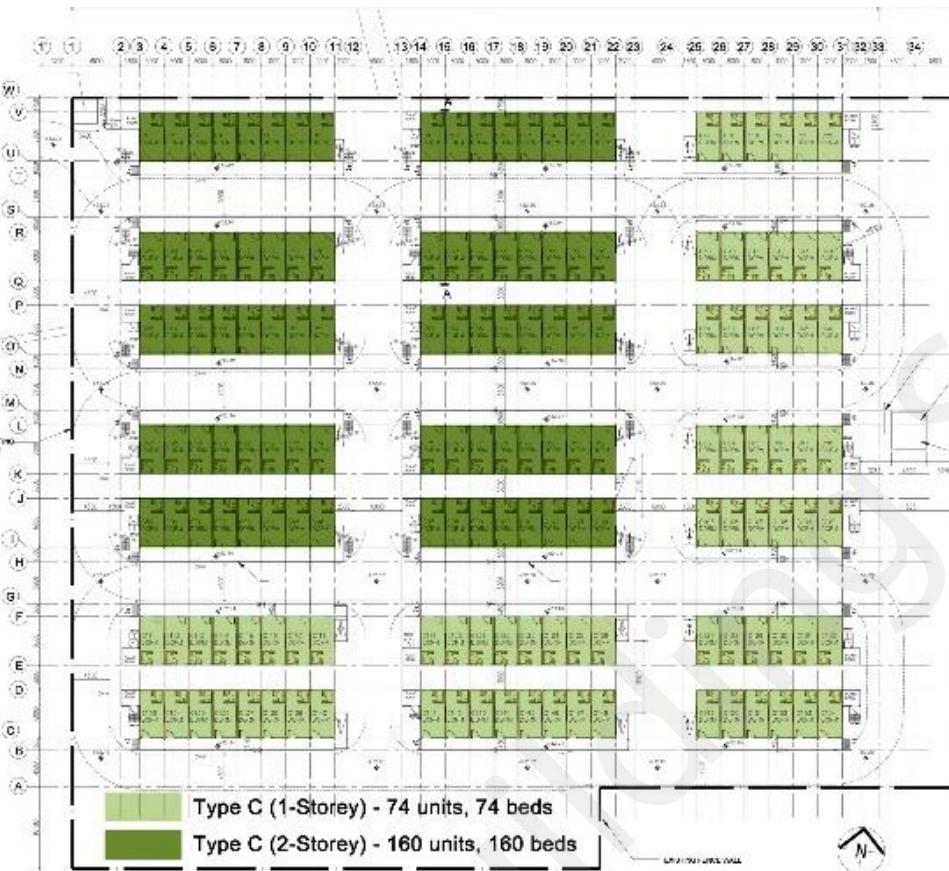
3m x 6m x 3m

Commencement

7 Feb 2020

Target Completion

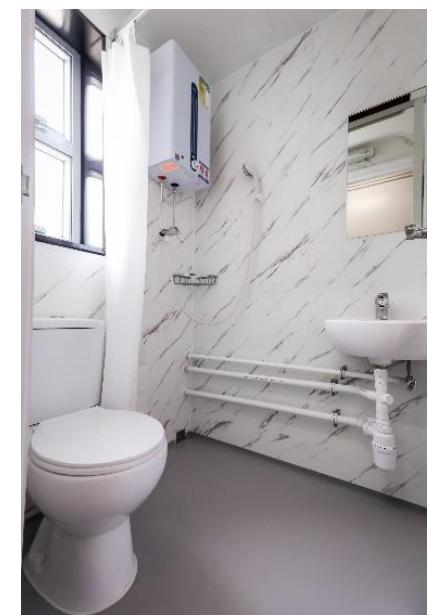
9 Apr 2020



Site Layout Plan

Site Photo (completed on 9 Apr 2020)

TEMPORARY QUARANTINE CAMP AT LOWER LEI YUE MUN PARK – FOOTBALL PITCH





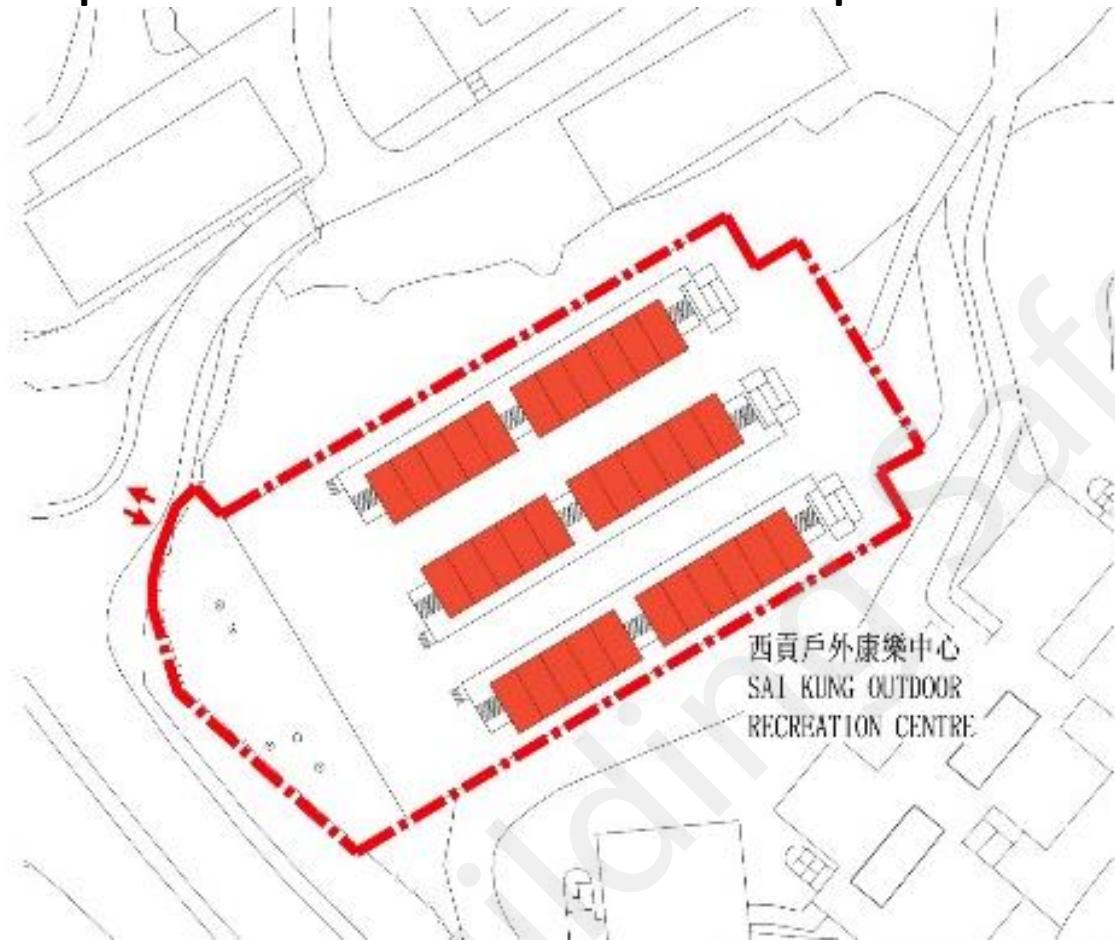
這是一場與時間賽跑的戰鬥
The Battle - fight against time

