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If you would like to share best practices and the latest technologies that could improve construction productivity, we would love to hear from you. Please email us at bca_enquiry@bca.gov.sg.

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Dear readers,

Singapore is one of the leading cities in the world today because we are constantly evolving and keeping up with the times. The built environment sector has played a vital role in the transformation of our modern city-state over the years and the way we build. Design for Manufacturing and Assembly (DfMA) is the way to go.

As part of BCA’s drive to build up the ecosystem for productive game-changing technologies, two land parcels at Yishun Avenue 4 and Jurong West Street 41 were identified to adopt Prefabricated Prefinished Volumetric Construction (PPVC) under the Government Land Sales (GLS) Programme. BCA will continue to work with URA and other relevant government agencies to identify more suitable GLS sites to adopt PPVC. Through this, we hope to fundamentally change the way we build.

The Nanyang Technological University’s (NTU) new 1,660-unit student hostel and apartment accommodation is the first public high-rise PPVC project that is designed and constructed using the Building Information Modelling (BIM). Through the use of productive technologies, the project will reap many benefits such as time savings of up to 30% to 50%, consistency in quality, safer and controlled automated processes, a more comprehensive design coordination process and more effective construction management.

Besides the adoption of productive technologies, training and deployment of workers into the right trade is essential. A survey conducted by BCA revealed that the percentage of new workers deployed in trades relevant to their skills and expertise is considerably lower for smaller firms. I encourage all firms to look into deploying the right person to the right job as it has a direct impact on your firm’s productivity. Employers can enroll their new workers to be trained in various BCA-appointed Overseas Testing Centres (OTCs) to help prepare them for their relevant jobs.

Construction demand will remain strong in the following years but with manpower supply tightening, improving productivity will help mitigate the impact. One of the initiatives under the second Construction Productivity Roadmap is the $450 million set aside for the second tranche of the Construction Productivity and Capability Fund (CPCF) in the next three years. This additional funding is expected to benefit about 7,000 firms and help drive higher productivity gains in the sector.

BCA’s efforts in the productivity journey can only bear fruits with the support of all industry stakeholders. Let us continue to work hand-in-hand to forge ahead and achieve greater productivity improvements.

Dr John Keung
Chief Executive Officer
MORE PREFABRICATED PREFINISHED VOLUMETRIC CONSTRUCTION (PPVC) PROJECTS COMING UP

Prefinished Volumetric Construction (PPVC) is an example of game-changing technologies that can help to promote off-site manufacturing for on-site assembly, or Design for Manufacturing and Assembly (DfMA). Currently, there are three ongoing projects adopting PPVC – a student hostel at Nanyang Technological University, an extension for Crowne Plaza Changi Airport Hotel and a City Developments Limited’s Executive Condominium at Canberra Drive. The PPVC modules for NTU’s student hostel and Crowne Plaza hotel are scheduled for installation in the third quarter of 2015. For CDL’s EC, the installation is estimated to commence in the fourth quarter of 2015.
As part of BCA's drive to help create lead demand to build up the ecosystem of such productive game-changing technologies, two land parcels at Yishun Avenue 4 and Jurong West Street 41 (Parcel B) were identified during the second half of 2014, to adopt PPVC under the Government Land Sales (GLS) Programme.

Both land parcels attracted a good number of tenderers. BCA will continue to work with HDB, URA and other government agencies to identify other suitable GLS sites to adopt PPVC.

For other private sector developments where the use of PPVC is not mandated, developers and builders adopting productive game-changing technologies like PPVC may apply for co-funding support through the Productivity Innovation Projects (PIP) scheme, under the Construction Productivity and Capability Fund (CPCF).

"BCA’s drive to help create lead demand to build up the ecosystem of such productive game-changing technologies"

Artist’s Impression of City Development Limited’s (CDL) Executive Condominium at Canberra Drive (Photo credit: CDL)

Nanyang Technological University’s (NTU) Student Hostel at North Hill (Photo credit: NTU)
To drive the use of game-changing technologies for higher productivity improvement, the use of Prefabricated Bathroom Units (PBUs) had been mandated for residential Government Land Sale (GLS) sites since 1 Nov 2014. PBU suppliers are required to go through the Building Innovation Panel (BIP) as well as be accredited under the PBU Manufacturer Accreditation Scheme before their PBU systems can be adopted at the mandated projects. However, various PBU systems had been adopted in private residential projects since 2005. These include PBU with metal panel walls and precast concrete PBU.

