

SPEECH BY MS GRACE FU, MINISTER, PRIME MINISTER'S OFFICE, SECOND MINISTER FOR THE ENVIRONMENT AND WATER RESOURCES, AND SECOND MINISTER FOR FOREIGN AFFAIRS AT THE OPENING OF THE SINGAPORE CONSTRUCTION PRODUCTIVITY WEEK AT THE SINGAPORE EXPO MAX ATRIA ON 14 OCTOBER 2014, 9.45AM

Dr John Keung
CEO, Building and Construction Authority

Mr Chua Wee Phong
Chairman, Sphere Exhibits

Distinguished guests

Ladies and gentlemen,

1. I was here to open the inaugural Singapore Construction Productivity Week (or SCPW) in 2011 and am delighted to join you again.

Productivity growth in the construction sector

2. Since then, the Government has taken concrete steps to improve productivity in the construction sector and reduce our reliance on foreign labour. From 2010 to 2013, worksite productivity¹ had improved by about 1.2% pa. This is short of our target productivity improvement of 2 to 3% pa and we are looking for higher productivity gains in the next few years.

3. The industry has responded to our call for productivity improvement. The adoption of productive construction technologies such as drywall and system formwork has increased. This year, about half of all new residential projects adopted drywall compared to about a quarter in 2010. The adoption rate of system formwork has also increased from 25% to 65% over the same period.

4. Although growth in the construction workforce has slowed, it made up a significant proportion of foreign workforce growth last year. Hence, going forward, we need to focus on three areas to continue to transform the sector and achieve the necessary productivity improvements:

- a. Firstly, making prefabrication more prevalent;
- b. Secondly, raising the skills level to support the sector's transformation;
- c. Lastly, further integration along the construction value chain. Let me elaborate further.

Moving towards Design for Manufacturing and Assembly

5. To take prefabrication further, BCA has taken steps to maximise off-site production and assembly, and leaving minimum assembly work on site. Prefabrication enables more work to be done in a controlled factory environment, and productivity to be raised through automation and better quality control, much like in a manufacturing process. This is called

¹ Site productivity is measured as the total floor area constructed per manday

Design for Manufacturing and Assembly or DfMA for short. Starting with the developers, architects and engineers design for off-site manufacturing and on site assembly and installation.

6. Prefab volumetric building solutions enable a quantum leap in productivity. Take for example Prefabricated Pre-finished Volumetric Construction (or PPVC) and Cross Laminated Timber (or CLT). PPVC involves the assembly of whole rooms or apartment units complete with internal fixtures that are produced off-site and installed on site much like Legos. Manpower and time savings of potentially up to 50 per cent can be achieved. Likewise, CLT can achieve up to 35 per cent in terms of manpower and time savings.

7. Besides reducing time and manpower, DfMA also brings about intangible benefits such as less noise and dust generated, and better quality homes and safer workplaces. Developers like City Developments Limited (CDL), NTU and OUE are piloting the use of these technologies in their projects. I am pleased to mention here that CDL will be the first developer in Asia to introduce the PPVC method in a large-scale residential development, an Executive Condominium (EC) project at Canberra Drive. The EC, which comprises about 600 apartments in eight 10 to 12-storey blocks, will be constructed using some 3,300 room-sized units – likely the largest application of PPVC in the world.

8. To further stimulate demand for such game-changing technologies, selected Government Land Sales sites to be released later this year will require the use of such technologies. BCA will also work with public agencies to identify suitable projects to adopt game-changing technologies. In addition, BCA will assist by giving grants of up to \$5 million per application of the Productivity Improvement Project (or PIP) scheme to private sector developments for the adoption of such technologies.

9. In the next five years, we hope to build a strong lead demand by having 40 to 50 projects adopt such technologies. To kick start this transformation, I am pleased to announce that the Government will allocate an additional \$55 million to the CPCF, bringing the total funding to \$335 million.

10. We also need to build up the manufacturing capability in PPVC. BCA has been developing the multi-storey Integrated Construction and Precast Hubs or ICPHs, where automated manufacturing of construction products such as PPVC modules can be carried out. Besides the Tiong Seng Prefab Hub which is operational, two more ICPHs at Kaki Bukit will be operational by the middle of next year and 2016 respectively. BCA will be rolling out more ICPH sites for tenders at Defu Industrial Estate over the coming months. I would like to urge the industry to make full use of these opportunities to build up their capacity for prefab construction.

Building a higher quality workforce

11. Second, transformation of the current largely low-skilled and transient construction workforce into one that is higher-skilled and experienced can help in the adoption of new advanced construction technologies.