Build

PROJECT SUMMARY

SAI KUNG OUTDOOR RECREATION CENTRE

Contractor	Paul Y
Site Area	2,710 sqm
Nos. of Quarantine Units	99 Units
Nos. of Storey	3 Storeys
MiC Unit Manufacturer (Origin)	Paul Y – IMAX (Malaysia)
MiC Unit Size	3m x 6m x 3m
Commencement	7 Feb 2020
Completion	30 Apr 2020



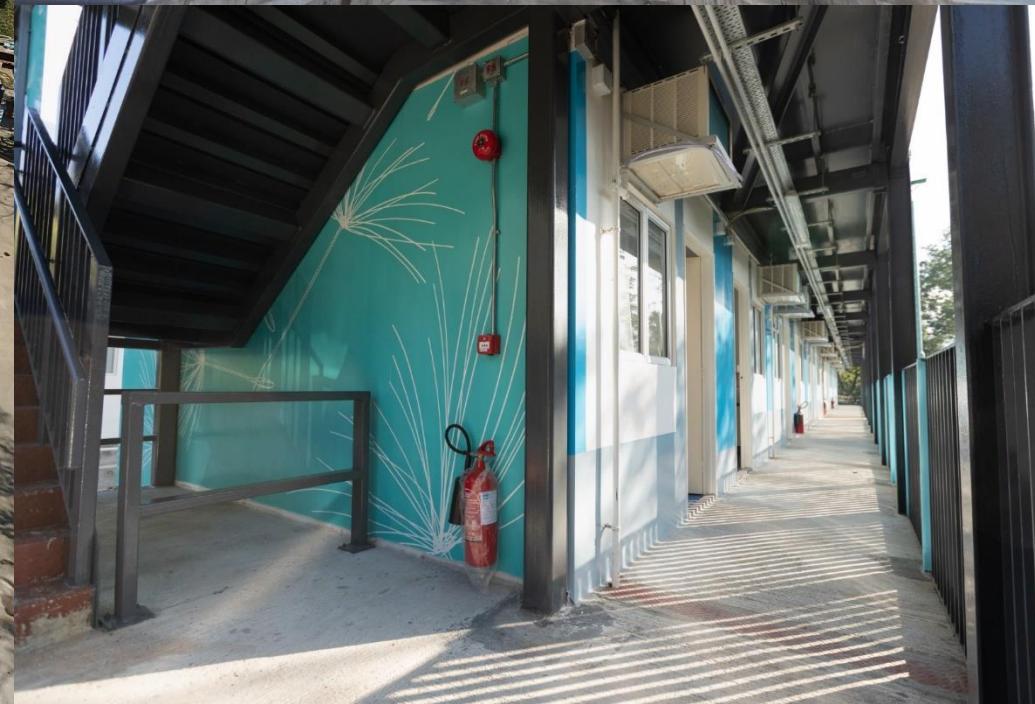
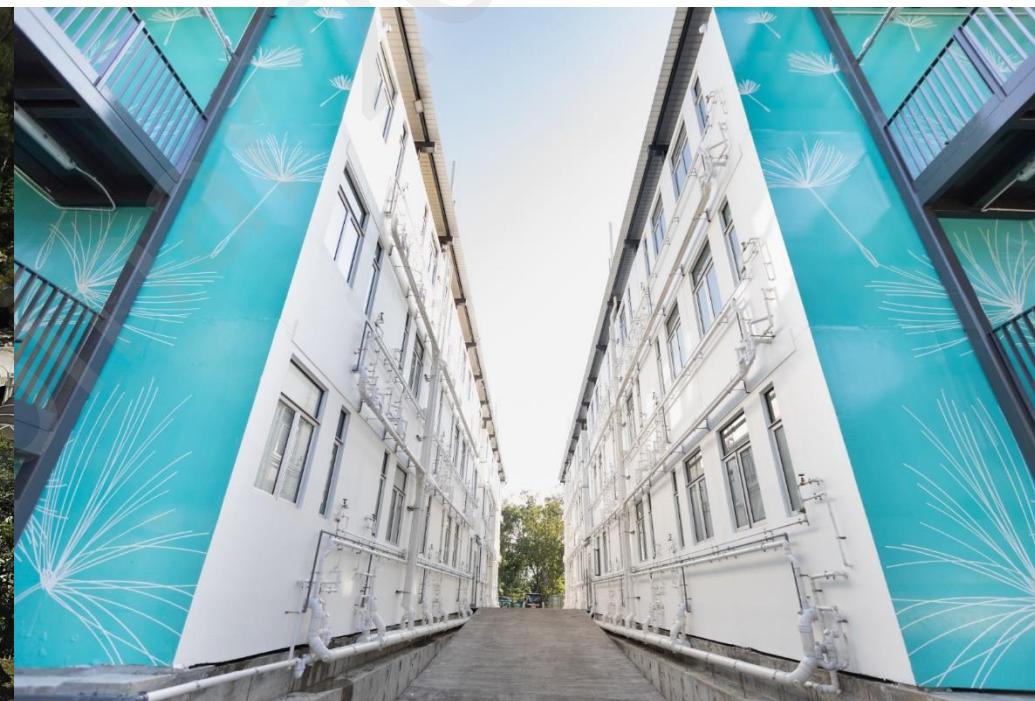
Site Layout Plan



Site Photo (completed on 30 Apr 2020)