For the recommended tile replacement methods on such PBU systems, BCA has developed a video guide each which can be accessed via http://www.bca.gov.sg/BuildableDesign/pbu.html. Homeowners and renovation contractors can refer to the video guides before carrying out tile replacement works on the PBUs to avoid unnecessary damages.

**Tile Replacement for PBU Drywalls** 在石膏板墙的预制浴室单位更换瓷砖

**Step 1:**
Cut out the tile joint with electric rotary abrasive cutter or other appropriate tools
使用手持砂轮机或其他合适工具，把瓷砖间的接缝切割开

**Step 2:**
Cut grooves into the middle of the tile with electric rotary abrasive cutter and chisel out the smaller pieces
使用手持砂轮机切出槽来，接着凿下被切割成小片的瓷砖

**Step 3:**
Remove remaining cementitious adhesive using concrete grinder
使用研磨机来磨去剩余的水泥极粘胶剂

**Step 4:**
Remove excess tile grout and loose waterproofing membrane and clean the drywall surface
清除残留的碎渣和防水隔膜，接着清理干净墙板板面

**Step 5:**
Re-apply waterproofing system according to the manufacturer’s instructions and allow time to set
根据制造商的说明，重新涂抹新的防水隔膜

**Step 6:**
Fix the tile onto cleaned surface
把新瓷砖贴在清理干净的墙面上

**Step 7:**
Use appropriate plastic spacers to control the uniformity of joint width
使用瓷砖定位十字架来确保接缝的宽度一致

**Step 8:**
Remove spacers, fill in joint gaps with grout paste using soft trowel and allow time to set
取出瓷砖定位十字架，使用抹子将灌浆料填好瓷砖接缝
更换预制浴室单位的瓷砖

为了推动新科技及生产技术，从而提升生产力，自2014年11月1日起，所有在政府售地计划下的非有地住宅项目，都必须采用预制浴室单位。预制浴室单位的供应商必须通过建筑创新小组的审核，并在预制浴室制造商认证计划下获得认可，所制造的浴室才可以被该建筑项目采用。

然而，私人住宅项目自2005年开始，就采用各种不同的预制浴室单位。这包括使用石膏板墙以及使用金属板墙的预制浴室单位。建设局为了更好地示范更换瓷砖的方式，特别为这两类浴室各制作了一部短片，让屋主及装修商能在更换浴室瓷砖前了解正确的方式，以免造成不必要的损毁，日后导致漏水的情况。

公众可到以下网址http://www.bca.gov.sg/BuildableDesign/pbu.html观看短片。

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**Tile Replacement for PBU Metal Panel Walls** 在金属板墙的预制浴室单位更换瓷砖

1. 使用刮刀把瓷砖接缝处的水泥刮下
2. 轻轻敲打凹槽，然后把碎片凿下
3. 使用热空气喷枪把瓷砖后面的粘合剂融化，接着取下瓷砖，并除去粘合剂
4. 根据制造商的说明，重新涂上防腐涂料/冷镀锌漆以及防水隔膜
5. 把新瓷砖贴在清理干净的墙面上
6. 使用合适塑料垫来控制接缝宽度的一致
7. 取出瓷砖定位十字架，使用抹子将灌浆料填好瓷砖接缝
Over the recent years, BIM technology has taken the construction industry by storm. BIM use is no longer confined to just the conceptual or design phase. By using appropriate BIM tools for costing and project management before and during construction, potential benefits such as more reliable and accurate quantity-take-off and cost estimation for better informed decision making, and better controls over the management of project costs during construction could be gained.

Two companies who have used BIM for quantity surveying in their projects shared how this has benefitted them and helped them to be more efficient in performing quantities take-off and cost estimating for their projects.

**QUANTITY TAKE-OFF REDUCED BY 25%**

The contractor, China Jingye, implemented the quantity take-off software during the construction period for the Forestville project, an executive condominium housing development in Woodlands. The time taken for the quantity take-off was reduced by 25%. The quantity surveyors imported the model and integrated it with the initial take-off model into the software to automatically generate the quantities for the required elements and for procurement, project budgeting and more.

*Mr Kinson, Senior Quantity Surveyor from China Jingye*

"The system has helped us in visualising the actual elements such as rebar and mesh installation which was not possible previously. It reduces the risk of missing out on elements during the quantity take-off. It has also provided us with valuable and confident information when reporting to the management for cost analysis, progress claims, sub-contractor’s progress payments and final settlement during the construction phase."

