Project management on MiC in Hong Kong – Case study on a student hostel

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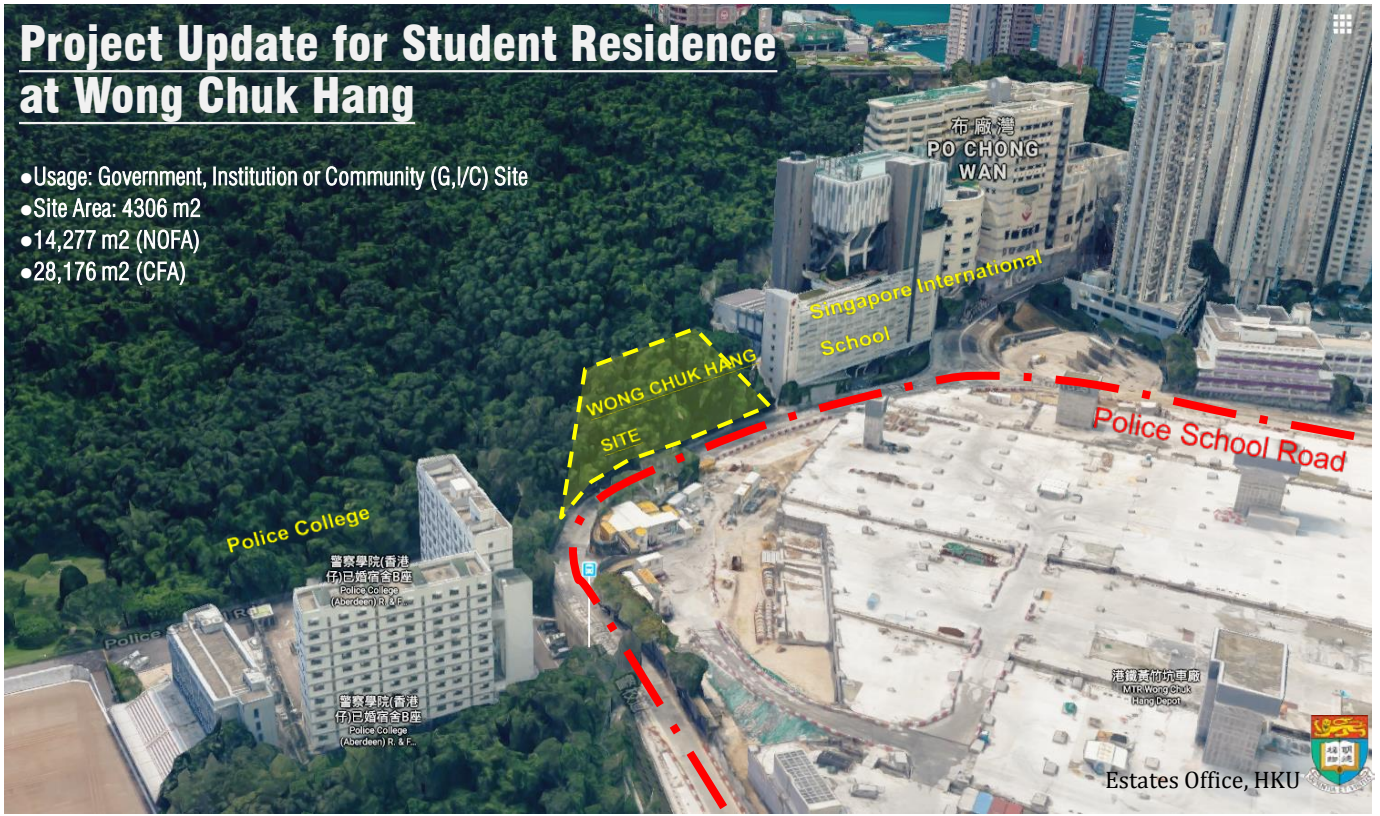
Project Update
for
Student Residence at Wong Chuk Hang

Estates Office, HKU

Project Update for Student Residence at Wong Chuk Hang

- Usage: Government, Institution or Community (G,I/C) Site
- Site Area: 4306 m2
- 14,277 m2 (NOFA)
- 28,176 m2 (CFA)



