SMALL, HANDY TOOLS FOR ARCHITECTURAL WORKS
PG 2
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

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Clarification:
On page 13 of Build Smart August 2012 issue ("Introducing: The BCA CPCF Clinic"), Singapore Contractors Association Limited should be 新加坡建筑商公会 instead of 新加坡建筑商工会.
Dear readers,

President Barack Obama once said, “Change will not come if we wait for some other person or some other time. We are the ones we’ve been waiting for. We are the change that we seek.” Likewise, if construction companies want to emerge stronger and increase the attractiveness of the sector, they will have to take the initiative to push for such changes.

Although the road to raising productivity will not be quick nor easy, those who try will find that they will be better off than they were in the past. Companies that are fast to adapt and embrace a productive mindset will lead the industry’s growth.

This is also why we will be enhancing the Construction Productivity Awards (CPA), which will better recognise industry stakeholders who have shown productivity achievements. A new category called CPA - Advocates will give recognition to organisations that have demonstrated efforts in initiating excellent productivity solutions and have translated this into significant productivity improvements for their projects.

We are also helping others to learn through the experiences of progressive companies by profiling them in Build Smart. In this issue, you will find that improving productivity need not require sophisticated solutions. For instance, by purchasing handy tools for architectural works, both Seng Soon Huat Construction and Kim Yi Construction were able to paint and sand down wall surfaces much faster. An interview with three architectural firms on Building Information Modelling also reveals that having the right mindset is a key success factor when adopting the new technology.

As the government continues to calibrate the inflow of foreign manpower, there will be no turning back to the days of conventional labour-intensive construction. It is time that the construction industry moves forward.

Restructuring the construction industry will require shared responsibilities and a common effort. I urge all industry stakeholders to come together to pursue higher standards and more productive ways to build. Together, we can make a positive change to build a productive and resilient industry!

Dr John Keung
Chief Executive Officer
The spray paint machine replaces the need for workers to manually paint the interior of a building with rollers and brushes. It cuts down the time taken to paint the interior of a building by half.

The conventional method of painting the interior of a building requires the use of rollers and brushes. Seng Soon Huat Construction Pte Ltd decided to improve this process by using spray paint machines. The new method not only cuts down on manpower and time, it also helps Seng Soon Huat Construction achieve consistent finishings.

Seng Soon Huat Construction began its business carrying out upgrading works for public residential estates, schools and factories. In recent years, they started specialising in painting solutions for residential projects.

With the encouragement and recommendation from their main contractor Teambuild Construction, which had successfully reaped the benefits of the Building and Construction Authority’s (BCA) Mechanisation Credit (MechC) scheme, Seng Soon Huat decided to tap into MechC to defray the cost of two spray paint machines.

“The spray paint machines effectively reduced manpower needed and the time taken to paint is now halved. Workers trained in using rollers and brushes have adapted quickly to the new method within a few days of training,” said Mr Edmund Ng, Director, Seng Soon Huat. He also shared that he intends to invest in another two spray paint machines.
Traditionally, to prepare wall and ceiling surfaces for painting, workers at Kim Yi Construction Pte Ltd had to sand them by hand or use a portable sander. These were manual processes that took up much time.

The company then decided to mechanise the process with support from the MechC scheme. This helps defray part of the expenditure when adopting new tools for their projects.

With funding from MechC, Kim Yi Construction purchased a long-reach sander with a built-in vacuum cleaner. Workers can now sand the walls at greater heights without the need for elevated platforms or scaffoldings. The machine also saves them the hassle of cleaning up after the work is done. The new machine greatly improves productivity during the preparation of wall and ceiling surfaces for painting.

On the MechC application procedure, Mr Chong Chuan Yi, Director of Kim Yi Construction, said, “It’s very simple to fill in the application form and the time taken for approval is fast. This really helps small contractors like us to manage the costs of our equipment. Workers also learnt to use the new equipment quickly.”

Mr Chong has expressed interest to invest in two more of these long-reach sanders.

To find out more about MechC, please visit www.bca.gov.sg/MechC/mechc.html.