*Mr Kinson, Senior Quantity Surveyor from China Jingye*
Ken-Pal made use of the quantity take-off software to generate the quantities and produce the necessary quantity reports during the construction stage for their public housing development project at Tampines. In some cases, when they combine the structural and architectural quantity take-off models, they also managed to find some differences between the two models e.g. location and sizes of columns differ in both models. Ken-Pal believes that using BIM helped their quantity surveyors improve their quantity take-off process and accuracy.

"The availability of 3D visualisation of the building has greatly reduced the missing out of items especially the finishes areas. It has also increased the speed in taking-off, hence, producing better cost estimates and more efficient materials procurement."

Mr Michael Tong, Quantity Surveyor, Ken-Pal (S) Pte Ltd.

Contributed by:
Mr Justin Bong, Products Manager, Glodon International Pte Ltd (Certified by buildingSMART International)
GAME-CHANGING CONSTRUCTION TECHNOLOGY WITH NEW WORK TOOLS

Building Information Modelling (BIM) for the 1st public high-rise Prefinished Prefabricated Volumetric Construction (PPVC) in Singapore

PPVC with BIM

To support the productivity of the local construction industry, the Nanyang Technological University (NTU) backed the idea of using PPVC, to construct its new 1660-unit student hostel and apartment accommodation (approx. 54,000sqm GFA). This was decided upon consideration of the probable benefits of PPVC such as time savings of up to 30%-50%, off-site fabrication and assembly in a factory environment, which reduces site labour thus ensuring consistent quality, and much safer and controlled fabrication processes automated off-site.

Working together with P&T Consultants Pte Ltd (P&T), the lead consultant and architect appointed for the project, NTU and P&T explored the feasibility of adopting PPVC technology into the new hostel development during the early stage of the project in 2013.

PPVC was adopted for the typical units of the hostel portion with its modular design and standardised dimensions. This accounted for approximately 60% of the total gross floor area. Taking into consideration key factors such as site constraints, the delivery of the PPVC modules, the client’s design brief, the project budget and timeline, the team decided right from the start to deploy BIM from design to fabrication to assembly of the PPVC modules.

Designing and constructing the PPVC modules with BIM has enabled the design coordination process to be more comprehensive and the construction management more effective. Using BIM has also reaped the following benefits:

- Improved design coordination
- Enhanced construction management
- Time savings of up to 30%-50%
- Off-site fabrication and assembly in a factory environment
- Reduced site labour
- Consistent quality
- Safer and controlled fabrication processes

BIM Modelling for Construction Planning (Photo credit: Singapore Piling & Civil Engineering Pte Ltd)

(L to R) - Lee Wah Fong (Senior Associate), Richard Soon (Director), Chung Yok May (Senior Project Construction Manager)
P&T shares some valuable learning points gleaned from integrating BIM and PPVC for the project:

- Create a library of standard “BIM Families” for the installation details of the PPVC modules
- Optimise the variable permutations by minimising the variations of the PPVC modules with standardised interfacing
- Design to be “construction-ready” particularly for fabrication, assembly, delivery and installation on-site

HS, PBU & PVC Components managed by Assemblies

MOVING AHEAD

P&T, together with the Housing Development Board (HDB), is currently designing the first public housing using PPVC. BIM is used as a design tool for integrating the various modes of construction technologies such as PPVC, prefabricated bomb shelters and prefabricated bathroom units (PBUs).

BIM would be a catalyst in facilitating the integration of different construction technologies in a single building development as it becomes an effective tool in designing and integrating prefabricated building parts with speed and accuracy.
MEASURES TO HELP WORKERS UPGRADE TO HIGHER-SKILLED (R1) STATUS TO MITIGATE INCREASING LEVY COST

Levies for Basic-skilled (R2) construction work permit holders (WPHs) will be raised in July 2016 and again in 2017. In addition, from 1 January 2017, 10% of all construction firms’ WPHs will need to be Higher-skilled R1 workers. To help firms meet this upcoming requirement, BCA is requiring relevant firms to upgrade 5% of their WPHs to R1 status in 2015 and another 5% in 2016.

Presently, employers can upgrade eligible workers to R1 status through the CoreTrade scheme, Multi-skilling scheme and Market-based skills framework. From September 2015, employers can also bring in new workers or upgrade their existing workers through the Direct R1 pathway and enjoy substantial levy savings and longer period of employment of up to 22 years for higher-skilled R1 workers.

BCA has made it easier for employers to upgrade their workers to R1 status. Employers can now secure a test date two months in advance while workers attend relevant training. Videos of trade tests offered can help employers make informed decisions to enroll workers in relevant trainings and tests. Syllabi of trade tests are available in English, Chinese, Tamil and Thai.