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Project Update for Student Residence at Wong Chuk Hang Site

- A combined non-residential podium
- Two 17-floor towers of student residences
- 1,224 hostel places
- Associated living accommodation for management staff, common space, canteen, support facilities and car-parking space
- Selected by Development Bureau as a Pilot Project for MiC in Hong Kong

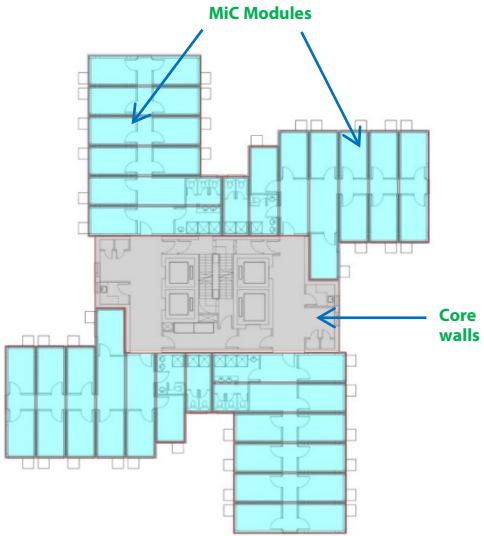
Why MiC for Student Residence at Wong Chuk Hang?

Why MiC for Student Residence at Wong Chuk Hang?

Design Aspects

- Design with repetitive units

  1,224 places with appx. 850 modules and **achieves great economy of scale**

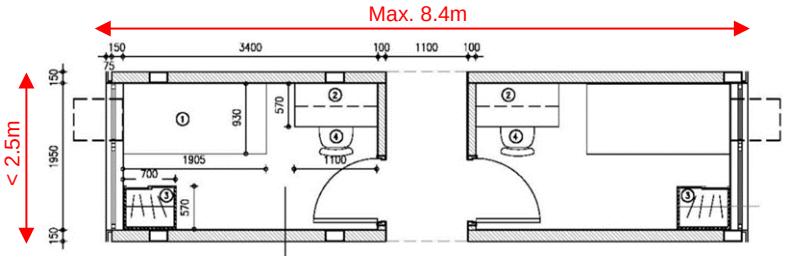


Why MiC for Student Residence at Wong Chuk Hang?

Design Aspects

Compact dimension room size

- Average single student room size is about **6.5m²** each;
- Each MiC unit is **less than 2.5m(W) X 3.65m(L) to 8.4m(L)**;



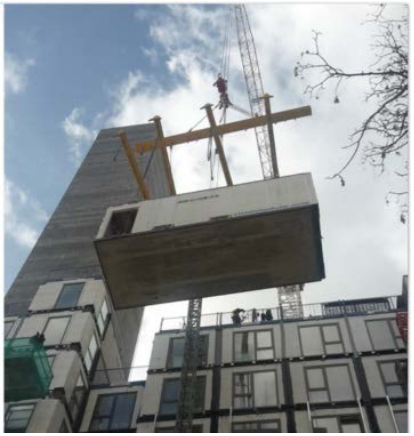
- Size and dimension of tentative modular units **comply with current local traffic restrictions**;

Why MiC for Student Residence at Wong Chuk Hang?

Design Aspects

Light weight units

- Weight of modules ranges from **6.5 ton to 14 ton**;
- Suitable and easy for **transporting and hoisting** with readily available equipment and plants



Why MiC for Student Residence at Wong Chuk Hang?

Design Aspects

- Units are fully finished and furnished

  Fully utilize the benefits of MiC to **achieve better workmanship and quality** in a factory controlled environment.

MiC Factory Visit to Jiangmen, Guangdong

MiC Manufacturer's Display Unit for Stuent Hostel in the UK.

Why MiC for Student Residence at Wong Chuk Hang?

Site-specific Aspects

- **Adequate time for planning and fabrication**
  Extensive site formation works is required prior to superstructure construction which allows sufficient time for design and fabrication of MiC units

- **Reduction of noise and dust generation with MiC**
  Reduce nuisance to nearby school

Why MiC for Student Residence at Wong Chuk Hang?