### Sanding Walls and Ceilings with Ease

Conventionally, workers stand on elevated platforms to reach higher wall surfaces for sanding. The new method, which makes use of the long-reach sander with a built-in vacuum cleaner, helps workers to easily reach walls at greater heights.

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<table>
<thead>
<tr>
<th>Builder</th>
<th>Kim Yi Construction Pte Ltd</th>
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<tbody>
<tr>
<td>Business</td>
<td>General building contractor</td>
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<tr>
<td>Equipment purchased with MechC</td>
<td>&gt; 1 long-reach sander with a built-in vacuum cleaner</td>
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<td>Benefits</td>
<td>&gt; Improved work processes&lt;br&gt; &gt; Improved occupational health and safety&lt;br&gt; &gt; Increased productivity</td>
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From left: Mr Chong Chuan Yi and Mr Lim Jit Kean from Kim Yi Construction Pte Ltd.
适用建筑工作的小巧轻便工具

看两家公司如何利用机械化奖励计划来提升上漆和打磨效率。

轻易上漆

通常，为一座建筑物的内部上漆的普遍方法都需要用到滚子和刷子。为了减少人力、节省时间，并确保表面平滑，成顺发建筑私人有限公司决定使用喷漆设备取代现用方法。

成顺发建筑是通过为公共住宅区进行的主要翻新计划以及为学校和工厂进行增添与修改工程而开始营业的。近年来，他们也开始专门为住宅项目提供粉刷服务。

由于作为成顺发建筑主要承包商的联宇建筑私人有限公司本身也成功地受惠于新加坡建设局的机械化奖励计划，成顺发建筑在联宇建筑的鼓励与推荐下决定利用机械化奖励计划来支付两架喷漆机器的成本。

成顺发建筑的署长黄义成先生说：“喷漆机器有效地减少了所需要的人力，并且将上漆所需用的时间减少一半。惯用滚子和刷子的工人在经过了几天的训练后，很快地就适应了新的上漆方法。”他也分享公司有意再投资购买另外两架喷漆机器。
工人常用的方法是利用架子进行打磨，而新的方法则是利用长距离并具有吸尘功能的打磨机以让工人能够在无需架子的情况下轻易地打磨墙壁的高处。

轻易为墙壁和天花板打磨

一般上，金毅建筑私人有限公司在预备为墙壁和天花板上漆之前，必需用手或使用携带式打磨机先为墙壁和天花板打磨，整个过程非常耗时。

公司后来决定通过机械化奖励计划将整个过程机械化。计划将帮助公司支付在他们于项目中使用新工具上的费用。

有了机械化奖励计划的资助，金毅建筑购买了一架长距离并具备吸尘功能的打磨机。如今工人可以在无需搭起架子的情况下也能够为墙壁的高处打磨。打磨时也可同时吸尘以便节省工程完成后的清理工作。这在预备墙壁和天花板上漆时大大地提高了生产力。

对于机械化奖励计划的申请过程，金毅建筑署长张壮毅先生说：“申请表格非常容易填妥，批准的时间也很快，确实帮助了像我们这样小的承包商以添购设备的初步成本。工人们也很快地就学会了使用新的设备。”

张先生表示有意投资购买多两架长距离打磨机。

欲了解更多有关机械化奖励计划的详情，请浏览www.bca.gov.sg/MechC/mechc.html。

| 建筑商： | 金毅建筑私人有限公司 |
| 生意范围： | 综合建筑承包商 |
| 通过机械化奖励计划所采购的器材： | > 一架具有吸尘功能的长距离打磨机 |
| 效益： | > 改进工作流程  
> 改善职业健康与安全  
> 提高生产力 |

左起：金毅建筑私人有限公司的署长张壮毅先生和工地经理林日权先生。
The enhanced Construction Productivity Awards 2013 is now open for nominations

The annual Construction Productivity Awards (CPA) is now open for nominations. Introduced by the Building and Construction Authority (BCA) in 2010, the CPA aims to recognise outstanding built environment professionals, consultants and builders for their achievements in improving construction productivity at both the project and firm levels.