TEMPORARY QUARANTINE CAMP AT SAI KUNG OUTDOOR RECREATION CENTRE

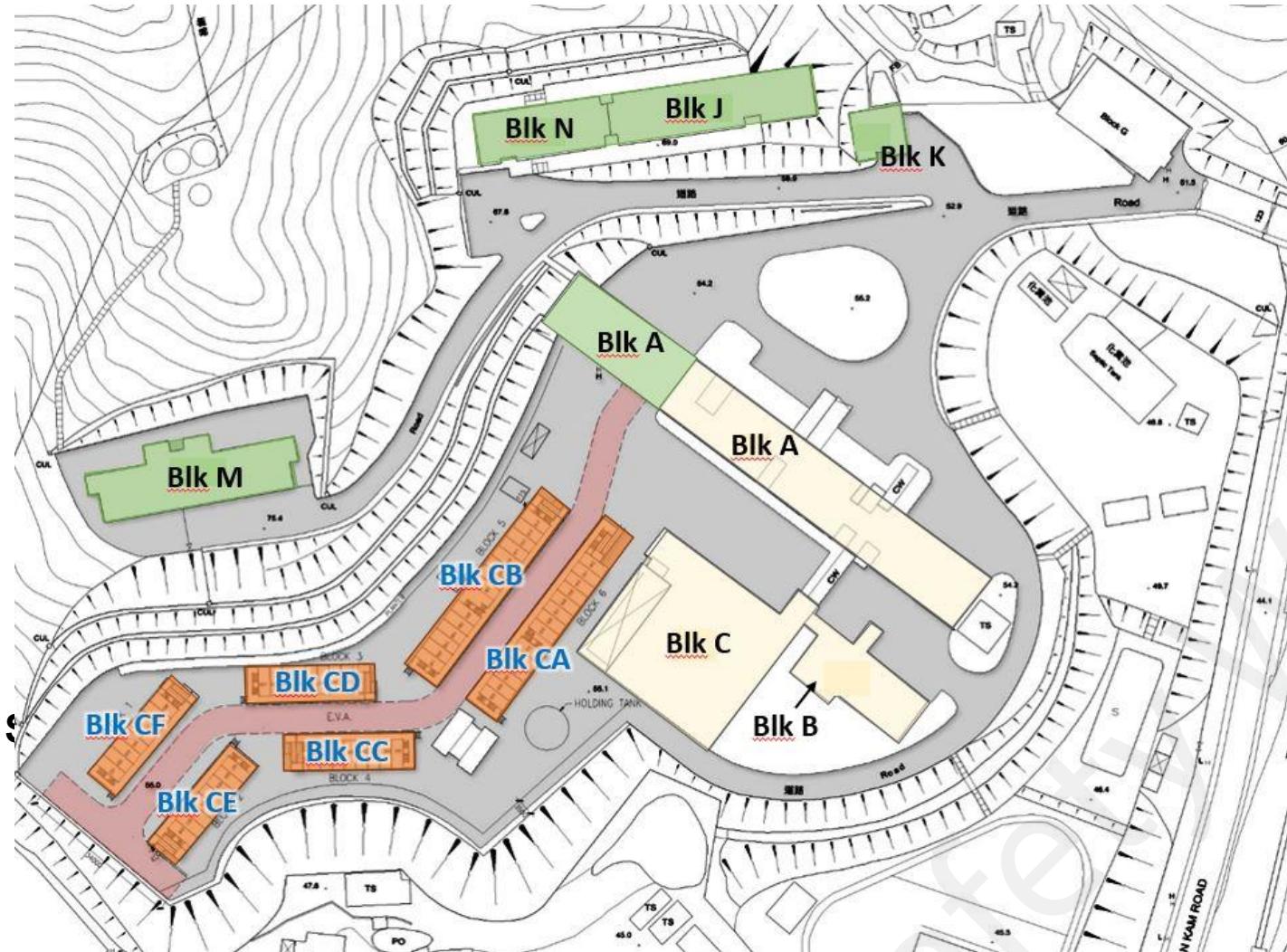


CONSTRUCTION PROGRESS VIDEO 2



Building Safety Seminar 2020

TEMPORARY QUARANTINE CAMP AT JPC PERMANENT ACTIVITY CENTRE, PAT HEUNG



REFURBISHMENT OF EXISTING QUARTERS

Contractor	Cheung Hing
No. of Units	88 (215 beds)
Commencement	8 Feb 2020
Completion	16 Feb 2020 (9 calendar days)

NEW QUARANTINE UNITS BY MIC

Contractor	Hip Hing
No. of Units	120 Units
No. of Storey	2
MiC Unit Manufacturer (Origin)	CIMC (Jiangmen, China)
MiC Unit Size	2.5m x 6m x 3m
Commencement	17 Feb 2020
Completion	22 Apr 2020



New MiC Units

Refurbishment of quarters



TEMPORARY QUARANTINE CAMP AT JPC PERMANENT ACTIVITY CENTRE, PAT HEUNG



Build

Building Safety Webinar 2020

PROJECT SUMMARY	PENNY'S BAY (PHASE 1A) (by CEDD)	PENNY'S BAY (PHASE 1B) (by ArchSD)	PENNY'S BAY (PHASE 2) (by ArchSD)
Contractor	China Harbour	China State Hong Kong	Gammon Construction
Site Area	6.6 hectares (site formation)	5.2 hectares	4.3 hectares
Nos. of Quarantine Units	100 Units	700 Units	700 Units
Nos. of Storeys	2 Storeys	2 Storeys	2 Storeys
MiC Unit Manufacturer (Origin)	AluHouse (Zhaoqing, China)	China State Hailong Construction Technology (Zhuhai, China)	AluHouse (Zhaoqing, China)
MiC Unit Size	3m x 6m x 3m	3m x 6m x 3m	3m x 6m x 3m
Commencement	17 Feb 2020	29 Apr 2020	22 Jun 2020
Completion	29 Apr 2020	10 Jul 2020	16 Sep 2020