Site-specific Aspects

布廠灣
PO CHONG WAN

Singapore International School

WONG CHUK HANG SITE

Police School Road

Police College

警察學院(香港仔)已婚宿舍B座
Police College (Aberdeen) R & F...

港鐵黃竹坑車廠
MTR Wong Chuk Hang Depot

- The site is not located in busy traffic district
  Geographically appropriate for MiC unit transportation

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What are the Constrains for MiC application in Hong Kong?

What are the Constrains for MiC application in Hong Kong?

No local expertise in construction industry;

Inadequate statutory procedures and regulations for MiC;

Contract procurement rules for public works – Cannot specify particular suppliers

What are the comments of Our Overseas Consultants on MiC Application?

What are the comments of Our Overseas Consultants on MiC Application?

" You CANNOT achieve all benefits for MiC in cost-saving, shorter time and better quality."

HKU's Target for WCH with MiC Application

We target to achieve all benefits for MiC in cost-saving, shorter time and better quality.

Our strategy for Contract Procurement for WCH

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Our strategy for WCH MiC Approach

Promote the WCH Project with MiC approach

- Announcement to public for WCH to adopt MiC in Sept, 2017.
- Meeting with HKCA to promote WCH with MiC Application in Aug, 2018.

Acquire MiC knowledge

- Conduct visits to the UK, Singapore and China.
- Employ MiC Specialists

Liaison with Government Departments

- Meetings with DevB;
- Technical meetings with BD, ArchSD and etc.

Tendering format

- MiC-ready approach has been developed.

MiC Factory Visit to Jiangmen, Guangdong

屋宇署 BUILDINGS DEPARTMENT

水務署 Water Supplies Department

Estates Office, HKU

Our strategy for WCH MiC Approach

Current contract procurement methods

MiC Suppliers engaged at project design stage

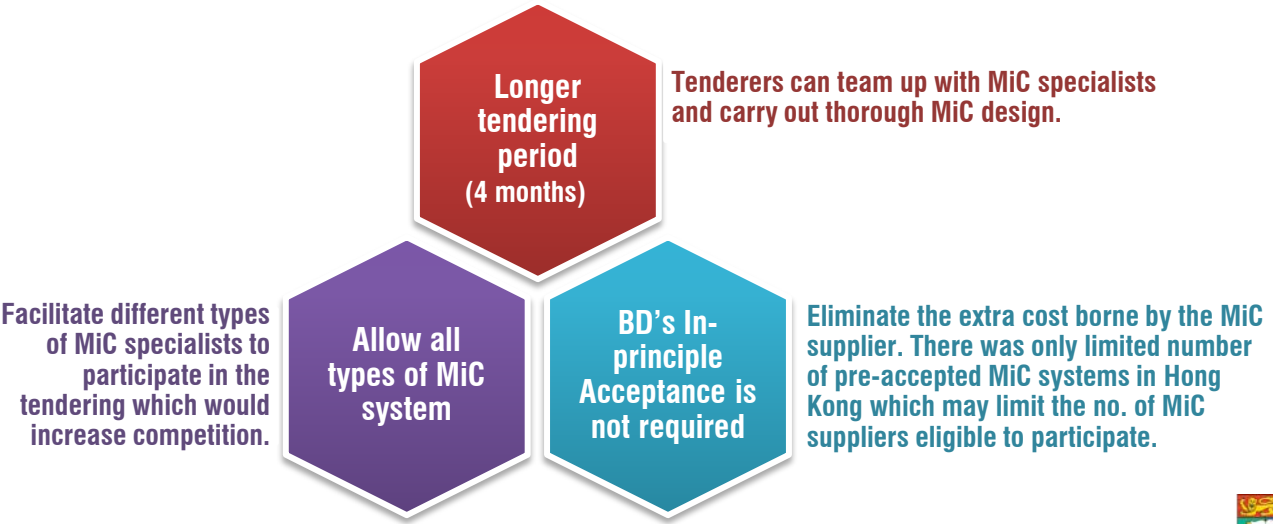
- Overseas approach to MiC projects to ensure MiC supplier is on board to address specific design issues and avoid abortive works design works.
- MiC suppliers in Hong Kong was limited.

