



香港建築師學會  
The Hong Kong Institute of Architects

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By Email and By Post  
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Mr. WONG Wai Lun, Michael, JP  
Secretary for Development  
Development Bureau  
18/F West Wing, Central Government Offices  
2 Tim Mei Avenue  
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Hong Kong

Dear *Michael,*

**Modular Integrated Construction (MiC)**

The Government has been promoting the adoption of MiC in the construction industry for some time. The promotion was highlighted in the 2017 Policy Address with certain pioneering public projects, such as The University of Hong Kong's Student Residence at Wong Chuk Hang. Since then, the adoption of MiC has been a requirement in different public works projects. The Construction Industry, with Design Professionals included, has now gained certain familiarity with this off-site construction technology which has the benefits of site works efficiency and can uplift productivity and performance in safety, quality and sustainability.

However, the issuance of the Development Bureau Technical Circular (Works) No. 2/2020 dated 31 March 2020 regarding MiC implementation plan took us all by surprise.

The said Technical Circular states that MiC shall be adopted for new buildings for most, if not all, of the Capital Works with immediate effect. Not that HKIA is against MiC, nor we find MiC adoption impractical, but we are concerned over the lack of stakeholders' consultation prior to the launching of the Technical Circular, particularly the views of our Institute on such an important issue.

Whilst we all share the perceived benefits which have been widely discussed in the Technical Circular, MiC has its share of challenges and is not entirely mature at the moment. It is certainly not a solution for a blanket application irrespective of individual project's context. Since the issuance of the said Technical Circular, practical concerns have been received from many of our members on the policy of blanket application with immediate effect, when the MiC construction method is still relatively new to the local market with few completed projects of applicable reference. For this reason, we take the liberty to share with you our concerns. By raising these, we would like to work with you to find ways to improve the policy so that the Industry can align with the Government's drive and adopt the MiC smoothly in a gradual, implementable, and truly beneficial manner.

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### **Design Considerations**

MiC relies heavily on road transportation to site. Hong Kong being a dense city, traffic is always heavy in general and with bridges and tunnels built with the previous Highways Standards which have constraints to the MiC delivery. Furthermore, width of traffic lane is typically 3.3m and can be less than 3m at some local road sections. Owing to this, the size of a loaded vehicle is limited to 2.5m(w) x 4.6m(h) by Regulation 55 of the Road Traffic (Traffic Control) Regulations (Cap. 374G), unless a Wide Load Permit has been applied for. To support the Government's policy of MiC construction, though Transport Department has recently relaxed the width of the loaded vehicles to 3.2m, this is limited to nighttime transportation only. As a result of the above constraints, the typical MiC unit is usually constrained to a maximum size of 2.8m(w) x 12m(l) x 3.1m(h) and 3.2m(w) x 12m(l) x 3.1m(h) respectively for daytime and nighttime transportation.

The size limitation of MiC units renders the adoption of MiC difficult or even not suitable for some building types as set in the List 1 of Annex II of the Technical Circular. For instance, the floor-to-floor height for laboratories in universities is usually 4.5m minimum which exceeds the allowable height for transportation. MiC, therefore, cannot be applied in a straightforward manner. Convolved adaptations such as vertical divisions of units have to be made which would lead to other complications such as more connection joints and therefore a higher risk of water seepage and possible prohibition of installation of building services on site.

Building types which are repetitive in nature, such as residential projects and hostels, will no doubt enjoy the full benefits of MiC in terms of cost reduction through high level of standardization and industrialization. However, the economy of scale may not be realized for projects with great complexity and non-repeating spaces. Examples are medical facilities in which a lot of rooms are highly specialized and varied in sizes.

Another consideration is that MiC offers limited opportunity for future changes not only during construction but in the long run. The difficulty of structural alternation of the modules and unit plans will undermine the flexibility in future change of uses of buildings in some cases. This lack of flexibility is a grave concern for most end-users. The MiC building thus completed is severely hampered for adaptation to a fast-changing world.

### **Readiness of the Construction Industry**

Although the Government has been promoting MiC in the past few years, only a few contractors and consultants have had the privilege to take part in previous MiC projects. Up to the date of this letter, completed MiC projects of significance in Hong Kong are sparse and limited.



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There are concerns that technical assessment on consultancy services contract bids may bias towards those who have the unfair advantage of previous experiences. In the past few months, Government consultancy tenders started to have heavy weighing on MiC experiences in the technical assessment criteria. With the issuance of the Technical Circular, one would expect that tendency for MiC-bias will prevail, a likely situation which may undermine fair competition or exclude competitors from the market and unduly jack up consultancy / contractor prices.