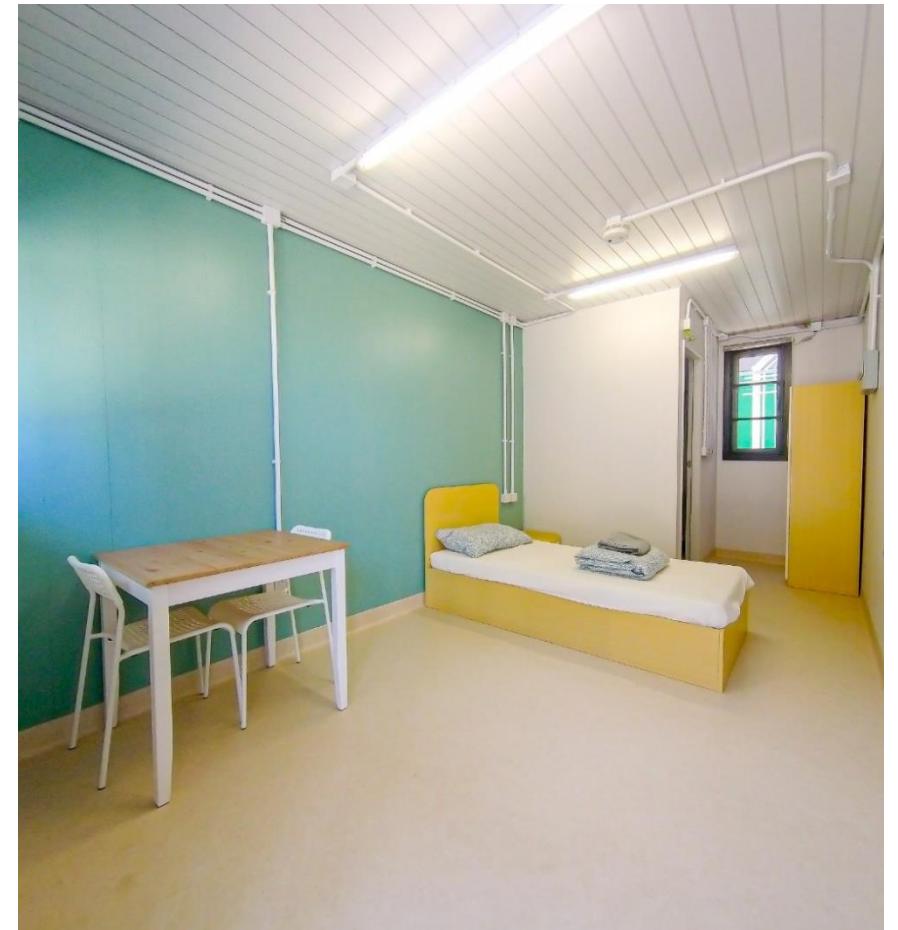


Site Photo

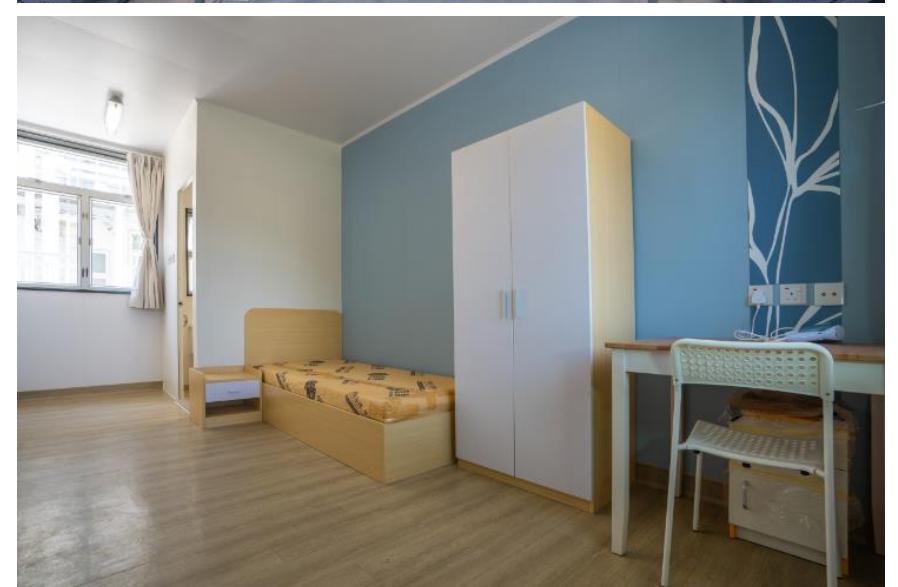


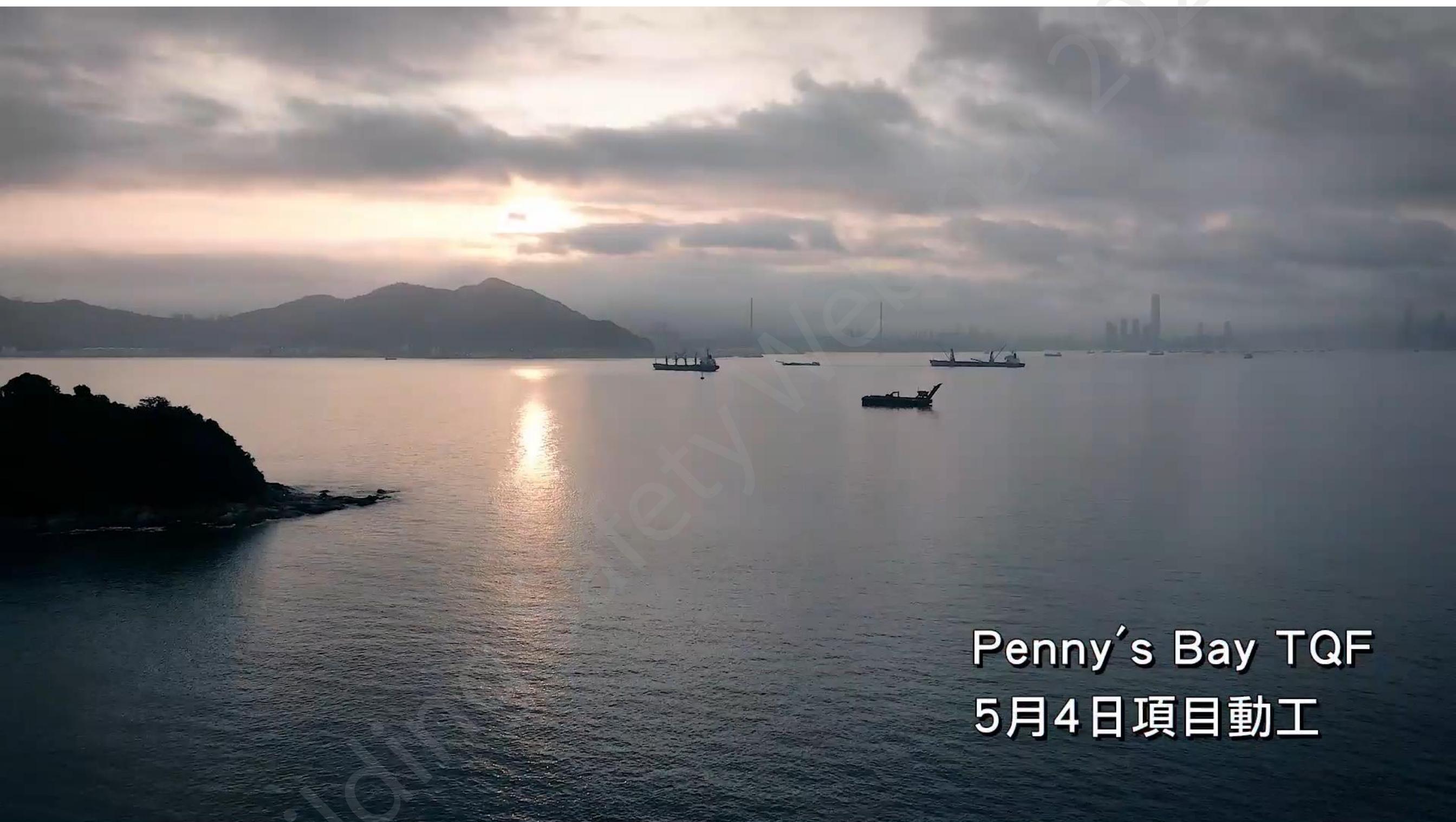
Site Layout Plan

TEMPORARY QUARANTINE CAMP AT PENNY'S BAY (PHASE 1A) - by CEDD



TEMPORARY QUARANTINE CAMP AT PENNY'S BAY (PHASE 1B)





Penny's Bay TQF
5月4日項目動工

TEMPORARY QUARANTINE CAMP AT PENNY'S BAY (PHASE 2)



the ... 3rd Wave



香港現第三波新冠肺炎疫情 大型社區隨時有失控危機



2020/07/09 07:40 報導



新冠病毒

香港第三波疫情全面爆發情況嚴峻前所未見



MEDICAL INSPIRE

“經豁免檢疫者傳入有機會在乘搭公共交通工具時傳播病毒，令疫情得以在本地擴散。”

許樹昌
港府抗疫督導委員會專家顧問

許樹昌：料未來數日新增確診數字仍會高企
憂部份人早已於社區染疫

【新冠肺炎】許樹昌：相信第三波疫情經豁免檢疫者傳入，料加強防疫措施一周後方見效。

醫療頭條

編輯：Raven @ Medical Inspire

Jul 20, 2020



319

Like 197 people like this. Be the first of your friends.