This year, the CPA will be enhanced to better recognise stakeholders with productivity achievements. There will be two categories:

**CPA – Projects**, a project-level award that will focus on the productivity contributions of various stakeholders; and

**CPA – Advocates**, a new category which will focus on firm-level achievements, combining two previous awards, CPA – Best Practices and Innovations and CPA – Value-Added Productivity (VAP).

For more information on the CPA and nominations, please visit [www.bca.gov.sg](http://www.bca.gov.sg).
**CPA – Projects** is awarded to project teams that have demonstrated productivity in their construction development projects from design to construction.

**The award aims to:**
- Encourage designers to come up with labour-efficient designs;
- Encourage project teams to adopt labour-efficient construction methods; and
- Recognise project teams for their excellent project planning and coordination in enhancing productivity.

**Building projects will be assessed on:**
1. Buildable design score
2. Constructability score
3. Simplicity for construction
4. Design and construction integration and
5. Aesthetics

**Civil engineering projects will be assessed on:**
1. Design for ease of construction
2. Construction technology and site management
3. Design and construction integration and
4. Innovative designs and products

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**CPA – Advocates** is awarded to organisations (developers, consultants and builders) that have demonstrated efforts in initiating high productivity solutions in design, construction methods, processes and/or technologies adopted and have translated these into significant productivity impact on their projects.

**The award aims to:**
- Encourage developers to promote the adoption of productivity ideas and solutions in projects;
- Encourage consultants to be innovative in making their designs more productive; and
- Spur builders to increase their productivity by taking ownership in monitoring their own productivity progress.

**Entries will be assessed on:**
1. Buildable design score
2. Constructability score
3. Productivity performance (physical and value-added productivity) and
4. Productivity initiatives

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大力提倡生产力的优化

2013年度的建设生产力奖(CPA)现在开始接受提名。

本年度建设生产力奖(CPA)已经开始接受提名。由新加坡建设局在2010年新设的建设生产力奖 (Construction Productivity Awards)，旨在为鼓励建筑业提高生产力并表扬在这方面表现杰出的业者与机构。

今年，建设生产力奖评选标准被调整，以更加彰显获奖者在提高生产力方面的杰出成就。本次建设生产力奖共分两个类别:

- 最佳建设项目生产力奖 - 旨在表扬在提高项目生产力方面各项目参与者的贡献
- 最佳建设先锋生产力奖 - 这个新奖项类别旨在表扬采用高成本效益及创新建设法的企业或机构，是两项旧奖项 - 最佳建设实践与创新生产力奖 (CPA – Best Practices and Innovations ) 以及最佳增值生产率奖 (CPA – Value-Added Productivity ) 的综合体。

有关奖项详情及提名事宜，请浏览网页www.bca.gov.sg。

最佳建设项目生产力奖旨在表彰由设计方案开始到落实建筑指标的过程中，成功展现高度生产力的项目管理团队。

**该奖旨在:**
- 鼓励设计单位提出高效率的设计方案;
- 鼓励项目团队采用将工效最优化的施工方法;及
- 表彰项目团队在项目规划和协调提高生产力的杰出表现。

**建设项目将基于以下几点进行评选:**
1. 项目易建设计指标
2. 适建性指标
3. 简易建设程度
4. 设计施工一体化;及
5. 建筑美学

土木建筑工程项目将基于以下几点进行评选:
1. 易建设计优良程度
2. 施工工艺和现场管理
3. 设计施工一体化;及
4. 创新设计理念和产品的采用

最佳建设先锋生产力奖则是为嘉奖那些透过策划、设计方案，采用尖端科技及创新建设方式，实践高度建设效率的杰出机构 (发展商、咨询公司及建筑商) 而设。

**该奖旨在:**
- 鼓励发展商推动在采用高生产力的理念和解决方案;
- 鼓励咨询公司为建筑设计工作提供具有创新性及前瞻性的咨询内容并达到高效运作的目的;
- 鼓励建筑商掌握主控权，自主监测生产过程并提高生产力。

**该奖项将基于以下几点进行评选:**
1. 易建设计指标
2. 适建性指标
3. 生产力表现 (实物和增值生产力);及
4. 提高生产力措施的落实程度
Productivity lessons from Woh Hup’s construction of a sophisticated condominium

A learning journey for the Building and Construction Authority (BCA) was held at The Interlace on 21 August 2012. Participants got to learn about the latest labour-saving technologies and productivity initiatives.

