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

Written permission must be obtained from BCA to reproduce any part of Build Smart.
Dear reader,

May was a busy month for us at the Building and Construction Authority (BCA). We held two major events during this period – the Singapore Construction Productivity Week (SCPW) and the BCA Awards.

A key highlight of this year’s SCPW was the launch of SCPW 2012 and the opening of Singapore’s first Integrated Construction Precast Hub (ICPH) – the Tiong Seng Prefab Hub – by Deputy Prime Minister Tharman Shanmugaratnam. The hub is the first facility of its kind to receive a S$1 million funding under BCA’s Construction Productivity and Capability Fund, which comprises incentive schemes that focus on workforce development, technology adoption and capability development in Singapore’s built environment.

Besides housing the automated production and storage of precast concrete components, the Prefab Hub would be used for other suitable construction-related activities, such as prefabrication of components, storage and maintenance of formwork, storage and maintenance of construction plant, equipment and machinery, as well as foreign workers’ dormitory. Besides helping to raise construction productivity, it will also raise land productivity.

We have formulated a master plan to roll out more of such ICPHs in the next few years to enhance the capabilities and efficiency of our local precast production and optimise the use of land. In fact, a tender to develop the next ICPH in Kaki Bukit was launched recently.

In recognition of outstanding firms and industry practitioners that go the extra mile to achieve productivity at the firm and project levels, 30 Construction Productivity Awards were given out at this year’s BCA Awards. It is essential that firms take a long term approach towards productivity, especially in the current uncertain economic climate. We encourage companies to learn from the winning firms and hope that they will inspire others to move ahead in their own productivity journeys.

When it comes to productivity, all hands are needed on deck. Everyone along the construction value chain has to work together, be it BCA, the contractors, subcontractors, developers, designers or suppliers. We also need committed and competent professionals on the ground to lead the productivity improvements. Hence, BCA recently introduced a new scheme to train and certify construction productivity professionals. These certified professionals will be equipped with the knowledge and skills to plan, co-ordinate and implement actionable productivity improvement measures in their various projects.

Only when everyone is on board, can we then move the whole industry forward on its productivity journey. Henry Ford once said, “If everyone is moving forward together, then success takes care of itself.” Don’t you agree?

Dr John Keung
Chief Executive Officer
MECHC FOR SMEs

A Better Way for Basement Excavation

Recognising the various manpower-tightening measures, Soon Li Heng Civil Engineering Pte Ltd is constantly thinking of new ways to reduce its reliance on manpower and increase its productivity. It actively sources for overseas equipment to help achieve this objective.

A small- and medium-sized enterprise (SME), Soon Li Heng Civil Engineering specialises in generalised earthwork and deep basement excavation for building and civil engineering projects. With the help of the Building and Construction Authority’s (BCA) Mechanisation Credit (MechC) scheme, it bought two hydraulic telescopic clamshells to improve its deep excavation process.

Compared to the conventional method of using excavators, the new equipment can reach a far greater depth. This results in significant productivity gains by reducing the number of excavators and workers by half.

“Although not all construction work can be substituted by machinery, a degree of mechanisation can reduce manpower in the long-run,” said Mr Ong Jun Quan, Engineer.

“Employing skilled workers is hard. Retaining them is even harder. It’s essential for us to leverage on the MechC scheme and identify new ways of raising productivity,” added Mr Ong.

Mr Ong said he was impressed with the time taken to process the MechC application. He was also pleased with the assistance rendered by BCA’s MechC account manager.

Soon Li Heng Civil Engineering Pte Ltd

<table>
<thead>
<tr>
<th>Business:</th>
<th>Building construction and civil engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment purchased with MechC:</td>
<td>2 hydraulic telescopic clamshells</td>
</tr>
<tr>
<td>Benefits:</td>
<td>Reduced manpower</td>
</tr>
<tr>
<td></td>
<td>Increased productivity</td>
</tr>
<tr>
<td></td>
<td>Provided cost-effective solutions</td>
</tr>
<tr>
<td></td>
<td>Improved occupational health and safety</td>
</tr>
</tbody>
</table>

Mr Ong Jun Quan, Engineer

Two case studies reveal how local firms can improve their productivity with MechC

The hydraulic telescopic clamshell is able to reach a greater depth, hence eliminating the need for multiple transfers of excavated materials and reducing manpower needed on site.
Cutting Steel Plates with Less Manpower

Sterling Engineering Pte Ltd used to require two workers to cut steel plates. Using oxy-fuel gas cutters, the process was often slow. When the steel plates were finally cut, the workers also had to grind the edges of the plates until they were smooth.