本港爆發第三波疫情，昨日（19日）更單日新增64宗確診個案、60宗初步確診，共計百多宗新冠肺炎個案。港府抗疫督導委員會專家顧問、中大呼吸系統科講座教授許樹昌早前出席商台節目時表示，很多員工在乘搭公共交通工具時，包括機組人員、海員等，他們有機會在乘搭公共交通工具時

the ... 3rd Wave

2020年7月18日 時事脈搏

疫情嚴峻 鯉魚門社區隔離中心或一兩周內啟用

醫管局行政總裁高拔陸在電台節目表示，本港第三波疫情嚴峻，現時醫院入住率本身已高，難以騰空病床作二線隔離病房，暫時最適合及最快可以啟用的是鯉魚門公園度假村，以現時疫情估算，有可能在1至2星期便要啟動相關設施。



放大圖片

高拔陸指出，若有需要，醫管局最快可以在72小時內啟動設施，首階段可以容納約100人，主要讓病情較穩定或沒有病徵、有獨立自理能力、溝通上沒有問題的確診者入住。

他又提到，每個患者會有獨立房間及洗手間，並要求他們自行量度體溫及血壓等，亦會安排醫護人員與病人視像通話，但強調會有醫療團隊24小時在場。

2020年7月22日星期三

昨增7危殆至29人 20確診者入院一度要等 鯉魚門營最快周五收輕症確診者

鯉魚門度假村隔離設施啟用 有醫生稱可應付第三波疫情

2020-07-24 HKT 12:22

推介 0 分享工具

張建宗早前視察竹篙灣新增檢疫中心 料本周投入服務

2020-07-19 HKT 09:09

推介 10 分享工具



張建宗（右二）表示，早前與其他官員到竹篙灣視察剛完工的新增檢疫中心。（政務司司長網誌）

政務司司長張建宗形容，本港出現第三波疫情來勢洶洶。他在網誌透露，上周一到竹篙，該中心提供800個單位，預期本周投入服務。至於在竹篙的檢疫設施，初步估計9月底前提供額外700個單位。

待「嚴陣以待」、「迅速應變」和「公開透明」。

當前的措施，令一些市民感到不便，但強調目的在於減少染，盡早切斷傳播鏈，盡快控制疫情，呼籲全港市民配合

發展，以及企業和市民的需要，在資源許可下，善用防疫抗疫基金應急款項，優化和推出適當的措施。

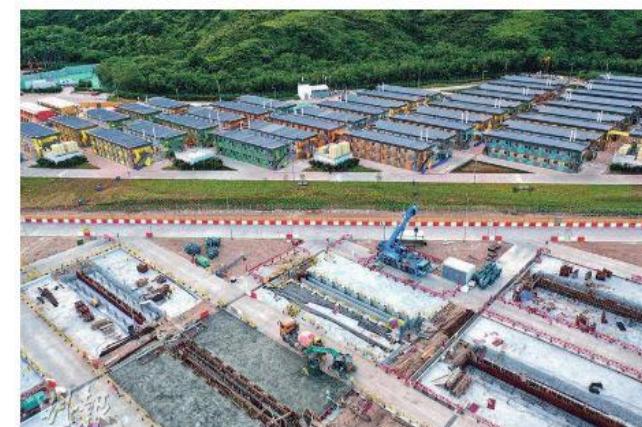
2020年7月20日星期一

上一節 下一節

竹篙灣增2000檢疫單位 盼年底建成 林鄭：交還駿洋邨或需檢視 短期啟動社區隔離設施

讚好 7

A+ A-



now in *Penny's Bay*

Phase 1A ●
(completed by CEDD)
- 100 units

Phase 4 ●
(in progress by CEDD)
- 300 units



● **Phase 1B** (completed)
- 700 units

● **Phase 2** (completed)
- 700 units

● **Phase 3A** (in progress)
- 850 units

● **Phase 3B** (in progress)
- 850 units

Build

2020

Design Enhancement

Building Safety Webinar 2020

DRAINAGE DESIGN

1. Trap and Refilling pipe

Replenishment of Sealing trap of floor drains by diverting wastewater from wash basin to maintain water seal

2. Vent pipe

Vent pipe at the back and at the far end of each block, carried up to a high point above the roof