The Interlace is a condominium development at Depot Road comprising 31 six-storey blocks of apartments that are arranged on four main “super levels” to form a stepped building typography. They are stacked in a hexagonal arrangement to form eight large open courtyards. The interlocking volumes also form the topography of a “vertical village” with cascading sky gardens and roof terraces vertically extending the landscape of the courtyards.

Despite The Interlace’s unique architecture, which was a challenge to construct, the project was two months ahead of schedule and the construction of its structure was completed three months ahead of the initial plan. The fast construction speed was made possible by a slew of productivity improvements adopted by the project team.

Productive Methods Adopted by Woh Hup for The Interlace

- **Heavy-duty shoring system**
  Seven prefabricated heavy-duty scaffolding staging sets were rotated within the site to keep pace with the construction cycle of each building block. Each component of the shoring system is of the “wedge and click” type for easy and safe installation. The estimated productivity improvement is about 115% compared to the conventional scaffolding system.

- **Precast construction**
  Woh Hup used precast construction including civil defence shelter doorframes, staircases, planter boxes and double slabs. The estimated productivity improvement from these precast activities is about 80% compared to cast-in-situ construction.

- **Productive formworks**
  Various productive formworks such as horizontal tableform, condek formwork and vertical steel formwork were adopted to reduce the construction cycle time. The estimated productivity improvement is about 80% compared to conventional timber formwork.

- **Innovative cast-in groove lines**
  Innovative cast-in groove lines were used to form the hexagonal patterns at the transfer decks soffits, to reduce double work. This resulted in an estimated productivity improvement of about 200%.
What are the common issues hindering productivity in bored piling works?

Bored piling works involve extensive on-site works, unlike reinforced concrete piles. Hence, site planning is very important to ensure efficiency in operations and to minimise the amount of idle resources. At HSL, we constantly review our work procedures and our management has been very supportive when it comes to adopting innovative practices for productivity.

Can you tell us more about one of the innovative practices adopted?

We innovated the process of hacking pile heads. The conventional method makes use of a breaker, an excavator and an air compressor to break the bond between the concrete and the rebar and reduce the concrete into smaller pieces for removal. This hacking process is noisy, results in a lot of concrete debris and is time consuming.

From our study of the practices in Japan, we learnt that rubbery sleeves were used to debond rebars from the concrete mass. The cost of providing the rubbery sleeves was too expensive for implementation. Then, the idea of using polystyrene foam came about after a trip to Bangladesh. Polystyrene foams are cost-effective and installing foams around the steel reinforcement bars before casting will help debond the rebars from the concrete mass. A crack can be induced at the cut-off level of the pile head and the concrete block above the cut-off level can be easily lifted off and removed in a single piece.

How has this new work process benefitted the project?

The new process yielded many benefits, such as reducing the number of machines and workers required. There was also a significant drop in the noise and dust levels on site. The most important thing is that with this improved process, we have managed to increase productivity by 300%. We also received funding assistance from the Productivity Improvement Project (PIP) Scheme, which helped us to defray costs.

What are some of your future plans for the company?

We will continue to place a strong emphasis on efficient and effective site planning and to provide training opportunities for our staff in this area. We also intend to proliferate the use of the new pile head removal method for all our future projects. We may even set up productivity groups within each project team to improve site processes.
在提高生产力方面，钻孔式打桩工作存在哪些常见的问题？

答：钻孔式打桩工作涉及广泛的实地工作，而这是有别于加固混凝土打桩的。因此，建筑工地规划非常重要，因为这将能确保运作上有效率，并且减少闲置的资源。我们经常检讨工作程序，而管理层也在我们为提高生产力采取创新做法方面给予很大的支持。