Now, that is a thing of the past. With assistance from MechC, the company purchased a hydraulic shearing machine that only requires one worker to carry out the cutting process. There is also no longer a need to grind the edges as the equipment delivers accurately-cut steel plates.

“My staff are very important assets of Sterling. I personally make sure they upgrade themselves constantly and I set an example by attending the courses too,” said Mr Sim.

He also shared that the Workforce Training and Upgrading scheme under BCA’s Construction Productivity and Capability Fund helped the company defray the cost of training and upgrading its staff.

“The hydraulic shearing machine speeds up the cutting of steel plates and reduces the manpower required. It also produces better quality finishes and improves safety.”

Sterling Engineering Pte Ltd

<table>
<thead>
<tr>
<th>Business:</th>
<th>Specialist in structural steel engineering solutions</th>
</tr>
</thead>
</table>
| Equipment purchased with MechC: | 1 hydraulic shearing machine  
1 CNC plasma-cutting machine |
| Benefits: | Reduced manpower  
Increased productivity  
Improved quality  
Improved occupational health and safety  
Improved cost savings |
两项个案凸现本地公司如何通过机械化奖励计划（MechC）提高生产力

通过更好的方式进行挖掘工程

顺利兴土木工程有限公司意识到各种人力紧缩措施所导致的限制，因此不断地思考减少人工及提升生产力的新方法。公司也努力地寻求海外器材以达到目的。

顺利兴土木工程是一家中小型企业，其专长是为建筑及土木工程项目进行土木及深层地下挖掘工程。通过建设局机械化奖励计划的援助，顺利兴土木工程一共采购两台液压伸缩式翻盖，以改善深层挖掘的过程。

与利用挖掘机的常规方式相比，液压伸缩式翻盖可延伸至更深层的深处，因此能将所需要的挖掘机及员工减少一半，从中大量提升生产力。

工程师王俊权先生指出：“虽然不是所有工程都能由机器来代劳，但某种程度的机械化能够减少人工。聘请技术员工困难，挽留他们更困难。我们有必要通过机械化奖励计划，寻找提高生产力的新方式。”

王先生对建设局办理顺利兴土木工程机械化奖励计划的时间表示赞赏。他也对建设局机械化奖励计划账户经理的协助感到满意。


顺 利 兴 土 木 工 程 有 限 公 司

生意范围:
> 建筑及土木工程

通过机械使用奖励计划采购的器材:
> 两台液压伸缩式翻盖

效益:
> 减少人工
> 提高生产力
> 提供具有成本效益的解决方案
> 提升职业安全与卫生

王俊权先生，工程师
以更少的人工切割钢板

以往，Sterling Engineering Pte Ltd 运用需要两名员工来切割钢板。他们必须利用氧燃料气切割器，过程十分缓慢。当钢板被切割后，员工还得研磨钢板的边缘，直到平滑为止。

通过机械化奖励计划的援助，公司采购了一台液压剪板机。新的器材仅需一名员工来操控切割过程。此外，员工再也不必研磨钢板的边缘，因为器材能准确地切割钢板。

Sterling Engineering 业务发展经理沈绥航先生表示：“工作过程机械化可帮助我们减少并优化人工资源。快速及简单的机械化奖励计划申请过程已帮助我们的公司成长并保持竞争能力。"

公司常务董事沈沛岏先生另外也坚信，公司的员工必须提升技能。他时常会敦促员工参与由建设局专业学院及新加坡钢结构协会所办的课程。他也透露，建设局建筑生产力与产能基金的人力培训及提升计划帮助公司抵消了员工培训及技能提升的部分成本。沈先生也说：“我的员工是 Sterling 重要的资产。我会亲自确保他们都不断地提升自己。我自己也会参与课程，树立好榜样。”

Sterling Engineering Pte Ltd

生意范围：

> 钢结构工程
通过机械使用

> 一台液压剪板机
奖励计划采购的器材：

> 一台数控离子切割机

效益：

> 减少人工
> 提高生产力
> 质量提高
> 提升职业安全与卫生
Noisy, messy and labourious. These describe the conventional method of hacking pile heads. In this process, mechanical equipment such as the hydraulic breaker, excavator and air compressor are used to break the bond between the concrete and the steel reinforcement bars. The concrete is then chopped into small debris for removal. The whole process is time-consuming and labour-intensive.