MiC-ready Tendering Strategy (Adopted for WCH)

- Main Contractor to engage MiC supplier (similar to curtain wall sub-contractor) as a domestic sub-contractor. Relevant MiC statutory submissions will be carried out after contract award.

Our strategy for WCH MiC Approach

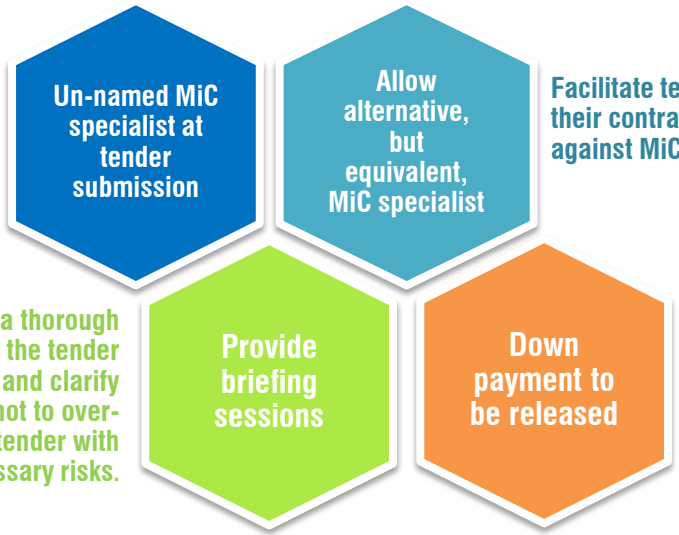
To ensure competitive tenders are submitted



Our strategy for WCH MiC Approach

To ensure competitive tenders are submitted

Flexibility allowed for MC to have a better bargaining power for negotiation. The MC has the flexibility to set-up their own MiC factory to reduce the cost.



Facilitate tenderers to maximize their contract negotiation power against MiC specialist.

Tenderers can have a thorough understanding of the tender requirements and clarify uncertainties in order not to over-price the tender with unnecessary risks.

Advanced payment to MiC specialist to ease their financial burden during off-site fabrication. In return, a more competitive price can be expected.

Implementation of MiC-ready Tendering Strategy & Elimination of Potential Risks

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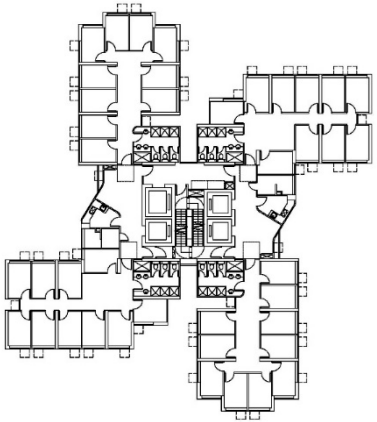
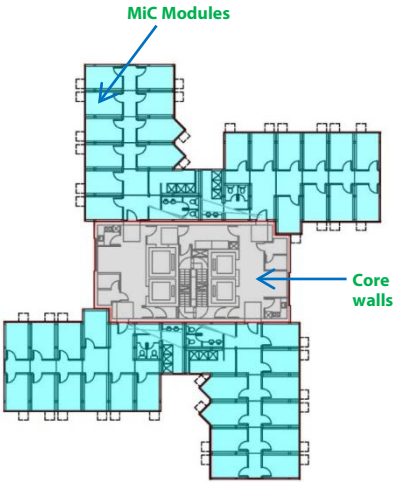
Implementation of MiC-ready Tendering Strategy