3. Two-pipe system

Separate soil and waste branch pipes respectively

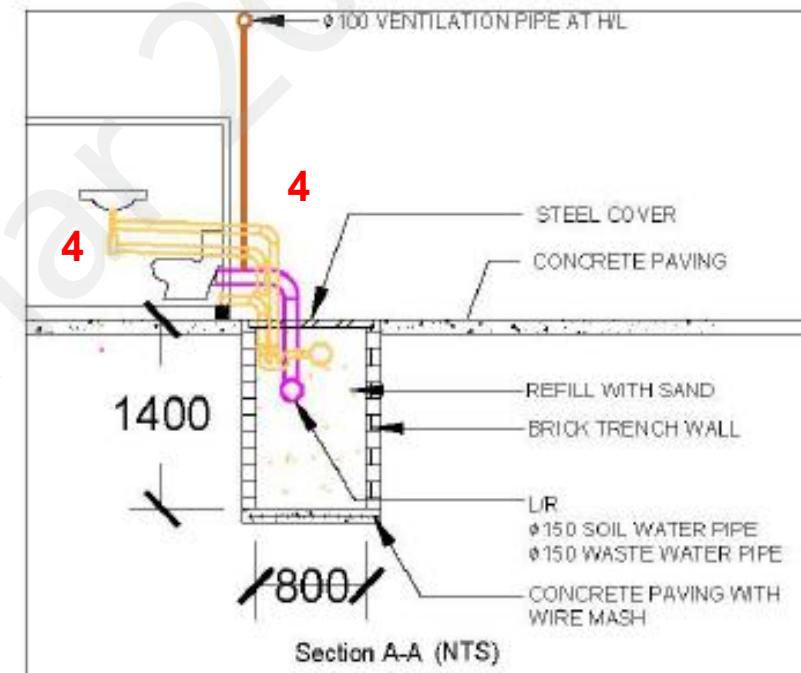
4. Anti-syphonage Trap/Pipe

Anti-syphonage trap/pipe at basin/watercloset

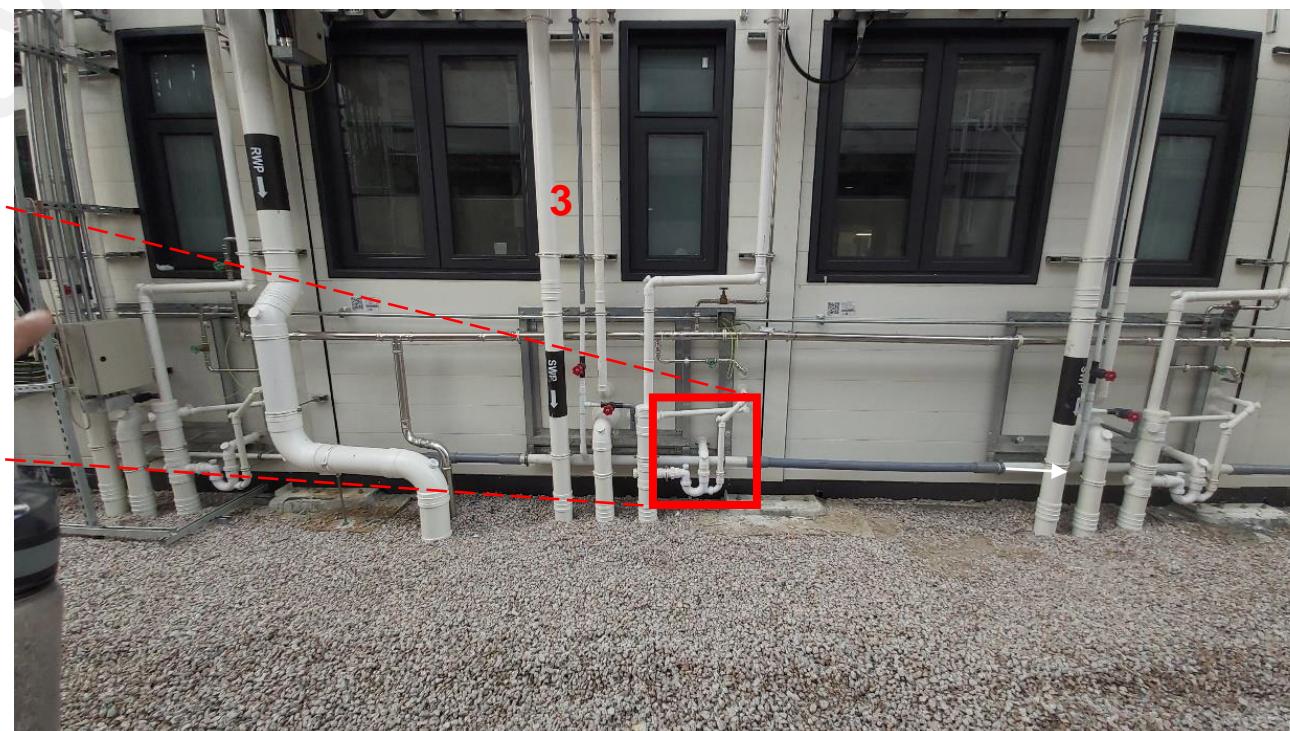
5. Restricted access to “dirty zone” for service maintenance/ repair



Restricted Access to Dirty Zone



Replenishment of Sealing-trap



Completion photo of Penny's Bay, Phase 2

BFA UNITS IN PENNY'S BAY PHASE 2

14 BFA units + **14 companion units**

- ✓ *accessible bathroom*
- ✓ *family friendly*
- ✓ *elderly friendly*
- ✓ *for those require personal care and attention*



Typical MiC Modules



BFA Unit + Companion Unit
(2 MiC Modules)

MiC Consideration

Building Safety Webinar 2020

PRE-ACCEPTED MiC SYSTEM FOR PROJECT DELIVERY

Codes and references Modular Integrated Construction

Resources > Codes and references > Modular Integrated Construction



Pre-acceptance Mechanism

Intro
Modular
factory
PNAP
Pre-a
With a
accept
The pre
materi
for the
structu
*NOTE -
submiss

Pre-accepted Modular Integrated Construction Systems / Components

Steel MiC Systems

Resources > Codes and references > Modular Integrated Construction > Pre-accepted Modular Integrated Construction Systems / Components > Steel MiC Systems

In-principle acceptance has been given to the following MiC Systems by the BD.

BD's Acceptance Reference No.	Manufacturer, Model and Prefabrication Location (City or Country)	Submission Details
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) Model No. RUSH (Module Type: MA1, MA2, MB1, MB2, MC and MD) Shanghai, China	General layout Intended Uses: Residential-Institution or Hostel Intended Building Height: Maximum 53.2m from ground floor (Maximum modular units of 15 storeys)
MiC 2/2018	Aluhouse Company Limited Model No. Aluhouse HK28 (Module Type: T1 and T2) Zhaoqing, Guangdong, China	General layout Intended Uses: Domestic Intended Building Height: Maximum 11.45m from ground floor (Maximum modular units of 3 storeys)
MiC 3/2018	Guangdong CIMC Building Construction Co. Ltd. Model No. CIMC Modular Building Systems - V System (Module Type: A1, A2, B1, B2, C and D) Jiangmen, Guangdong, China	General layout Intended Uses: Residential-Institution or Hostel Intended Building Height: Maximum 53.2m from ground floor (Maximum modular units of 15 storeys)
MiC 4/2018	Nova Deko Modular Building Company Limited	General layout

Buildings Department

**Practice Note for Authorized Persons,
Registered Structural Engineers and
Registered Geotechnical Engineers**

ADV-36

Modular Integrated Construction

Introduction

Modular Integrated Construction (MiC) is a construction method that employs the technique of having freestanding volumetric modules (with finishes, fixtures, fittings, etc.) manufactured off-site and then transported to site for assembly. Proven benefits include improved site safety, more efficient and better quality control, shortened construction period, less construction waste, less demand for on-site labour, less disturbance and nuisance to the neighbourhood, etc., not just contributing to the quality and sustainable built-environment but also help ease some of the challenges of the local construction industry. To encourage MiC, the Buildings Department (BD) has formulated streamlined measures and guidelines to facilitate the industry in meeting the relevant standards and requirements under the Buildings Ordinance (BO).

Considerations Unique to MiC

2. Similar to the use of prefabricated building components, the project team should engage the MiC suppliers at the early design stage to sort out the issues usually not encountered in conventional in-situ construction. Apart from the extent of standardisation and buildability of such modules, the mode of delivery with due regard to the specific site conditions, the issues that may arise from meeting the relevant requirements including those on supervision as well as the programme of plan submissions to the BD should be considered in advance. General guidelines on the design and quality control requirements under the BO for MiC are given in Appendices A and B respectively.