HSL Ground Engineering, which often seeks innovative ways of construction, was determined to explore new pile head removal methods with support from the Building and Construction Authority’s (BCA) Productivity Improvement Project Scheme (PIP). PIP encourages contractors and prefabricators to embark on development projects that build up their capabilities and improve their processes for better productivity on site.

The collaboration paid off. A successful new hacking method was devised. The method involves the use of circular polystyrene foams. Before casting, HSL Ground Engineering installed the foams around the steel reinforcement bars to debond the bars from the concrete mass. Special moulds had been manufactured to produce the debonding material – an important step to ensure that the debonding material could be accurately placed around the reinforcement bars.

A crack was then induced at the cut-off level of the pile head. This allowed the mass of concrete above the cut-off level to be separated, which led to its easy removal in one piece to be lifted away.

The unique hacking method yielded several advantages. It sped up the hacking process, which enhanced the company’s project productivity. There was also a significant reduction of noise on site and no debris was produced during hacking.
INDUCING THE CRACK

The crack at the cut-off level of the pile head was induced through two methods:

1. **Wedge Method**

Wedges were driven into the pile head at the cut-off level by manual means to produce a crack.

2. **Hydraulic Jack Method**

To further improve productivity, hydraulic jacks were also used to induce the crack at the pile head.

During the implementation of the new hacking system, HSL Ground Engineering introduced another method to crack the pile head at the cut-off level. It embedded a chemical cutter around the reinforcement bar. This chemical would react with the concrete and subsequently induce a crack automatically at the cut-off level. The pile head was then easily lifted using a crane or an excavator.

HSL Ground Engineering is known for innovation and exploring new building methods. This time, the company has introduced a new way to remove the pile head at the cut-off level. It involved pouring circular polyurethane foam around the reinforcement bars. Before casting, the employees would ensure that the pieces of foam were accurately placed around the reinforcement bars. This technique resulted in a crack being formed at the cut-off level, allowing the pile head to be easily removed using a crane or excavator.

Easy removal of whole pile head without the need for hacking.

<table>
<thead>
<tr>
<th>打造裂缝</th>
</tr>
</thead>
<tbody>
<tr>
<td>在桩头的切除处打造裂纹有两种方式：</td>
</tr>
<tr>
<td>1. <strong>利用楔块</strong></td>
</tr>
<tr>
<td>通过人工方式将楔块注在桩头的切 除处来打造裂缝。</td>
</tr>
<tr>
<td>2. <strong>利用液压千斤顶</strong></td>
</tr>
<tr>
<td>为了再提升生产力，可利用液压千斤顶在桩头打造裂缝。</td>
</tr>
</tbody>
</table>

在实行新敲击系统的同时，HSL Ground Engineering也推行另一种方式在桩头的切除处打造裂纹。员工将化学切割剂注入钢筋条。化学物将与混凝土产生化学作用, 自动地在切除处打造出裂缝。接着，员工便可用起重机或挖掘机将桩头轻易地拾走。

这独特的敲击方式具有几个优点。它加快敲击过程, 因而提升公司的工程生产力。此外，此敲击方式所发出的噪音大大减少, 也不会产生任何瓦砾。
First held in April last year, the Singapore Construction Productivity Week (SCPW) returned in an even bigger way this year. The annual productivity mega-event of the industry, which took place from 14 to 18 May 2012, saw 5,500 participants.

Riding on the strong productivity wave and to create greater awareness on productivity, SCPW 2012 featured events tailored to excite and inspire industry firms and its workforce to play an active part in raising their productivity and capability.

The Week began with a convening of the second International Panel of Experts (IPE) on Construction Productivity and Prefabrication Technology. Experts reviewed Singapore’s initiatives on raising construction productivity. They also explored what more could be done.

The Singapore Construction Productivity Week 2012 returns with a bang
"The initiatives introduced by the Building and Construction Authority (BCA) are commendable," said panel expert Professor Jan N. J. A. Vambersky from the Netherlands. "For example, the Buildable Design Score and Constructability Score are excellent measures in improving site productivity. Many countries, including the Netherlands, can learn a lot from Singapore," he said.

Another key component of the Week is the BuildTech Asia exhibition, which was opened by Minister for National Development Khaw Boon Wan. The exhibition showcased the latest products from 69 exhibitors and attracted 4,300 trade visitors.

At the event, Minister Khaw flagged off the Skilled Builders Competition (see page 10), where tradesmen from various firms and teams pitted their skills against each other to produce accurate and high quality work within a designated timeframe. The 48-hour Building and Information Modelling (BIM) Competition also saw an overwhelming response of more than 300 participants – triple the participation rate of last year’s inaugural competition. This signifies the industry’s readiness in adopting BIM technology to improve productivity.