Original Typical Layout Approved by BD



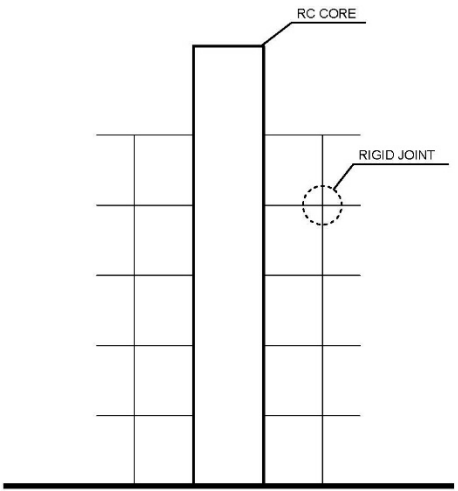
Modularization

- Modularized student rooms into limited types;
- Enlargement of central core for structural stability;
- Revised toilet layout to suit MiC unit.

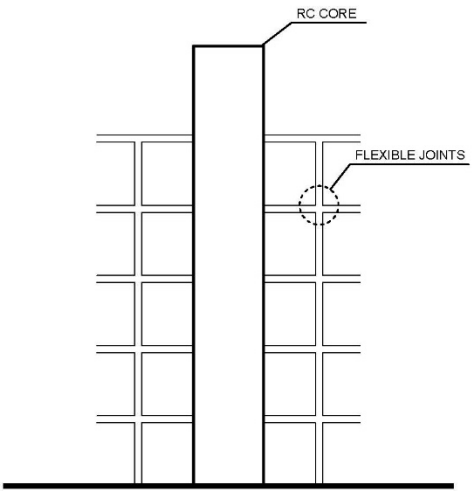


Implementation of MiC-ready Tendering Strategy

Statutory Submission Strategy for Superstructure Plan 1st Amendment (MiC-ready)



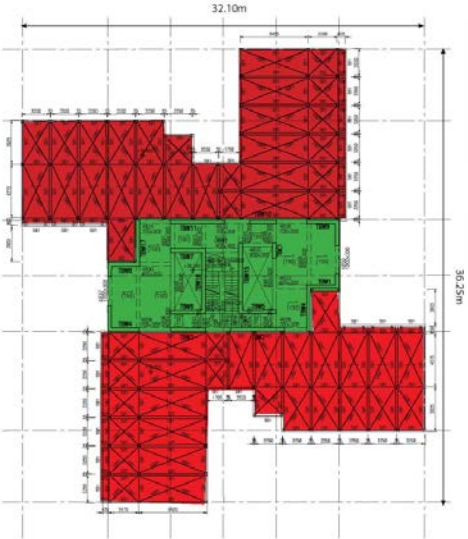
CONVENTIONAL RC CORE WITH STEEL FRAMING

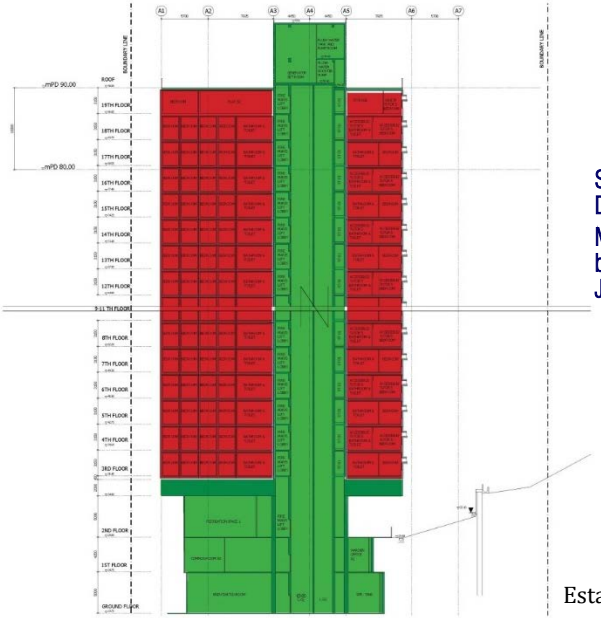


RC CORE WITH STEEL FRAMING (DOUBLE BEAM & DOUBLE COLUMN

Implementation of MiC-ready Tendering Strategy

Clear Demarcation of Design Responsibility between Engineer and Main Contractor





Similar to curtain wall DSC.

MiC-ready scheme has been approved by BD in Jan 2019.

