

# *Singapore Government*

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**SPEECH BY ASSOC PROF KOO TSAI KEE, SENIOR PARLIAMENTARY SECRETARY, MINISTRY OF NATIONAL DEVELOPMENT, AT THE OPENING OF THE SEMINAR “BREAKING OUT OF THE BOX – FLAT PLATE FOR RESIDENTIAL PROJECTS” ON WED, 27 SEP 00 AT 9.30AM, AT THE CONSTRUCTION INDUSTRY TRAINING INSTITUTE, 200 BRADDELL ROAD**

Mr Tan Kian Hoon, Deputy Chairman, BCA;

Ladies & gentlemen:

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### **Introduction**

1 I am heartened to learn that the concept of Buildable Design is gaining acceptance among practitioners. The number of participants attending Buildable Design-related seminars and training has increased considerably. The last seminar on pre-casting, I am told, received an overwhelming response. Today's seminar on Flat Plate is yet another effort by BCA to improve understanding of Buildable Design. It also provides an opportunity for members of the building and construction industry to come together, update one another and share experiences.

### **Benefits of Buildable Design**

2 The legislation on Buildable Design comes into force in a few months' time.

Although the key objective is to raise productivity at construction sites so that we do not have to rely heavily on foreign workers, Buildable Design will also have many benefits for the man-in-the-street. This has been proven in many advanced countries such as the United States, Japan, Australia and the Scandinavian nations. They have adopted many buildable features in their building designs which are widely accepted by the public. Building and home-owners in Singapore should also be made aware of these benefits.

### **Benefits of Prefabrication**

3 For instance, the Scandinavian countries, like Singapore, have an acute shortage of construction tradesmen. Yet, they are able to have buildings of high quality standards. This is mainly due to the use of a lot of precast concrete and other prefabricated building components, which is one of the main features of Buildable Design. Factory-manufactured components tend to be superior in quality as they are produced by sophisticated machines under a better-controlled environment. For example, due to a shortage of skilled plasterers, the external walls of many buildings in Singapore, whose conventional designs do not emphasise buildability, are poorly plastered. The results are especially obvious on a bright, sunny day -- unsightly façades which are uneven and wavy. Very often, plaster cracks can also be seen. Precast concrete walls, on the other hand, require only a thin skim coat to give a smooth, quality finish.

4 Prefabrication opens the door to a much wider variety of architectural finishes, compared to conventional site-cast concrete. A wide range of colours, textures and profiles can be created. In fact, the technology is available to produce precast façades that look like granite, marble and other natural stones but at a much lower cost than the original stuff.

### **Benefits of Standardisation**

5 Another feature of Buildable Design is the standardisation of the dimensions of selected building components. It is important to understand that standardisation does not mean producing standard buildings. A practical range of sizes can be introduced to allow for selection. Wisely practised, standardisation will enable suppliers to take advantage of the economies of scale to prefabricate commonly required building components at much lower costs. Home-owners can benefit from this.

6 Take the example of doors. In places like Australia and Japan, designers and homeowners can choose from a range of standard-size doors. Good quality doors are available off-the-shelf at prices which are at a big discount from custom-made

doors of odd sizes. In Singapore, HDB flat-owners are already enjoying this benefit when they renovate their homes because HDB has standardised its door sizes. However, private homeowners still have to pay up to 30 % more for their doors because of the absence of a range of standard sizes. This will change in the near future when standard sizes are recommended for doors as one of the features of Buildable Design in Singapore. Other components whose dimensions are being standardised are precast staircases, refuse chutes and civil defence household shelters.

### **Flat Plate Design**

7 Flat plate is another good design alternative to increase buildability. By minimising or eliminating the use of beams, flat-plate design gives homeowners a fuss-free, aesthetically-pleasant floor layout with its clean lines and flexibility. It offers homeowners more room to express their individuality. With ceilings that are not cluttered by unsightly overhead beams, they can change the size of the rooms and even combine multiple units into one single suite. This is possible with flat plate because partition walls can be positioned in places not possible in conventional construction.

8 With flat-plate design, it is easy to install M & E services. Due to the absence of beams, it is possible to mount pipes and cables on the underside of the slab. That means homeowners wanting to install other services later on do not have to hack through beams, making a mess and threatening structural integrity.

9 Developers will also be pleased that, with flat-plate design, they can maximise living space. A fine example of this is the Somerset Compass Project at Cairnhill Road – one of the winners of last year's BCA Best Buildable Design Awards. In the space that would normally fit 20 floors in a conventional building, a flat plate (beam-free) system has allowed the developers to slot 22 storeys. This was done within the height constraint for the location and without sacrificing the generous headroom clearance demanded by the owner. You don't need to be a genius to work out the cost efficiencies.

10 Despite the above advantages, flat-plate design, which has been used widely in commercial projects, is very seldom adopted by architects and engineers of private residential developments. Is it too difficult to apply flat-plate design to the irregular floor plan of most residential developments, or are the designers not willing to break out of the box? This seminar will provide an answer. BCA and Nanyang Technological University are helping you to break out of the box. They have been working together on a research project to come out with guidelines on

design considerations when applying the flat-plate method to irregular column layout, openings adjacent to columns and other areas not covered by the current design codes. They will share their findings with us shortly.

### **Consumer Awareness Programme**

11 BCA's programme to gear up the industry for Buildable Design is progressing well. To complement these efforts, it has also embarked on a publicity drive to make the general public aware of the changes that will come with the legislation of Buildable Design. Last week, for instance, BCA launched a series of advertorials in the print media. The objective is to acquaint home-owners and occupants with the implications of Buildable Design and how this can improve their living conditions and lifestyle.

### **Conclusion**

12 Using flat plate and other Buildable Design features in construction will add variety and vibrance to Singapore's architectural landscape.

13 Today, I am also most pleased to congratulate the Construction Industry Joint Committee (CIJC) on its signing of an MOU. The MOU formalises the co-operative framework among nine key construction-related bodies for improving the industry. The CIJC also hopes to enhance the image of the construction industry through this co-operative framework. The CIJC can play a very important leadership role in such worthwhile programmes as the promotion of Buildable Design and other Construction 21 initiatives. Indeed, the C21 report has recommended that CIJC be the lead organisation for many C21 initiatives. So far, CIJC has given strong support to BCA's efforts to prepare the industry for the legislation of Buildable Design. Five CIJC members, namely those representing REDAS, SIA, IES, SCAL and SISV, were active members of my Ministry's Buildability Implementation Committee which oversees the planning and implementation of this legislation. The Code of Practice for the legislation was finalised with much inputs from the CIJC members. The CIJC had also declared its full support for this initiative when the Code of Practice was launched earlier in April. This new partnering and integrated approach by the interested parties of the construction community augurs well for the future development of the industry.

14 On that note, let me wish you all a fruitful seminar.

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