The launch of the Tiong Seng Prefab Hub was officiated by Deputy Prime Minister Tharman Shanmugaratnam (see page 12). The S$36 million project is the first integrated construction precast hub in Singapore. It features a more productive way of producing precast concrete elements.

The Week also featured the two-day Build Smart Conference, where experts shared best practices and showcased exemplary projects that had successfully adopted productive processes and methods of construction, BIM and other information and communication technologies. Close to 800 industry professionals attended it.

"BCA is set on helping small and medium enterprises and sub-contractors get started on and sustain this productivity drive, as there is no turning back to the old ways of doing construction. Our Construction Productivity Centre was established specifically for this purpose – to reach out to construction firms, both big and small, on all fronts. It’s now time for companies to take charge and come on board with us through this productivity journey," commented Dr John Keung, BCA’s CEO, at the Build Smart conference.
BUILDING CHAMPIONS

BCA honours exceptional builders in the construction industry

The Skilled Builders Competition and the Building Information Modelling (BIM) Competition were held from 14 to 15 May as part of the annual Singapore Construction Productivity Week to recognise innovative builders in the industry. The Building and Construction Authority (BCA) would like to congratulate all winners for their exceptional contributions to the industry!

THE SKILLED BUILDERS COMPETITION

A total of 24 companies nominated 60 of their best teams to pit against each other in several categories under the Skilled Builders Competition. These categories included Mobile Aerial Platform Operations, System Formwork Installation, Drywall Installation, Plumbing & Sanitary and Architecture Finishings. After two days of intensive competition, Lian Beng Construction emerged as the winner.

Winners of the 2012 Skilled Builders Competition

<table>
<thead>
<tr>
<th>Skilled Builders Competition Event</th>
<th>Overall Champion</th>
<th>WINNER: Lian Beng Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Formwork Installation</td>
<td>WINNER: Lian Beng Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1ST RUNNER-UP: Sembcorp Construction</td>
<td></td>
</tr>
<tr>
<td>Plumbing &amp; Sanitary</td>
<td>WINNER: China Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1ST RUNNER-UP: Saangyong Construction</td>
<td></td>
</tr>
<tr>
<td>Mobile Aerial Platform Operations</td>
<td>WINNER: Lian Beng Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1ST RUNNER-UP: Woh Hup</td>
<td></td>
</tr>
</tbody>
</table>

From left: Sphere Exhibits’ Executive Director Chua Wee Phong, BCA’s Group Director of Technology Development Tan Tian Chong, BCA’s Deputy Chairman Lee Chuan Seng, Minister for National Development Khaw Boon Wan and BCA’s Chief Executive Officer John Keung.
THE BIM COMPETITION

The 48-hour virtual BIM Competition received an overwhelming response this year with 330 participants. Up to 44 teams from over 30 firms, associations and Institutes of Higher Learning registered for the competition held from 8 to 10 May 2012. This spoke volumes about how the industry has been using BIM technology to improve productivity.

WINNERS OF THE 2012 BIM COMPETITION

<table>
<thead>
<tr>
<th>INDUSTRY – Architecture Category</th>
<th>WINNER: Information RSP Architects Planners &amp; Engineers (Pte) Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st RUNNER-UP:</td>
<td>DPA-Team SSH DP Architects Pte Ltd</td>
</tr>
<tr>
<td>2nd RUNNER-UP:</td>
<td>DCA Architects DCA Architects Pte Ltd</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRY – Engineering Category</th>
<th>WINNER: SS Team 2 Samsung C &amp; T Corporation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INDUSTRY – Multidisciplinary Collaboration Category</th>
<th>WINNER: HumanDynamics CPG Consultants Pte Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st RUNNER-UP:</td>
<td>INNO-BIM Team 2 (WH) Woh Hup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRY – Construction, Quantity Surveying, Facilities Management &amp; Project Management Category</th>
<th>WINNER: INNO-BIM Team 1 (WH) Woh Hup</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>EDUCATION – Architecture Category</th>
<th>WINNER: DesignREarm National University of Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st RUNNER-UP:</td>
<td>BIMPact Singapore Polytechnic</td>
</tr>
<tr>
<td>2nd RUNNER-UP:</td>
<td>Archi Monkeys Singapore Polytechnic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EDUCATION – Engineering Category</th>
<th>WINNER: Winner 2012 National University of Singapore</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>EDUCATION – Multidisciplinary Collaboration Category</th>
<th>WINNER: SDE BIMmers National University of Singapore</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BEST TEAM FOR THE INNOVATIVE USE OF BIM</th>
<th>WINNER: HumanDynamics CPG Consultants Pte Ltd</th>
</tr>
</thead>
</table>