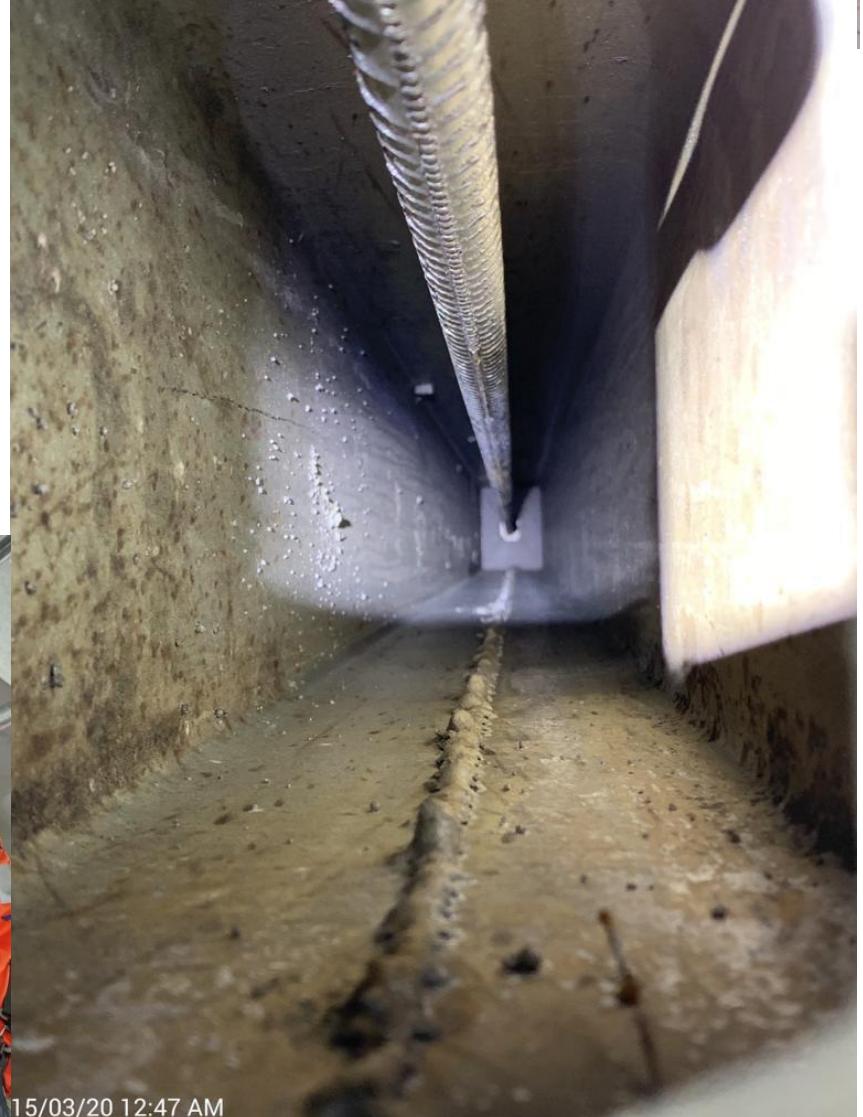
Pre-submission Enquiry

3. Authorized Persons and Registered Structural Engineers are encouraged to make use of the established mechanism of pre-submission enquiry service mentioned in PNAP ADM-19 to clear with the BD in the early design stage unconventional design or performance of a modular prototype for acceptance under the BO before preparing the detailed designs. A determination would be available within 45 days.

MiC CONNECTION & INSTALLATION METHOD

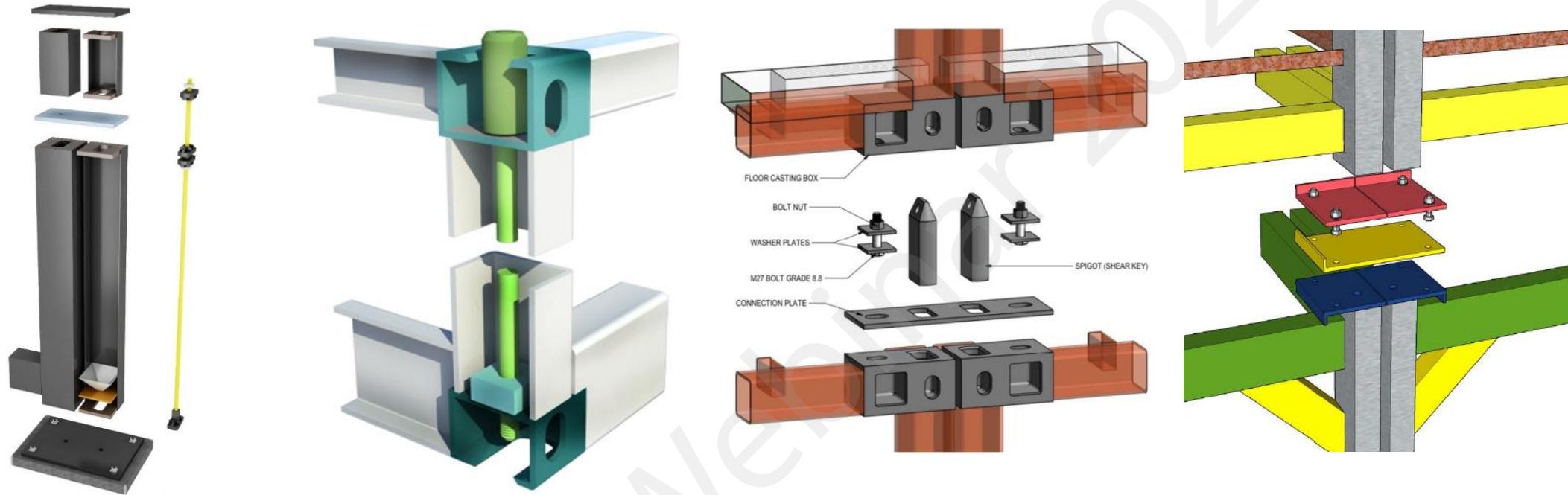


MiC CONNECTION & INSTALLATION METHOD



15/03/20 12:47 AM

MiC CONNECTION & INSTALLATION METHOD



	LEI YUE MUN PARK PENNY'S BAY (PHASE 1B) PENNY'S BAY (PHASE 3B)	SAI KUNG OUTDOOR RECREATION CENTRE	JPC PERMANENT ACTIVITY CENTRE, PAT HEUNG PENNY'S BAY (PHASE 3A)	PENNY'S BAY (PHASE 1A) PENNY'S BAY (PHASE 2) PENNY'S BAY (PHASE 4)
Material of MiC System	Steel MiC System (BD's pre-accepted MiC System)			
Connection System / Installation Method	<ul style="list-style-type: none"> ● Threaded steel bar with couplers ● Installation at top of module 	<ul style="list-style-type: none"> ● Candle-Loc pin system (patented) ● Installation at top of module 	<ul style="list-style-type: none"> ● Spigot and bolt plugin system (patented) ● Installation at corner of module 	<ul style="list-style-type: none"> ● Bolt and nut system ● Installation at corner of module
Provisions for Future Re-use of MiC Modules	<ul style="list-style-type: none"> ● easily disassembled and re-assembled at another location ● stacked up in 4 storey high under gravity load case ● additional lateral stability system / bracing to resist wind loads in future 4 storey buildings ● additional connection components from original manufacturer in future assembly 			