BCA will provide funding support through the Workforce Training & Upgrading (WTU) scheme, under the Construction Productivity and Capability Fund (CPCF). The WTU scheme co-funds the fees for training and skills certification required for CoreTrade and Multi-skilling registration. To date, BCA has received more than 60,000 applications from almost 6,000 companies under the WTU scheme. Since September 2014, locals could receive funding support more than once under the WTU. From June 2015, BCA will offer up to 90% of co-funding for the relevant training and skill certification fees for locals, and up to 40% for first-time failures of foreign personnel in 2015 and 2016.

Eligible workers who register for CoreTrade, Multi-Skilling and Direct R1 Pathways may undergo the training and skills certification at BCA Academy (BCAA) or any of the 28 Approved Training and Testing Centres (ATTCs) in Singapore.

Employers' Testimonials:

Employer’s Recognition for CoreTrade Foreman

“Mr Hemla Phikul is a Thai national who has been working with the company for 15 years. Starting his career as a general construction worker, we recognised his potential and signed him up for the Coretrade training in steel reinforcement work at Santarli ATTC. With the Coretrade foreman qualification, Hemla supervised reinforced concrete works and coordinated with the structural engineer to meet delivery timeline. We have promoted Hemla to be a site manager and raised his monthly salary to $3,500 for his good work and valuable contributions to the company.”

– Mr Tan Ah Chua, Project Director, Hak Kian Enterprise Pte Ltd

Multi-Skilled Worker Valued by Employer

“Mr Abdul Hannan Md Wadud, a Bangladesh national, is a multi-skilled worker with SEC(K) certificates in steel reinforcement work and aluminium formwork. We encourage our workers to acquire additional skill sets so that they can perform multi-tasking jobs and help raise productivity, and enable the company to meet project deadlines with fewer workers. Abdul Hannan is one such worker who has demonstrated his abilities to guide his co-workers on structural works. In recognition of his contributions, we increased his monthly wage from $900 to $1,000, as an incentive for lowering the company’s wage bill with levy savings as a higher skilled (R1) worker.”

– Ms Adeline Teo, Human Resource Officer, Santarli Construction Pte Ltd
**SHINGDA CONSTRUCTION PTE LTD**

Shingda Construction ATTC offers three CoreTrade and Multi-skilling trades – Welding, Structural Steel Fitting and Pipe Fitting. It is one of the 23 ATTCs offering the Continuing Education and Training (CET) to enable CoreTrade Foremen in these three trades to renew their CoreTrade registration. Over the past two years, Shingda has trained more than 2,500 workers.

Training is conducted on weekdays from 8am to 5pm and in the evenings from 6pm to 10pm by dedicated trainers. Classes may be held on Saturdays at the employer’s request. Languages available: English, Tamil and Bengali.

**Contact Person: Ms Kelly Chong**  
Tel: 63688936  
Address: 10 Kranji Crescent Singapore 728660  
Email: kelly_chong@shingda.com.sg  
Website: www.shingda.com

**SANTARLI CONSTRUCTION PTE LTD**

Santarli Construction is a BCA-appointed ATTC for six CoreTrade and Multi-Skilling trades - Aluminium Formwork, Steel Reinforcement, Electrical Wiring Installation, Plumbing and Pipe Fitting, Tiling and Waterproofing. It is also a CET provider for five trade categories-Reinforced Concrete Works, Electrical Works, Plumbing and Piping Works, Tiling, Stone laying and Floor Finishing Works and Waterproofing Works.

Training is conducted on weekday evenings and on Saturdays by a pool of experienced trainers. Languages available: English, Mandarin and Bengali.

**Contact Persons: Ms Jessy/Chloe/Chee Beng**  
Tel: 67556676  
Address: 531 Yishun Industrial Park A, Singapore 768739  
Email: jessy.coretrade@santarli.com/cet@santarli.com  
Website: www.coretrade.org

**Announcement on the Appointment of a New Crane ATTC**

We have appointed a new crane ATTC, P-One (S) Pte Ltd to offer the Certificate of Successful Completion (CSC) in crawler crane, mobile crane and tower crane (saddle jib).

P-One has obtained funding support from the Workforce Development Agency (WDA) for the 3 CSC crane programmes, and the course is recognised by the Ministry of Manpower (MOM) for registration as crane operators.

Look out for more details in the June publication.