| BEST TEAM TO USE BIM FOR SUSTAINABLE DESIGN | WINNER: | DPA-Team SSH DP Architects Pte Ltd |
| --- | --- | SPECIAL MENTION: BIMPact Singapore Polytechnic |

| BEST TEAM TO USE BIM FOR BUILDABLE DESIGN | WINNER: | INNO-BIM Team 1 (WH) Woh Hup |
| --- | --- | |

| BEST TEAM TO USE BIM FOR PUBLICATION & PRESENTATION | WINNER: | Information RSP Architects Planners & Engineers (Pte) Ltd |
| --- | --- | |

"The BIM competition has achieved so much more than just the learning and camaraderie formed. It has succeeded, within 48 hours, to raise the level of competency of the industry in a way that no other initiative or mandate could have done in such a short time."

Ms Vivien Heng
Director
RSP Architects Planners & Engineers (Pte) Ltd

02: Winning team of the Education – Multidisciplinary Collaboration Category.
Deputy Prime Minister and Minister for Finance Tharman Shanmugaratnam officially launched the Singapore Construction Productivity Week and opened Singapore’s first Integrated Construction Prefab Hub on 16 May 2012. The Tiong Seng Prefab Hub is the first facility of its kind to receive a S$1 million funding from the Construction Productivity and Capability Fund administered by the Building and Construction Authority. Here are highlights from the opening.

From left: BCA’s Deputy Chairman Lee Chuan Seng, DPM Tharman Shanmugaratnam, Tiong Seng’s Chief Executive Officer Pek Lian Guan and BCA’s Chief Executive Officer John Keung jointly open the Tiong Seng Prefab Hub.

Deputy Prime Minister and Minister for Finance Tharman Shanmugaratnam tries his hand at various precast-related material.
BENEFITS OF THE TIONG SENG PREFAB HUB

> **Safer Environment**

The Tiong SengPrefab Hub introduced automated and mechanised production of prefab building components to the local construction industry. With the automated production line, thePrefab Hub is capable of around-the-clock operations under quieter, cleaner and sheltered conditions.

> **Manpower Savings and Increased Productivity**

With automation,Tiong Seng has reduced manpower needs by up to 70%, requiring only a third of the workers to produce double the volume of precast components. Running the factory for 24 hours a day can produce enough parts for 5,000 Housing and Development Board flats. ThePrefab Hub helps build more flats quickly with better finishes.

> **Enhanced Resource Management**

ThePrefab Hub is a multi-purpose facility. It houses the automated precast plant and contains space for the building of prefabricated bathroom units and the pre-assembling, storing and maintaining of advanced formwork systems. It also has a training centre, a Building Information Modelling (BIM) Centre and a workers’ dormitory. The co-existence of these related activities under one roof makes managing resources easier while improving land productivity.

OTHER FEATURES OF THE TIONG SENG PREFAB HUB

> A training centre and a Building Information Modelling (BIM) Centre.

> A workers’ dormitory located on the roof and a small plot of land for the workers to grow their own crops just outside the dormitory.

> Green building features include an eco- façade for the office block incorporating a green wall and monsoon windows to improve air ventilation.

The Tiong Seng Prefab Hub also assembles prefab bathrooms. The construction of a traditional bathroom is labour-intensive and involves multiple building trades such as waterproofing, finishes, accessories, sanitary wares, plumbing systems and M&E installation. Prefabrication helps to eliminate the challenge of having several workers toiling inside a small space at any one time on site.
A total of 30 awards were given out to firms that have demonstrated a productivity mindset. They were conferred the Building and Construction Authority’s (BCA) Construction Productivity Awards (CPA) at a ceremony on 24 May 2012 at Resorts World Sentosa.

This year marks the second year of CPA. More than 2,200 guests attended the event, which was graced by Guest-of-Honour President Tony Tan Keng Yam and Minister of State for Trade and Industry and National Development Lee Yi Shyan.

CPA recognises outstanding firms and industry practitioners that go the extra mile to achieve productivity at the firm and project levels. The Award also promotes productivity in the industry and serves as a platform to measure the productivity movement.