QUALIFIED SUPERVISION FOR MiC MODULES

1. Videotelephony to conduct off-site supervision

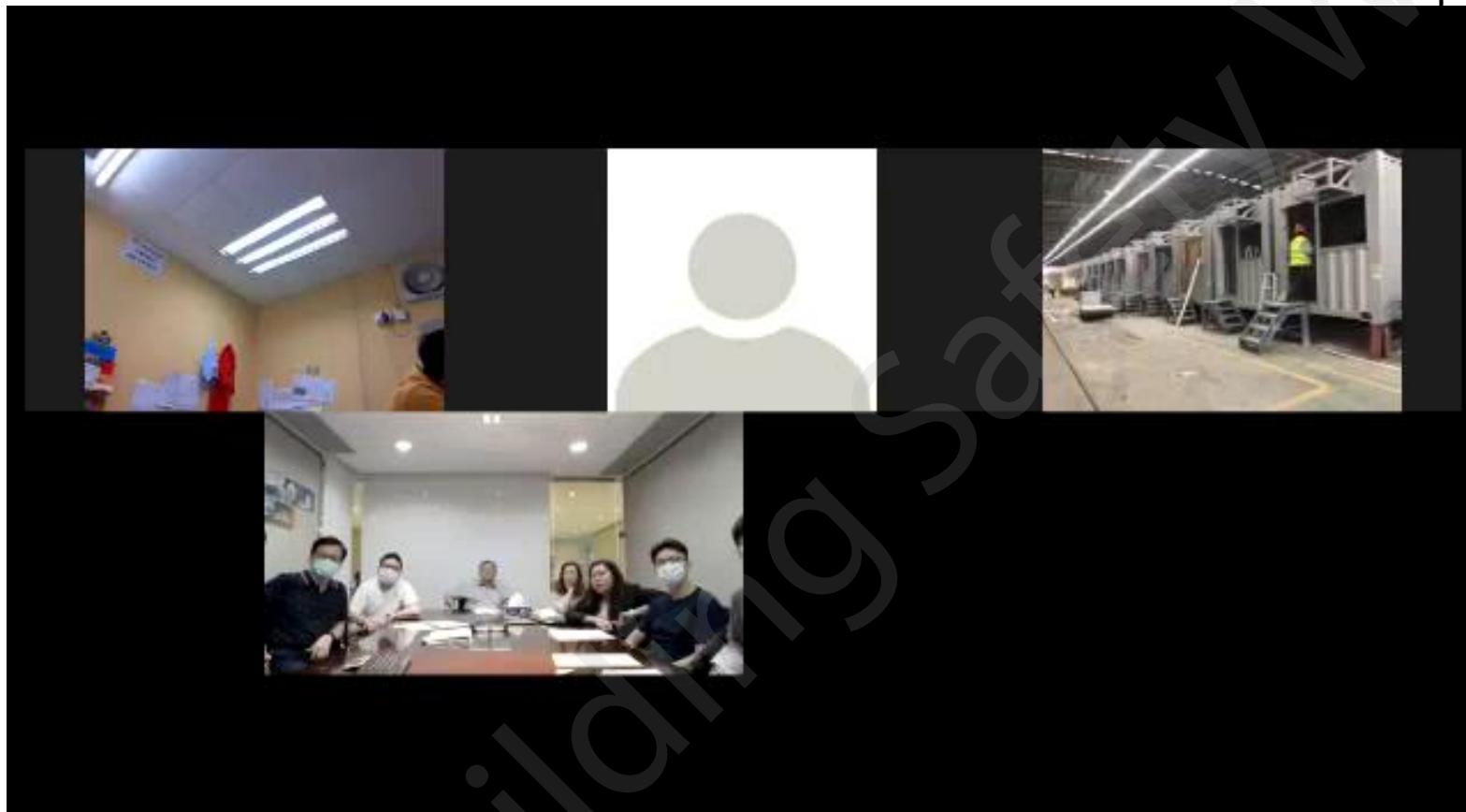
- Owing to the Covid-19 situation, AP and RSE's representatives have difficulties to visit the factories;
- BD issued a circular letter on 7 Feb 2020 which allowed AP and RSE's representatives to supervise by videotelephony;
- RC's representatives shall provide assistance in the factory.



3. Under the stepped up cross-boundary control as one of the anti-epidemic measures, the AP¹, RSE¹, AS and supervisory personnel of each functional stream may encounter difficulties to comply with the approval conditions on factory visits. Having considered the unique circumstances, the Buildings Department (BD) adopts a pragmatic and flexible approach and accepts the following alternative arrangements for meeting such approval conditions with immediate effect:

(a) The Grade T3 TCP and AS should employ videotelephony² to conduct supervision. In this connection, they should work with their assistant in the factory who is not a member of the RC's supervisory personnel team providing the required continuous supervision under the approval conditions;

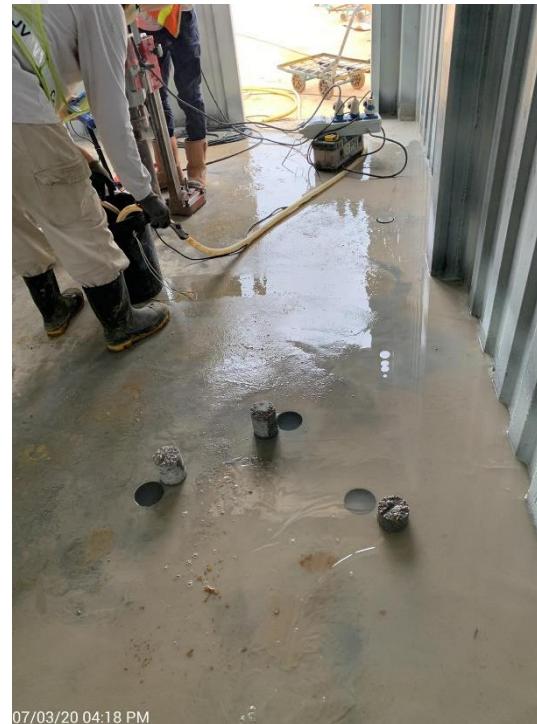
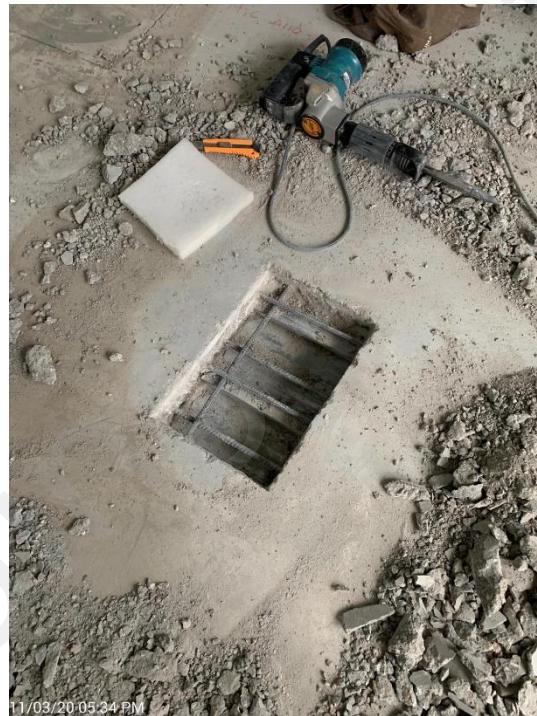
(b) The level of supervision by videotelephony at the factory should not be inferior to that carried out personally by the Grade T3 TCP and AS as required under the approval conditions. In addition, all supervision items covered in the videos taken should be recorded contemporaneously in the log book and audit report of the respective AP, RSE and AS, and should be submitted together with the DVD-ROM discs as required in subparagraph (c) below;



QUALIFIED SUPERVISION FOR MiC MODULES

2. On-site audit check for MiC modules

- AP and RSE are required to carry out audit check on modules delivered on site;
- Sampling rate is 2% per each type of module;
- The scope of audit check include:-
 - ✓ Concrete coring test
 - ✓ Open-up of concrete surface
 - ✓ Covermeter test
 - ✓ Welding inspection / tests
 - ✓ Check on fire protection materials
 - ✓ Dimension check, etc.



8 Sites

duration

600 hrs - 3 months

around

525,804

man-hours/ month at peak

total MiC quarantine unit

1,971 nos.

total Construction Floor Area

> 50,000 m²

Thank You