Same concern applies to works contracts as small- and medium-sized contractors are less resourceful in adjusting to the new requirements and become possible victims of the larger ones possessing substantial degree of market shares.

The capacity of the MiC fabricators is another concern. With the sudden imposition of policy, whether the capacity of the currently available fabricators could cope with the increase in demand in the short term remains to be seen. The construction cost will increase according to the supply-and-demand principle until more fabricators are available in the market, which will not be forthcoming in the near future.

### **Impacts to Design Professionals**

It is widely discussed that MiC will ease the shortfall in skilled construction workers in coming years. However, the impact to design professionals has scarcely been discussed. With the MiC units being fabricated mostly in mainland China, it is expected that the lion's share of detailed design development and construction drawings of MiC will be carried out by fabricators outside Hong Kong as per their mills and factories shall become the determining factor in the process. The same applies to construction supervisions. The possible diminished job opportunities in the long-term is a grave concern to the local design and engineering professionals.

### **Variation Order to Consultancy**

The Technical Circular sets out that the policy on the adoption of MiC shall take immediate effect for any new building works with total construction floor area larger than 300m<sup>2</sup> under the Capital Works Programme to be tendered on or after 1 April 2020. It has huge impact to those consultancies which are already well under way.

The decision to use MiC should be made from the onset of design. There are many cases that although tenders have not been issued, Government approvals have been obtained and detailed design completed which are not MiC. Notwithstanding projects with foundation works well-committed, re-design and abortive works are inevitable if MiC is to be adopted in the middle of project delivery.

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The design input, in terms of human resources and time allocations in different stages, is fundamentally different for traditional constructions when compared with MiC. For instance, modular projects require higher upfront costs and resources and the involvement of MiC design experts in the consultant teams. Worries amongst professionals are that they will be required or expected to carry out MiC without any reasonable compensation or remuneration if generic requirements such as “pre-fabrication”, “modulation designs” have been mentioned in the consultancy agreement, even though MiC had not been explicitly mentioned.

### **Legislation**

There is room for enhancement in legislation to promote the adoption of MiC. At present, 6% of the MiC floor area will be disregarded in GFA calculation by the Buildings Department, according to PNAP APP-161. However, GFA is only part of the equation. Other legislations such as height control in Outline Zoning Plans, building setback in Sustainable Building Design Guidelines and site coverage may also limit the development potentials for projects with MiC. The combined effects of the above, in some cases, will render the maximum potential not being realized even though GFA concessions are granted. A more comprehensive review on legislations is therefore warranted, which make the implementation of the Technical Circular with immediate effect all the more hastily unthoughtful.

### **Suggestions**

To address the above, our Institute would like to make the following suggestions for your consideration:

1. Consider the adoption of wider application of pre-fabricated construction in different forms, instead of promoting MiC alone. Whilst having similar benefits of MiC, DfMA is more embracing and poses less restrictions on a lot of aspects. References can be made to Singapore’s policy that certain percentage of construction must be DfMA.
2. Review with various stakeholders on the suitability of adopting MiC in certain building types, in particular those which are not repetitive in nature, with high floor-to-floor requirements, of speculative use, of maximum future planning flexibility required, or with highly specialized facilities.
3. Establish comprehensive and clear guidelines and criteria to Government departments when exemption for not adopting MiC will be granted, instead of burning all consultants’ resources to prove the ineffectiveness. Otherwise, it is anticipated that the burden of justification will be entirely rest on consultants even though for obvious reasons.



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4. Consider carrying out a pilot project for each type of building before MiC becomes a mandatory requirement.
5. Establish clear guidelines on how additional fees are to be calculated for projects which have been commissioned before 30 March 2020 and without MiC requirements stipulated in the original consultancy agreements. The guidelines shall take into account of possible abortive works which have been incurred, additional works such as feasibility reports and any potential prolongations when compared with the original programmes without MiC. Unless the adoption of MiC is explicitly made in consultancy agreements, its adoption will be a change of scope to the professionals.
6. Review the current planning and building legislations and consider giving site coverage concessions and relax height control of MiC projects in a reasonable manner. This will no doubt give flexibility in design.
7. Consider allowing temporary storage areas for all pilot MiC projects in particular in urban sites.

We trust that the Bureau shares our concerns and would favourably consider our suggestions. If necessary, we will be glad to meet with you, your colleagues and the Steering Committee on Modular Integrated Construction to discuss and share our considerations and suggestions in greater details, so as to facilitate the Industry to embrace the use of MiC more smoothly in coming years.

Yours sincerely



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President