**RECOGNISING SINGAPORE’S PRODUCTIVITY CHAMPIONS**

Winning companies of BCA’s Construction Productivity Awards 2012

**WINNERS OF THE BCA CONSTRUCTION PRODUCTIVITY AWARD (CPA) 2012**

**CPA - Best Practices and Innovations**

<table>
<thead>
<tr>
<th>Company</th>
<th>Project Title</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbeit Sicher Pte Ltd</td>
<td>CLUMB12 methodology</td>
<td>Platinum</td>
</tr>
<tr>
<td>Ssangyong Engineering &amp; Construction Co., Ltd.</td>
<td>Innovation on structural stability for sloping RC structure</td>
<td>Platinum</td>
</tr>
<tr>
<td>Swee Hong Engineering Construction Pte Ltd</td>
<td>Auto safety shackles</td>
<td>Platinum</td>
</tr>
<tr>
<td>Fujitec Singapore Corporation Ltd</td>
<td>Re-engineering of lift installation using moving platform installation system</td>
<td>Gold</td>
</tr>
<tr>
<td>Ginlee Construction Pte Ltd</td>
<td>Facilitating productive and controlled demolition works</td>
<td>Gold</td>
</tr>
<tr>
<td>SG Concept Pte Ltd</td>
<td>Re-engineer conventional RC construction using hybrid light gauge steel frame for landed house</td>
<td>Gold</td>
</tr>
<tr>
<td>SH Design &amp; Build Pte Ltd</td>
<td>Re-engineering of installation method of precast concrete wall panel system</td>
<td>Gold</td>
</tr>
<tr>
<td>Ssangyong Engineering &amp; Construction Co., Ltd &amp; PQ Builders Pte Ltd (joint submission)</td>
<td>Innovation on Restrain and Guide Cable System (RGCS) for access to overhanging and slanting gable end wall</td>
<td>Gold</td>
</tr>
<tr>
<td>Swee Hong Engineering Construction Pte Ltd</td>
<td>iPhone application for construction</td>
<td>Gold</td>
</tr>
<tr>
<td>Swee Hong Engineering Construction Pte Ltd</td>
<td>3D visualisations and integrated BIM process</td>
<td>Gold</td>
</tr>
<tr>
<td>Yau Lee Construction (Singapore) Pte Ltd</td>
<td>Construction cycle planning with enhanced installation method for precast components and application of large panel formwork</td>
<td>Gold</td>
</tr>
<tr>
<td>Yau Lee Construction (Singapore) Pte Ltd</td>
<td>ViSmartTM – An integrated system for Construction Management and Productivity Analysis using Biometric Attendance</td>
<td>Gold</td>
</tr>
<tr>
<td>Yee Hong Pte Ltd</td>
<td>Development of customised telescopic handler attachments to assist in the precast concrete components installation within building floor</td>
<td>Gold</td>
</tr>
</tbody>
</table>

**CPA – Projects**

<table>
<thead>
<tr>
<th>Company</th>
<th>Type of Development</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelford Suites</td>
<td>Residential Non-Landed &lt; 25,000 m²</td>
<td>Platinum</td>
</tr>
<tr>
<td>Wilkie Studio</td>
<td>Residential Non-Landed &lt; 25,000 m²</td>
<td>Platinum</td>
</tr>
<tr>
<td>Oliveden At Grange</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Platinum</td>
</tr>
<tr>
<td>The Residences at W Singapore Sentosa Cove</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Platinum</td>
</tr>
<tr>
<td>Punggol Waterway Part 1</td>
<td>Civil Engineering</td>
<td>Platinum</td>
</tr>
<tr>
<td>City View @ Boon Keng</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Gold</td>
</tr>
<tr>
<td>One Sheraton</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Gold</td>
</tr>
<tr>
<td>Queenstown RC21</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Gold</td>
</tr>
<tr>
<td>Sengkang N4 C16</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Gold</td>
</tr>
<tr>
<td>Trevista</td>
<td>Residential Non-Landed &gt; 25,000 m²</td>
<td>Gold</td>
</tr>
</tbody>
</table>