问：您是否可以分享其中一项所采取的创新做法？

答：我们创新切割桩头的过程。一般的做法是利用一个破碎机、挖掘机以及空气压缩机来破开混凝土和钢筋之间的粘合，然后将混凝土破碎成小块在进行清除。这种破碎过程非常吵杂、也容易造成很多的混凝土碎片，并且非常耗时。

通过我们对日本做法的研究，我们得知他们是使用塑胶套管将钢筋从混凝土块脱粘的。但是供应塑胶套管的成本太高，我们无法实行。之后，我们到孟加拉考察，想到了使用聚苯乙烯泡沫塑料这方法。制造聚苯乙烯泡沫塑料的成本符合成本效益，所以是合适的选择。在铸造桩头之前在钢筋周围装置泡沫塑料将能够帮助钢筋从混凝土块脱粘。我们可以在桩头的截点开出一个裂缝，然后就能够轻易将截点上面的混凝土整块取走，并完整地去除。

问：这新的工作过程如何让该项目受益？

答：新的工作过程带来了很多好处，例如减少了所需的机器和人工，并且也大幅度减低了工地的噪音和灰尘。最重要的是通过这个过程，我们的生产力提高了三倍。我们也得到了生产力改进计划（PIP）的资助，帮助我们支付一些成本。

问：您对公司未来有什么计划？

答：我们将继续重视有效率的建筑工地规划，并且在这方面为我们的员工提供培训机会。我们也打算在未来的项目中使用新的桩头清除方法，甚至会在每个项目中设立生产力小组以提升工作过程效率。
How has BIM helped in enhancing the architectural aspects of your projects?

BIM has helped us in various ways. At the earlier stages of the design process, BIM allows us to highlight potential design issues. Through the use of BIM, we also created a framework that can be used for all types of projects, thus streamlining our design workflow.

During architectural documentation, any changes to the BIM model will be automatically reflected in all relevant drawings. This improves coordination, not just for architecture, but also across other disciplines such as civil and structural and M&E engineering. All these come together to enhance ONG&ONG’s 360º Design Solution approach.

What are the initial challenges faced when adopting BIM and how did ONG&ONG overcome them?

The implementation of BIM was our first challenge. To overcome this, we adopted a centralised approach by setting up a specialist department within our organisation to handle its implementation.

Next, there were costs involved in adopting BIM. However, through BCA’s BIM Fund, we were able to set up a room comprising 10 dedicated BIM workstations for staff training. We are also upgrading the company’s IT infrastructure to accommodate the increasing use of BIM-related equipment.

Our biggest challenge is to find people with both BIM capabilities and design experience. For instance, it is very difficult to convince our experienced designers to adopt BIM due to their preference for and familiarity in working with the traditional CAD system. On the other hand, designers with less experience are more willing to learn BIM.

To overcome this, we send our staff for regular training conducted by our in-house BIM specialists or external parties.

What is your company doing to build BIM expertise?

ONG&ONG has developed an in-house BIM team named BIM CORE to strengthen the company’s BIM capabilities. BIM Director Daniels Chandra leads the team. Members of BIM CORE take on the role of BIM Manager for each BIM project. BIM CORE’s assistance involves BIM strategy, project implementation, training and technical support. The team also developed the corporate BIM standard, template and library to ensure high quality BIM deliverables throughout. By setting up company-wide BIM guidelines, staff members who are new to BIM can learn faster and adapt more easily.
WOHA is in its early stages of BIM implementation. The firm is investigating new working methods to realise the benefits of BIM. WOHA makes use of 3D modelling in virtual design to test and validate ideas in the early design process.

Q: What have been the initial challenges faced as you adopt BIM?
A: We struggle with the steep learning curve and a lack of experienced BIM users in the workforce. Learning new software and new workflows and trying to break from traditional CAD dogma can be daunting.

We invest in staff training to overcome this initial hurdle. BIM implementation is as much about investing in people and processes as it is about technology.

Q: What has been the most important factor for WOHA as it begins its BIM implementation?
A: We have had the full support from the senior management of the practice. This is crucial as BIM requires effort and leadership to move users forward.