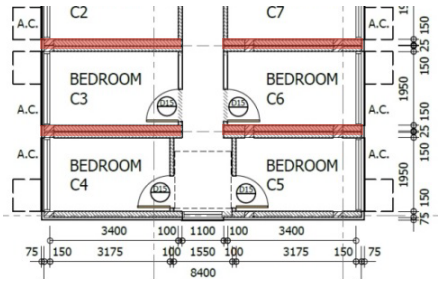
Elimination of Potential Risks

Design Considerations

- Increased slab thickness due to 6-side enclosed modular units leading to the increase in overall building height. A new **Section 16 Planning Application** was required for minor relaxation in building height from +87mPD to +90mPD as per Planning Department's advice; *Section 16 Planning Application approval was granted in Nov, 2018.*

- Increase double wall had taken up extra floor space, i.e. increase GFA;

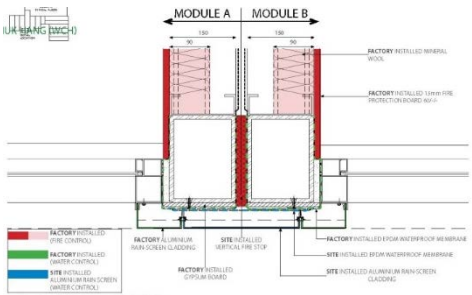
- LandsD advised that increased GFA would have to be resubmitted to **District Lands Conference (DLC)** for consideration; *DLC In-principle approval granted in Dec, 2018.*



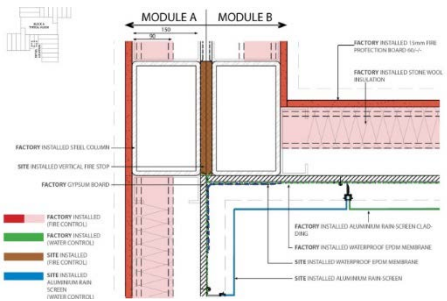
Elimination of Potential Risks

Design Considerations

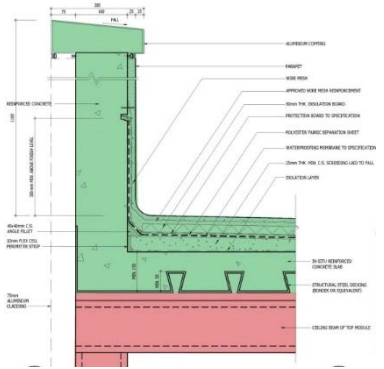
- Waterproofing, fireproofing, roofing and envelop design have been clearly indicated in tender drawings