12. Skills training and upgrading your workers must be a key priority. Progressive companies such as Kim Seng Heng Engineering Construction have seen the benefits of building an experienced and skilled workforce through savings in levy and higher work efficiency. Over 55 per cent of the firm's 500-strong foreign workforce is higher-skilled. The firm tracks the job experience and performance of its workers on a monthly basis and sends

them for relevant skills certification such as BCA's CoreTrade scheme² regularly. The firm also offers higher salaries and allowances to retain their higher-skilled workers. This year, their workers will be participating in BCA's Skilled Builders Competition to display their skills in productive trades.

13. Besides workers, we will also need to constantly upgrade our workforce at the supervisory and professional levels to keep pace with technological advancements. The BCA Academy will be introducing two new courses early next year: a five-month Specialist Diploma in Construction Productivity programme and a two-month Advanced Certificate in Construction Productivity.

14. These courses, which are designed for built environment professionals including consultants and contractors, will keep participants abreast with the latest emerging game-changing technologies and trends. By January 2016, contractors registered under the BCA Contractors Registration System (CRS) are required to have at least one full-time Professional and Technical personnel complete either the Specialist Diploma programme or the Advanced Certificate course.

15. I also understand that BCA is in discussion with the industry on additional measures to help firms send more workers for training and upgrading, including funding support for training, and attracting locals to enter the workforce to lead the industry transformation. More details will be announced after BCA completes its industry consultation.

Improving integration along construction value chain

16. Lastly, we need to improve the integration of various activities along the construction value chain. Building Information Modelling, or BIM, is a key enabler in this aspect. With BIM, design conflicts can be identified and resolved before construction takes place so that unproductive and wasteful reworks on site can be avoided.

17. BIM is also helpful in realising the full potential of DfMA. The technology allows designers to introduce greater modularity to their designs so that the repeated use of standardised components increases buildability. BIM can also be used by contractors to create digital mock-ups, simulate assembly sequences, develop digital method statements and plan the capacity of hoisting equipment and site logistics. Prefabricators can use the precision of geometric data contained in BIM to aid the manufacturing process and assembly of building components on site. In the long run, manufacturers can share standard components and assembly details in the form of parametric BIM objects with designers to generate Lego-like design models. The integration of processes will greatly improve the construction process and overall constructability.

18. To encourage the use of BIM, BCA will be giving out the inaugural BIM Awards this year to recognise 11 outstanding project teams that have implemented BIM in their projects from the design to construction. The spread of award entries from residential and mixed developments, hospitals, a place of worship to sports complex reflects the extent of BIM adoption.

² The Construction Registration of Tradesmen, or CoreTrade helps to build up a core group of competent and experienced workers in key construction trades and supervisory roles to anchor and lead the construction workforce, and raise its quality and productivity levels. It allows better and more experienced workers to progress from a basic skilled worker, to a registered CoreTrade Tradesman specialising in specific trades, a registered CoreTrade Trade Foreman and eventually a CoreTrade Supervisor.

19. Indeed, I am pleased to announce that the Singapore Sports Hub has emerged the platinum award winner this year, for the adoption of BIM and the Big Room Concept where all key stakeholders were housed in the same premises to break down barriers and silos between project partners in a truly collaborative and integrated work process.

20. To promote more of such mindset change towards an integrated approach, both vertically across levels within the organisation, and horizontally across the construction value chain, BCA Academy is partnering Stanford University's Center for Integrated Facility Engineering, a leading BIM and construction management institution, to offer two training programmes, one at the leadership/CEO level and another at the middle management level.

21. The training programmes will equip the participants with the skills in the areas of Virtual Design and Construction, coupling BIM with advanced management methods. This will facilitate better understanding of the benefits of BIM, more extensive and correct application of BIM, and more effective project management.

Conclusion

22. In line with the Government's efforts to slow the growth of our foreign workforce to a more sustainable pace, the sector has to continue to restructure and transform along with the rest of the economy. Productive growth is the only way to remain globally competitive and to attract and retain more locals and skilled labour in the sector.

23. Singapore remains business-friendly, and we will help businesses to grow and succeed here, to create good jobs for Singaporeans. The Government will support the transformation of the sector through funding and by building the ecosystem and expertise needed for the widespread adoption of game-changing and productive construction technologies. I look forward to seeing the built environment sector make a quantum leap in productivity improvement in the coming years.

24. I wish everyone here a fruitful time networking, sharing and gathering experience and insights at the Singapore Construction Productivity Week. Thank you.