**ATTCs and CET’s Providers on BCA’s webpage**  
Visit our webpage for more information about Coretrade, Multi-skilling and CET programmes:

- [Contact Details of ATTCs and BCAA](www.bca.gov.sg/CoreTrade/others/ATTCcontacts.pdf)
- [CET Providers, Course Dates & Fees](www.bca.gov.sg/CoreTrade/others/CETFees.pdf)
- [Videos of trade offered and trades in alphabetical order, offered by ATTCs](http://cmsuat.bca.gov.sg/bca/industry/training-manpower/skill-certification/videos-of-trade-tests)
THE RIGHT PERSON FOR THE RIGHT JOB

The key to productivity is training and deploying workers into the right trade, together with the use of productive technologies.

A survey conducted in September 2014 by BCA revealed that 92% of new workers in big firms are deployed in trades that are relevant and related to their skills and expertise. The figure is just 63% for smaller firms. Even though there is some improvement on the part of the smaller firms compared to a similar survey conducted in June 2013, which were 90% and 56% for the big and smaller firms respectively, there is still a need to step up bringing in new workers who have been trained and certified for the right trades.

Firms wanting to better train their workers into the right trades can look to BCA-appointed Overseas Testing Centres (OTCs) in China, India, Bangladesh, Myanmar, Thailand and Sri Lanka. These OTCs offer training and skills certification in a wide range of trades. Employers can opt for their new workers from these source countries to be trained and certified for the right trades.

For the list of SEC(K) trade tests available at BCA's appointed OTCs, please visit: http://www.bca.gov.sg/manpower/others/SECKtradetests.pdf
Workers deployed in trades relevant to their skills certification (E.g: Workers trained in tiling and are deployed in tiling works)

Workers deployed in trades related to their skills certification (E.g: Workers trained in tiling and are deployed in plastering works)

Workers deployed in trades irrelevant to their skills certification (E.g: Workers trained in tiling and are deployed in piping works)

Workers deployed in general construction works (E.g: Workers deployed in manual tasks such as transporting materials, preparation works, cleaning, etc.)

A display of productive and game-changing technologies coming your way in second half of 2015
CALL FOR NOMINATIONS

NOW OPEN
2015 BCA BIM AWARDS
PROJECT CATEGORY

About the Award
The BCA Building Information Modelling (BIM) Awards – Project Category recognises the contributions of project teams in their BIM projects implementation during the project life cycle.

Deadline
Nomination for BCA BIM Awards – project category 2015 is now open until 02 June 2015, 5.30pm
The Awards will be given out during the Singapore Construction Productivity Week in October 2015.

Guidelines
Download awards nomination forms and guidelines online:

Questions?
Please contact:
Mr Qin Hao
E-mail: Qin_Hao@bca.gov.sg
Tel: 6730 4509
Jointly organised by:

Proactive Facility Management:

**ANTICIPATE**

**PARTICIPATE**

**INNOVATE**

The event serves as a platform to engage stakeholders and advance the FM fraternity with best practices and the adoption of proven technologies and much more...

Join us at WWA 2015 (Singapore) from 3-5 August 2015 at Marina Bay Sands Singapore! Visit www.bcaa.edu.sg for more details

**STANFORD CIFE-BCA Advanced Management Program on**

**VIRTUAL DESIGN & CONSTRUCTION**

The program is designed to enable participants to optimise and obtain high value for their projects and organisation from effective use of VDC.

**PROGRAM FORMAT/DATE**

- **MODULE A:** Introductory Workshop (Singapore, 3rd week of Jun 2015)
- **MODULE B:** VDC Advanced Management Program (Stanford University, USA, 9-16 Jul 2015)
- **MODULE C:** Practicum - 6 sessions over 6 month (Singapore, in consultation with VDC experts, starting in Aug 2015)
- **MODULE D:** Integration Experience Workshop (Singapore, Mar 2016)

