

Construction Industry Council

Committee on Productivity

Meeting No. 002/17 of the Committee on Productivity was held on 28 June 2017 (Wednesday) at 2:30pm at Board Room, 38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon.

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|----------------|--------------------|----------------------------------|--|
| Present: | Christopher LEUNG | (KYL) | Chairman |
| | CHAN Ka-kui | (KKCh) | Chairman, CIC |
| | WONG Sze-chun | (SCW) | |
| | Vitus NG | (VN) | for Permanent Secretary for Development (Works) |
| | Kwok-Kwan NG | (KwKN) | |
| | PAN Shujie | (PSJ) | |
| | KWAN Kai-sing | (KSKn) | for Permanent Secretary for Transport and Housing (Housing) |
| | Tommy NG | (TyN) | Association of Consulting Engineers of Hong Kong |
| | TSE Kam-leung | (TKLg) | Architectural Services Department |
| | Vincent CHEUNG | (VnC) | Hong Kong Construction Association |
| | Victor CHAN | (VCh) | Buildings Department |
| | Albert CHENG | (CTN) | Executive Director, CIC |
| | LAI Kin-pui | (KPL) | Government Seconded |
| | James WONG | (JsW) | Manager - Research & Development |
| Terry LAM | (TyLm) | Manager - Research & Development | |
| Carol DU | (CD) | Officer – Research & Development | |
| In Attendance: | Wei PAN | | (Presenter) |
| | Sam CHAN | | (Presenter) |
| | Jeff FUNG | | (Presenter) |
| | S L CHAN | | (Presenter) |
| | Ivan SHAM | | (Presenter) |
| | Victor LI | | (Presenter) |
| Apologies: | Ivan Chin-shing FU | (FI) | |
| | Ringo SHEA | (RSh) | Hong Kong Federation of Electrical and Mechanical Contractors |
| | Pauline PANG | (MTP) | Buildings Department |

PROGRESS REPORT

Action

2.1 Confirmation of Progress Report of the Previous Meeting

Members confirmed the notes of Meeting No. 001/17 for the Com-PRO (Paper CIC/PRO/R/001/17) without amendment.

2.2 Matters Arising from the Previous Meeting

For item 1.7.1: The half-day Technical Seminar entitled “Tomorrow’s Construction: Robots, Drones, and Printed Buildings” co-organised by CIC and HKUST was successfully held in the afternoon of 3 July 2017 at HKUST. Around 150 industry practitioners attended the seminar.

For item 1.7.2: The proposed R&D forum co-organised by CIC, LSCM and NAMI is scheduled to be held in Nov/Dec 2017 to tie in with the scheduled opening of CIC’s Construction Innovation and Technology Application Centre.

For item 1.7.3: The proposed delegation visit to Japan is postponed to 2018 in view of the unsatisfactory response from the Japanese counterparts and the scheduled delegation visit to Singapore in mid July 2017.

2.3 A Comprehensive Productivity Appraisal of the Hong Kong Construction Industry (Initiated by Com-PRO)

Dr Wei PAN from HKU delivered a presentation on the key findings and recommendations of the project. Subsequent to the focus group meetings in February 2017 and two international forums held in March and April 2017 respectively, HKU had submitted a final report which identified the drivers and constraints for productivity enhancement in the industry in five areas, namely policy formulation, regulatory measures, project management, design and site execution. A series of strategies and measures were proposed to enhance construction productivity in industry level e.g. increasing precast construction, promoting BIM and innovation, etc.

VN was concerned whether the proposed strategies and action plans have been fully consulted among industry stakeholders including relevant Government bureaux and departments. Dr PAN explained that the industry stakeholders have been extensively engaged through expert interviews, focus group meetings and the forums.

CTN queried the application procedure for the buildability assessment in Hong Kong. HKU suggested establishing a scoring system for tender assessment may help enhance the construction productivity as long been applied in Singapore.

Suggested by the Chairman, the Draft Final Report would be circulated to the Members for further comments. HKU is requested to address the comments raised by Committee Members accordingly.

2.4 **Achieving Productivity Leap through Construction Process Re-engineering (Initiated by Com-PRO)**

Mr. Jeff FUNG from Hong Kong Productivity Council (HKPC) reported the progress and initial recommendations generated from the project. Mr. FUNG presented the latest progress on standardisation of design to reduce the time for learning cycle, on-site automatic equipment for bar cutting, bending and fixing, systematic layout planning to reduce the idling time in the material delivery process, etc.

The Chairman suggested HKPC to conduct field trials in the CIC training centres with the help of instructors in order to quantify the effectiveness of their proposed measures. CTN agreed the suggestion. The Secretariat would follow up to liaise with the CIC training centres on the arrangement for the trial.