Detail - Plan

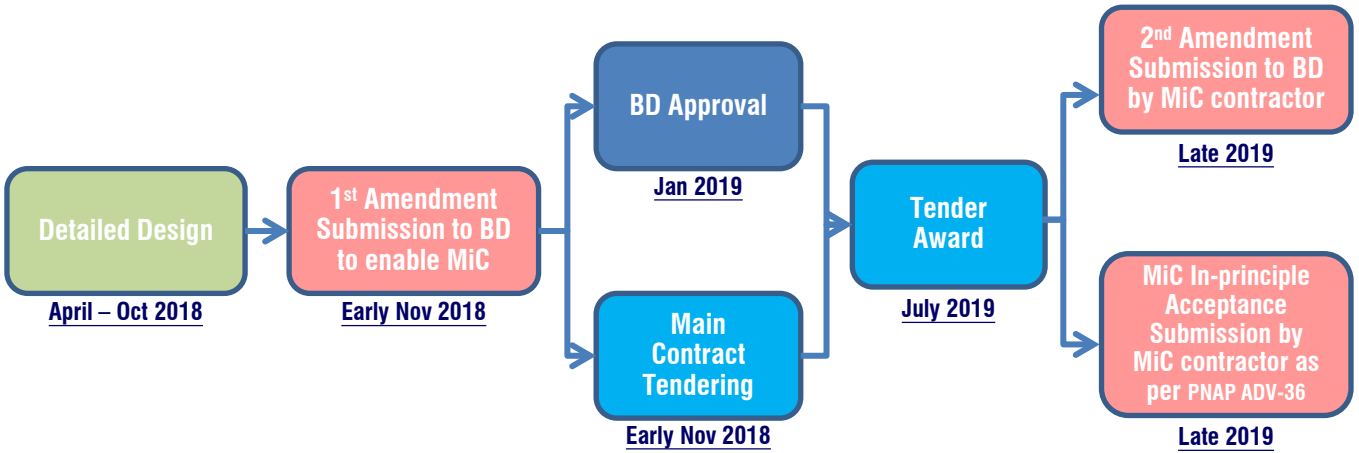


Detail - Section



Detail - Roofing

Statutory Submission Roadmap



MiC Statutory Submission Roadmap for WCH

Our strategy for WCH MiC Approach

Tendering progress and briefings

Tender Out: **November 6, 2018**

Tender Briefings:

For Tenderers -
November 22, 2018
December 28, 2018

For MiC suppliers -
January 29, 2019

Tender Return Date: **March 18, 2019**

8 tender submissions have been received

Outcomes at This Stage

Outcomes at This Stage

Tender Return

8 tenders submitted out of 9 tender invitations.

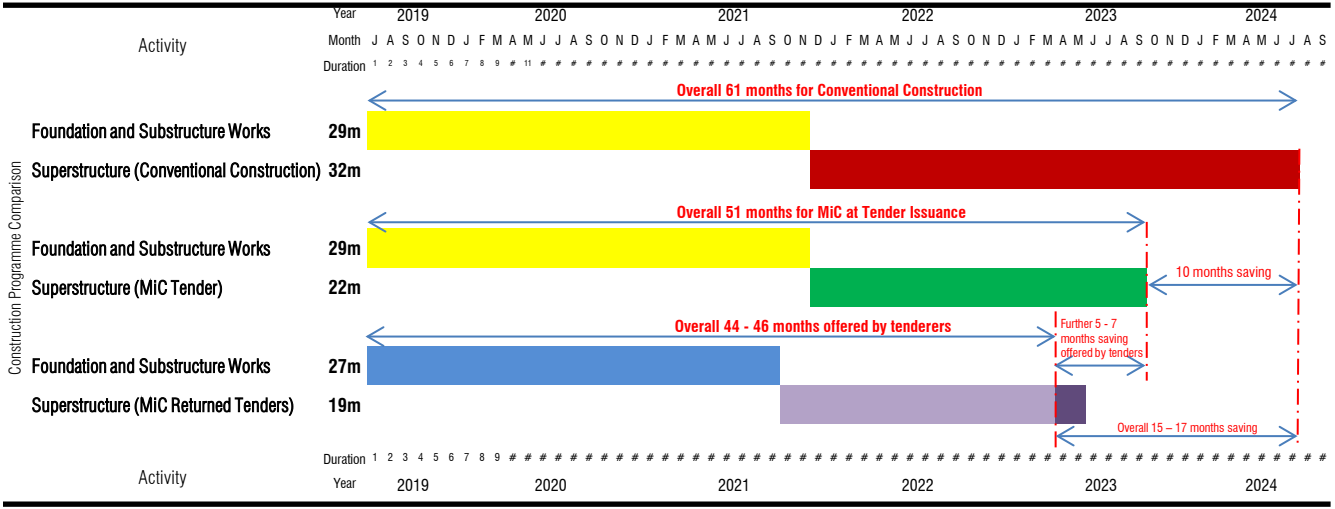
Amongst 8 submitted tenders,

4 tenderers are technically capable to deliver the MiC project;
1 tenderer can deliver the project but with reservation;

3 tenderers' price envelopes were not opened.

Outcomes at This Stage

Construction Programme Comparison



MiC can achieve faster construction programme

Outcomes at This Stage

Construction Programme Comparison

Amongst valid tenders, all are within the original project estimate. Further savings can be expected.

All offers are very close.

In conclusion, MiC can achieve cost balance or even saving.

What's Next?

What's Next?

A Good Quality Assurance and Quality Control System

Thank You