**CPA – Value-Added Productivity**

<table>
<thead>
<tr>
<th>Company</th>
<th>Award Category</th>
<th>Type of Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>GreatEarth Construction Pte Ltd</td>
<td>Category 1 (Turnover ≥ S$100 million)</td>
<td>Best VAP Builder Award &amp; Best VAP Improvement Builder Award</td>
</tr>
<tr>
<td>Straits Construction Singapore Pte Ltd</td>
<td>Category 1 (Turnover ≥ S$100 million)</td>
<td>Best VAP Builder Award</td>
</tr>
<tr>
<td>Chye Joo Construction Pte Ltd</td>
<td>Category 2 (Turnover &lt; S$100 million)</td>
<td>Best VAP Builder Award</td>
</tr>
<tr>
<td>Santari Construction Pte Ltd</td>
<td>Category 2 (Turnover &lt; S$100 million)</td>
<td>Best VAP Builder Award</td>
</tr>
<tr>
<td>Unison Construction Pte Ltd</td>
<td>Category 2 (Turnover &lt; S$100 million)</td>
<td>Best VAP Builder Award</td>
</tr>
<tr>
<td>Guan Ho Construction Co. Pte Ltd</td>
<td>Category 2 (Turnover &lt; S$100 million)</td>
<td>Best VAP Improvement Builder Award</td>
</tr>
</tbody>
</table>

Dr John Keung, Chief Executive Officer, BCA, said: “It’s essential that firms take a long-term approach towards productivity, especially in the current uncertain economic climate. We encourage companies to learn from the winning firms and hope that more will step forward to begin their productivity journey.”
Walk past any construction site in Singapore and messages on “zero accidents” are a common sight. With few accidents, work can be completed on time with higher productivity. More importantly, employers and employees would be more confident in a safe working environment. Working in a safe and healthy environment yields many benefits.

These were some of the key messages presented by international and local experts at the Workplace Safety and Health (WSH) Conference held at the BCA Academy on 4 and 5 June 2012. The inaugural conference, jointly organised by BCA Academy and the Institution of Occupational Safety and Health (IOSH), featured speakers from the United Kingdom, Hong Kong, Australia and the Middle East.

Mr Subash Ludra, President, IOSH (U.K.), delivered the keynote presentation, Building the Olympic Park for London 2012. During the Olympic Park’s construction, which took 18 periods of a million hours, there was no reportable accident and only 100 near-miss reports for every accident.

Other experts who presented papers also came from the Ministry of Manpower, WSH Council, Housing and Development Board and Land Transport Authority. Representatives from prominent firms such as Keppel Offshore & Marine also presented papers on various WSH issues in the construction industry. About 300 industry personnel attended the event.

Guest-of-Honour Mr Hawazi Daipi, Senior Parliamentary Secretary, Ministry of Education and Manpower, delivered the opening speech. He noted that with various programmes organised and supported by the WSH Council and the industry, the fatality rate in construction sector fell from 8.1 per 100,000 employed persons in 2010 to 5.3 in 2011. However, the construction sector has been the biggest contributor to workplace deaths. The national vision is to halve the construction fatality rate to less than 3.5 by 2013.

Support schemes for companies to carry out WSH initiatives were also highlighted. For instance, BCA’s Construction Productivity and Capability Fund (CPCF) helps companies to adopt technologies that improve workplace safety. Demolition contractors can tap on the Mechanisation Credit scheme (see page 2) under CPCF to defray the costs of utilising better technologies such as robotic demolition. This method reduces noise levels at work sites and enables workers to operate the equipment from a distance, thus protecting them from flying debris.

Another initiative that enhances safety is BCA’s Buildable Design and Constructability Framework. BCA encourages businesses to look at the constructability of buildings as early as the design stage to improve a project’s overall productivity. The Framework encourages the use of labour-efficient designs and construction methods that also raise safety standards.

A Memorandum of Understanding (MOU) was signed between BCA and IOSH (Singapore) to advance and promote WSH excellence in the built environment.

Also at the conference, the WSH Learning Gallery was officially launched. Located at the BCA Academy, the Gallery was built to provide students and industry personnel with experiential learning of WSH best practices in the construction industry. It focuses on five key WSH areas: work at height, confined space, noise hazard and controls, personal protection equipment and risk management.

A Recipe for WSH Success

- Set clear WSH standards with measurable objectives and targets
- Provide leadership with real impact at every level
- Procure the best contractors available
- Encourage designers to design for WSH in construction and future maintenance
- Plan every phase of work, profile every risk and manage them
- Build resources for health and well-being
RAISING MANAGERS FOR PRODUCTIVITY

The Certificate in Construction Productivity Management aims to enhance project management competencies in the industry.

For the construction industry to reach its full productivity potential, there must be an effective management of people, projects and construction sites. In 2011, the Certificate in Construction Productivity Management (CCPM) was launched to groom a pool of construction professionals to lead key productivity initiatives within the industry. CCPM is a collaboration between the BCA Academy and the Singapore Contractors Association Limited (SCAL).