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Secretariat**

KKCh suggested the HKPC deliberating the proposed recommendations with relevant Trade Associations to gauge their views on the proposed productivity enhancement measures. HKPC will follow up to ensure that the recommendations will be feasible and

practical.

PSJ concerned that HKPC cannot simply apply the methodology in manufacturing to construction due to the different working condition. HKPC would take it into consideration in the Draft Final Report.

2.5 Innovative Design Technique for Steel Concrete Composite Structures in Hong Kong

Prof. SL CHAN from The Hong Kong Polytechnic University (PolyU) presented the research findings. Prof. CHAN developed a computer aided design software for steel concrete composite structure design which already obtained the pre-acceptance by Buildings Department (BD) in March 2017.

The Chairman asked whether Architecture Department (ArchSD) incorporated more composite structures which could apply the software as a trial. TKLg agreed that with the help of the software, design for the composite structures could be cost-effective and comparable to concrete structures due to the less assumptions and more user friendly than the existing practice.

The Secretariat will further promote the free design software starting from the relevant Government Departments.

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2.6 Research Proposal on Innovative backfilling materials for pavements in Hong Kong

Dr Ivan SHAM from Nano and Advanced Materials Institute (NAMI) presented a Research Proposal on a potential replacement for the traditional backfilling materials (e.g. soil) by a flowable backfilling foamed concrete with characteristics of light weight, fire resistant and sound absorption with a research duration of 20 months.

CTN requested NAMI to explain the waste treatment of the soil excavated as it may impose huge pressure on the public fill bank managed by the Civil Engineering and Development Department

(CEDD). PSJ added that the construction and demolition waste generated from the foamed concrete could create a problem more difficult than the original soil.

NAMI would further discuss with relevant Government Departments including CEDD and Highways Department (HyD) on the concerns and to address them in the revised research proposal for Members' endorsement.

2.7 **Research Proposal on A Feasibility Study of Lego-inspired Construction with Bendable Concrete**

Prof. Victor LI from University of Michigan presented a Research Proposal on an imaginative construction method inspired by “Lego” to be realized by ECC¹, which can be fully automated and reconfigurable. This is a feasibility investigation into a tailor made ECC with consideration of the design of the joints between the bricks to finally achieve a prototype which could be assembled and dis-assembled for re-use.

VCh queried whether the technical connection methods (e.g. Beam-column joints) would be similar to steel structures using bolts and nuts. Prof. LI responded a new connection methods different from traditional ones would be studied under the proposed research.

Prof. LI further stated that with quality prefabricating components in factory, Building Modelling Information (BIM) and automated construction on site could be realized to increase the productivity.

With Members' support in-principle to the proposal, the Secretariat would circulate the proposal to the Members for formal endorsement.

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¹ *Engineered Cementitious Composite, also called bendable concrete*

2.8 Progress Update of the Consultancy Studies

The Chairman briefly reported the latest status for the six Consultancy Studies initiated by the Committee. The contract document for the study entitled “*Investigating the Potential Application of 3D Printing Technology for Construction Supply Chains in Hong Kong*” is under preparation. The study is expected to commence in Q3 2017.

2.9 Report on Breakfast Roundtable Meeting (held on 31 May 2017)

A roundtable meeting was held on 31 May 2017 focusing on Prefabrication and Modular Construction with considerations in technical, commercial, political and practical aspects. A total of 13 industry practitioners joined the meeting.

The meeting started with an introduction of the purpose of the meeting by KKCh, followed by a presentation describing the status and trend of construction productivity as well as some strategies for the enhancement by the Chairman.

The views and concerns of various industry stakeholders were noted and would be conveyed to relevant parties in CIC and DEVB respectively. Pilot projects using Modular Prefinished Volumetric Construction (MPVC) would be selected under the steering of the CIC and DEVB in order to solve various issues involved, sort out the necessary logistics, gauge the approval time and cost, and assess the response from industry as well as the public.

2.10 Work Plan and Budget for 2018

Committee Secretariat presented the Com-PRO work plan for the years 2017 and 2018 and the budget allocation accordingly including on-going and proposed consultancy studies, overseas trip, seminars/forums, etc.

Taking into account the minor comments raised by the Members and the Chairman to be followed up by the Secretariat, the finalized work plan and budget would be submitted to Com-ANF in August for approval.

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2.11 **Any Other Business**

Committee Secretariat propagated and called for submission for the CIC Construction Innovation Award 2017 to be held in December 2017. Members suggested the event could be promoted in professional institutes and associations, e.g. ACEHK, to seek more applications from the industry.

2.12 **Next Meeting 003/17**

The next meeting was tentatively scheduled in September 2017. The Secretariat would inform Members when the meeting date was confirmed.

All to Note

The meeting was adjourned at 6:10 pm.