

Project Title: Relocatable Housing by Modular Integrated Construction

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Project Outline:

Local building industry in Hong Kong has just commenced to adopt the technology of Modular Integrated Construction (MiC), in order to meet urgent society needs and transformation of the construction industry to a modern era. One of the typical applications is the provision of social housing for youths, university students, disciplined services staff and transitional social use (e.g. Transitional Social Housing for families in distress or extended waiting list of public rental housing). In order to address to the unprecedented challenges faced by MiC during a brand new implementation in local context, this study aims at identifying key technical issues and proposing a solution in form of a versatile MiC building system prototype, with the following objectives:

- (a) To provide a series of modular housing units based on MiC which is fully relocatable, reusable and environmentally self-sustainable (with maximized optional off-grid capacity).
- (b) To provide a time and cost efficient low-rise structural and building system which is also fully relocatable, reusable with optimized life cycle costing and compliance to local building regulations.
- (c) To explore the scope of adaptable MiC modules for different user needs such as accommodation requirements (size/no. of bedrooms/bathrooms), functional configuration of compound/complex, site and terrain constraints (stacking, cascade), and other associated ancillary use of residential complex.

The study will initially review the MiC technology and its current application in Hong Kong, also taking account of present development of various on-going projects in the housing sector. Literature review on MiC and exemplary national guidelines (global) will provide a reference and basis for evaluation against local context including industry practices, manufacturing and logistics, building code compliance, etc. Collaborative focus group will be conducted with academia, industry key stakeholders, related government departments and user groups to identify key challenges and possible solutions. Value engineering assessment will be introduced to evaluate cost effectiveness of options on module sizes, layout and configuration such as no. of storeys, no. of bed accommodation, provision of communal amenities, etc. Proposed prototype will consist of modular units as well as an entire building system, from foundation to building envelope.

Expected Deliverables:

- (i) Design of MiC volumetric residential modules, of different configurations and degree of adaptability;
- (ii) Prototype design of a relocatable MiC building system, including structural (foundation and superstructure), building components (horizontal & vertical circulation, façade, roofing, amenities), essential building services and sustainable environmental systems (energy, water, thermal, septic, etc.);
- (iii) Physical presentation and working models to illustrate (i) and (ii) above;
- (iv) Prototype MiC system building cost and time program for construction planning purpose;
- (v) Knowledge Dissemination - public and industry seminars, presentation at industry conference;
- (vi) Evaluation - public and industry feedback, recommendation of way forward.