CCPM provides participants with practice-oriented training on site project management and productivity enhancement skills. Training covers key knowledge areas including processes, tools and techniques as well as best practices in project and productivity management. Relevant case studies will be discussed to reinforce learning. There will also be a hands-on assignment for participants.

A total of 88 participants across three batches have been trained. Professionals enrolled for the course include project directors, project managers, construction managers, project engineers and site engineers. The academic qualifications of the participants range from diplomas to master’s degrees. Up to 99% of the participants have successfully completed the course.

Contractors registered under CW01 (General Building) and CW02 (Civil Engineering) with grades A1 and A2 must have at least one of their full-time Professional & Technical (P&T) personnel obtain the CCPM by 1 July 2013.

Certificate in Construction Productivity Management (CCPM) Course Details

Entry requirements:
A degree, diploma or equivalent qualification, with at least 3 years of working experience as project manager/construction manager or as a professional with similar responsibilities.

Course structure:
This is a 36-hour certification course conducted over 12 evenings (from 6.30pm to 9.30pm). Participants submit an individually written assignment at the end of the course, which will be assessed. Those who pass and have attained at least 75% attendance will be awarded the Certificate of Successful Completion (CSC).

Main topics covered:
> Productivity management and framework
> Tools and techniques for enhancing productivity on construction sites
> Managing time, schedule, procurement, cost and value for productivity
> Mechanisation and productive work processes
> Case studies on productivity management
> Building Information Modelling (BIM)
> Managing precast and prefabrication to improve productivity

For more information, call the BCA Academy at 6248 9999. You can also email us at bca_academy@bca.gov.sg
CONSTRUCTION PRODUCTIVITY AND CAPABILITY FUND (CPCF) COURSES

> Certificate in Interior Finishing Coordination
> Certificate in Pavement Construction and Maintenance
> Certificate in Precast Concrete Construction Supervision
> Certificate in Waterproofing Supervision
> Certificate in Building Measurement
> Certificate in Geotechnical Instrumentation for Supervisors
> Certificate in Levelling and Setting Out
> 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
> Higher NBQ in Supervision and Coordination of M&E Works
> Advanced NBQ in Supervision and Coordination of M&E Works
> NBQ in Operation & Maintenance
> Higher NBQ in Operation & Maintenance
> Advanced NBQ in Operation & Maintenance

16 NEW COURSES ARE NOW AVAILABLE.
UP TO 50% TO 80% OF THE TRAINING COST CAN BE SUBSIDISED UNDER THE CPCF SCHEME.

The additional courses are:

Certificate courses (PMETs)
> Certificate course in BIM Modelling
> Certificate course in BIM Management
> Project Management for Professionals in the Building and Construction Industry (in collaboration with SPM)
> Construction Productivity Management (in collaboration with SCAL)
> Design of Precast Concrete Structures for Engineers
> Workshop on Site Management of Precast Concrete Construction

Trade Diplomas (Foremen / Supervisors)
> Structural Steel Supervision
> Reinforced Concrete Supervision
> Plumbing Technology
> Electrical Technology

Certificate courses (Tradesmen / Foremen)
> Builders Cert in Plumbing and Pipefitting
> SEC(K) in Precast Concrete Components Erection
> SEC(K) in Structural Steel Fitting
> SEC(K) in Interior Drywall Installation
> System Formwork Training
> Mechanical Elevated Work Platform

FOR ENQUIRIES, PLEASE CONTACT:

BCA ACADEMY
TEL: 6248 9999  EMAIL: bca_academy@bca.gov.sg
CONSTRUCTION PRODUCTIVITY AND CAPABILITY FUND (CPCF)

TECHNOLOGY ADOPTION

MECHANISATION CREDIT (MECHC) SCHEME
Provides assistance to companies to defray up to 50% (S$100,000) of machinery cost

PRODUCTIVITY IMPROVEMENT PROJECT (PIP) SCHEME
Provides assistance to companies to defray up to 70% (S$1 million) of the cost for adopting more productive work processes

BUILDING INFORMATION MODELLING (BIM) FUND
Provides assistance to companies to defray up to 50% (S$105,000) of the cost for incorporating BIM into their work processes

For more information, please call the CPCF toll-free hotline at 1800-325 5050 or visit http://www.bca.gov.sg/CPCF/cpcf.html

Building and Construction Authority
We shape a safe, high quality, sustainable and friendly built environment.