Visit www.bcaa.edu.sg for more details
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<th>Date/Time</th>
<th>Event Name</th>
<th>Venue / Organiser</th>
<th>Contact Person &amp; Details</th>
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<tr>
<td>9 Jun 2015</td>
<td>Good Industry Practices (Timber Doors, Wardrobe &amp; Kitchen Cabinet) (5th Run)</td>
<td>BCA Academy 200 Braddell Road Singapore 579700</td>
<td>Marketing &amp; Business Development Unit 6730 4503 / 6248 9824  <a href="mailto:bca_academy@bca.gov.sg">bca_academy@bca.gov.sg</a></td>
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<tr>
<td>11 Jun 2015</td>
<td>Requirements for Environmental Sustainability Standards for Existing Buildings &amp; Periodic Energy Audit (4th Run)</td>
<td></td>
<td>Name: Mr Harry Chua Tel: 6278 9577 Email: <a href="mailto:harry@scal.com.sg">harry@scal.com.sg</a></td>
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<td>12 Jun 2015</td>
<td>BCA – SCAL Productivity Clinic</td>
<td>Singapore Contractors Association Limited (SCAL) Construction House, 1 Bukit Merah Lane 2, Singapore 159760</td>
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<td>10 July 2015</td>
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<td>BCA – SCAL Productivity Clinic</td>
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<td>17 Jun 2015</td>
<td>Basic Concept in Construction Productivity Enhancement</td>
<td>BCA Academy 200 Braddell Road Singapore 579700</td>
<td>Marketing &amp; Business Development Unit 6730 4503 / 6248 9824  <a href="mailto:bca_academy@bca.gov.sg">bca_academy@bca.gov.sg</a></td>
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<td>15 – 16 Jun 2015</td>
<td>Workshop on Protection against Lightning for Buildings (10th Run)</td>
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<td>17 – 19 Jun 2015</td>
<td>Course on Project Management (14th Run)</td>
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<td>18 Jun 2015</td>
<td>Contract Drafting - The Technicalities and Legalities (20th Run)</td>
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<td>22 – 23 Jun 2015</td>
<td>Design of Steel-Concrete Composite Buildings using Eurocode 4 (5th Run)</td>
<td>BCA Academy 200 Braddell Road Singapore 579700</td>
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<tr>
<td>24 – 26 Jun 2015</td>
<td>Certified QM/CONQUAS Managers Course (44th Run)</td>
<td>BCA Academy 200 Braddell Road Singapore 579700</td>
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<td>29 Jun, 2 &amp; 6 Jul 2015</td>
<td>Workshop on Site Management of Precast Concrete Construction (17th Run)</td>
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<td>Starting from 7 Jul 2015  (5 Months Part-Time)</td>
<td>Specialist Diploma in Construction Productivity (3rd Run)</td>
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<td>Starting from 7 Jul 2015  (15 evenings)</td>
<td>Advanced Certificate in Construction Productivity (3rd Run)</td>
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<td>Starting from 13 Jul 2015 (12 evenings)</td>
<td>Certificate in Construction Productivity (16th Run)</td>
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<td>20 &amp; 21 Jul 2015</td>
<td>Certificate in Concrete Technology</td>
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<td>27 &amp; 28 Jul 2015</td>
<td>Universal Design Conference &amp; Workshop - Shaping an Age-Friendly Built Environment</td>
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<td>3 - 5 Aug 2015</td>
<td>World Workplace Asia 2015 (Singapore) Conference, exhibition, Networking, Site visits</td>
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<td>28 Aug – 7 Nov 2015 (12 days)</td>
<td>BCA-SMU Advanced Management Programme on Productivity and Leadership Development (6th Intake)</td>
<td>SMU School of Social Sciences Building 90 Stamford Road BCA-SMU</td>
<td>Mr Tan Kim Guan / Ms Serene Chua Tel: 68281966 / 68085361 email: <a href="mailto:kgtan@smu.edu.sg">kgtan@smu.edu.sg</a> / <a href="mailto:serenechua@smu.edu.sg">serenechua@smu.edu.sg</a></td>
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<td>Starting in late June 2015 (Full-time)</td>
<td>Bachelor of Construction Management (Building) FULL TIME (5th Intake) (awarded by The University of Newcastle, Australia)</td>
<td>BCA Academy 200 Braddell Road Singapore 579700 BCA - University of Newcastle</td>
<td>Ms Nurhadhinah / Ms Zhuo Xiuyun Tel: 6730 4503 / 6248 9881 Email: <a href="mailto:nurhadhinah_osman@bca.gov.sg">nurhadhinah_osman@bca.gov.sg</a> or <a href="mailto:zhuo_xiuyun@bca.gov.sg">zhuo_xiuyun@bca.gov.sg</a></td>
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> Certificate Course for Structural Steel Supervisors
> NBQ in Project Supervision
> Higher NBQ in Project Supervision
> Advanced NBQ in Project Supervision
> NBQ in Supervision and Coordination of M&E Works
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> Reinforced Concrete Supervision
> Plumbing Technology
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Certificate courses (Tradesmen / Foremen)
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FOR ENQUIRIES, PLEASE CONTACT:

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