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Panel on Housing

Meeting on 6 June 2022

Background brief on Hong Kong Housing Authority's Modular Integrated Construction projects and Design and Build procurement model to expedite public housing construction

Purpose

This paper provides background information on the Hong Kong Housing Authority ("HA")'s "Modular Integrated Construction" ("MiC") projects and "Design and Build" procurement model, and a summary of relevant views and concerns expressed by members of the Panel on Housing ("the Panel") on the subject.

Background

2. As mentioned in the Chief Executive's 2021 Policy Address, the Government has identified about 350 hectares of land to produce some 330 000 public housing units for the coming 10-year period (i.e. from 2022-23 to 2031-32), and can meet the estimated public housing demand of around 301 000 units in the coming 10-year period. The estimated total public housing production of HA and the Hong Kong Housing Society ("HKHS") from 2021-22 to 2025-26 is about 106 800 units. The Government recognizes the importance of constructing more public housing units more speedily with a view to shortening the waiting time for public rental housing.

3. In this connection, HA and HKHS would adopt MiC and other innovative construction technologies more widely in building public housing estates. The application of the MiC method is site-specific. HA had selected domestic blocks at Tung Chung Area 99, Tak Tin Street, and Anderson Road Quarry Site as MiC pilot projects, so as to facilitate the mapping out of solutions for applying MiC under different site constraints.

4. HA had identified additional projects suitable for MiC application, and, by preliminary estimation, about 20 000 units could be provided upon completion. HKHS would also adopt MiC to develop a domestic block at Hung Shui Kiu. HA and HKHS would continue to select more projects suitable for MiC application as a means to drive the industry to get ready for the wider application of MiC in public housing.

5. HA would actively introduce technologies to enhance efficiency for early completion of projects. Such efforts included applying Building Information Modelling ("BIM") and other innovative technologies (such as laser scanning and unmanned aerial systems) in the planning, design and construction stages; utilizing mobile devices and mobile applications for site supervision to streamline on-site communication and workflow; and using construction robotics to address labour shortage.

6. HA would further adopt the new "Design and Build" procurement model in suitable projects whereby contractors would undertake both design and construction in a single contract. Under this model, the Housing Department ("HD") would provide the basic layouts and overall development requirements of the projects when inviting tender. The contractors would then further develop the detailed design and take charge of the construction, thereby supplementing HD's limited human resources in design work and enabling HD to focus more on planning, coordination and supervision of its public housing developments.

7. At the same time, the entire construction workflow could be further enhanced by leveraging on contractors' expertise. By carrying out design and construction works in parallel, contractors would also have greater flexibility in material procurement, construction methods and workflow. HD was currently working on the formulation of an institutional framework for the "Design and Build" procurement model and would select public housing projects suitable for adopting this model, which was expected to be rolled out in the middle of 2022.

Members' views and concerns

8. When discussing the housing-related initiatives in the Chief Executive's 2021 Policy Address in October 2021 and February 2022, members expressed concern about the long waiting time for allocation of public rental housing units and the Administration's capability in meeting its targets in public housing production. Members opined that adopting MiC in HA's public housing developments would help shorten the construction time and enquired about the progress and effectiveness of HA's application of MiC and other construction technologies in speeding up public housing production.

9. The Administration advised that HA could complete the main concrete structure of a typical floor of a public housing block in six working days. As of mid-June 2021, in addition to the first MiC pilot project at Tung Chung Area 99, there were two public housing projects which were identified as suitable for implementation of MiC, namely the public rental housing project at Tak Tin Street and subsidized sale flats project at Anderson Road Quarry Site.

10. HA also adopted other innovative technologies, including construction robotics in carrying out labour-intensive works and mobile applications to facilitate site supervisions, to streamline on-site communications and workflow in its other public housing development projects currently. HA would also adopt the "Design and Build" procurement model to suitable projects to allow contractors to undertake design and construction in a bundle, thereby releasing resources for HD to carry out preliminary design, as well as leveraging the contractors' expertise to further enhance the entire construction workflow.

11. Members noted that the Government had been applying various innovative technologies such as geographic information system, MiC, BIM in implementing public housing development projects. They enquired what other innovative and technological construction methods the Administration would adopt with a view to expediting the delivery of public housing development projects and lowering the construction cost.

12. The Administration advised that at present, HA had achieved a precast rate of 90% on plan in certain public housing projects and was able to build a typical floor with over 20 public housing units in six days. HA and HKHS would expand the application of MiC in suitable public housing development projects to reduce reliance on construction labour and lower the construction cost. In addition, the Government was encouraging construction industry to expand the application of MiC in their project implementation. HA would also actively extend the application of BIM and other innovative technologies in the planning, design and construction stages, and to improve site safety management.

Council questions

13. Questions on issues relating to the use of MiC in building projects by the Government and using smart technologies for land identification and housing production were raised at the Council meetings of 6 May 2020 and 26 January 2022, respectively. The Council questions and the Administration's replies are hyperlinked in the **Appendix**.

Latest position

14. The Administration will brief members on HA's MiC projects, Design and Build procurement and other measures to expedite public housing construction at the Panel meeting on 6 June 2022.

Relevant papers

15. A list of relevant papers is in the **Appendix**.

Council Business Division 1 and Public Complaints Office
Legislative Council Secretariat
1 June 2022

Appendix

Hong Kong Housing Authority's Modular Integrated Construction projects and Design and Build procurement method in speeding up public housing production

List of relevant papers

Committee	Date of meeting	Paper
Council	6 May 2020	Council question on "Use of the modular integrated construction method in building projects by the Government"
Panel on Housing	20 October 2021	Briefing by the Secretary for Transport and Housing on the Chief Executive's 2021 Policy Address (LC Paper No. CB(1)1400/20-21(01)) Minutes of the meeting (LC Paper No. CB(1)1499/20-21)
Council	26 January 2022	Council question on "Using smart technologies for land identification and housing production"
Panel on Housing	7 February 2022	Briefing by the Secretary for Transport and Housing on the Chief Executive's 2021 Policy Address (LC Paper No. CB(1)33/2022(01))