Q: What do you expect to gain from BIM?
A: We are still learning from new BIM projects and are excited to discover the full benefits of the tool. We expect to see a reduction in unnecessary work and in the misinterpretation of design. We also anticipate improved communication and streamlined processes.

Now, with BIM, we also look forward to collaborating with other consultants and contractors in the industry who are embracing the technology and its workflows.
To help the construction workforce upgrade their skills, the Building and Construction Authority (BCA) has roped in industry firms and trade associations to set up BCA-Approved Training and Testing Centres (ATTCs). A total of 18 ATTCs have been in operation since 2011 and another five ATTCs were launched in October 2012. In addition, five more ATTCs will commence operation in early 2013.

ATTCs offer associated training and skill assessments for trades under CoreTrade and the new Multi-Skilling Schemes. They also facilitate the customisation of training courses to meet the industry’s needs. In addition to day courses, evening and weekend courses are also available for selection. Special requests can be made for these courses to be conducted in the workers’ native language.

To further help employers defray the cost of upgrading their workers, the Workforce Training and Upgrading (WTU) fund under CoreTrade and the new Multi-Skilling Schemes. They also facilitate the customisation of training courses to meet the industry’s needs. In addition to day courses, evening and weekend courses are also available for selection. Special requests can be made for these courses to be conducted in the workers’ native language.

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MORE BCA- APPROVED TRAINING AND TESTING CENTRES

These centres help train workers through courses and skill assessments that lead up to the CoreTrade and Multi-Skilling registrations.

<table>
<thead>
<tr>
<th>ATTC / Contact</th>
<th>Courses offered</th>
</tr>
</thead>
</table>
| P-ONE (S) PTE LTD                      | • Bored Piling Operation  
• Joinery  
• Driven Piling Operation          |
| POSITIVE ENGINEERING PTE LTD          | • Cladding Installation  
• Curtain Wall Installation          |
| SETSCO SERVICES PTE LTD                | • Welding                                                                 |
| SANTARLI CONSTRUCTION PTE LTD          | • Aluminium Formwork  
• Steel Reinforcement Work  
• Waterproofing  
• Tiling  
• Plumbing and Pipefitting  
• Electrical Wiring Installation |
| SIGMA BUILDERS PTE LTD                 | • Cladding Installation  
• Curtain Wall Installation  
• Doors and Windows Installation (Aluminium)  
• Glazing                      |
| SINGAPUR GLASS ASSOCIATION             | • Glazing                                                                |
| SOLEY CONSTRUCTION PTE LTD             | • Tiling  
• Waterproofing  
• Plumbing and Pipefitting  
• Precast Kerb and Drain Laying  |
| SHINGDA CONSTRUCTION PTE LTD           | • Pipefitting  
• Structural Steel Fitting          |
| SINGAPORE PILING & CIVIL ENGINEERING PTE LTD | • Aluminium Formwork  
• Painting  
• Interior Drywall Installation  
• Steel Reinforcement Work  
• Suspended Ceiling Installation (Acoustical)  
• Suspended Ceiling Installation (Fibrous Plaster)  |
| TEAMBUILD CONSTRUCTION PTE LTD         | • Precast Kerb and Drain Laying  
• Precast Concrete Component Erection  
• Timber Door Installation  
• Structural Steel Fitting  
• Pipe Fitting  
• System Formwork Installation |
| TIONG SENG CONTRACTORS PTE LTD         | • Structural Steel Fitting  
• Pipe Fitting                      |
| WING TUCK ENGINEERING PTE LTD          | • Asphalt Concrete Paving                                                  |
| YUN ONN CO. (PTE) LTD                  |                                                                                  |

POSTERS TO PUSH CPCF OFFERINGS

They will also provide information on the BCA Productivity Clinic

To create greater awareness of the Construction Productivity and Capability Fund (CPCF) as well as the Building and Construction Authority (BCA) Productivity Clinic, the BCA is encouraging contractors to display CPCF posters at their construction sites.

The posters, which are available in both English and Chinese, are also targeted at sub-contractors and encourage them to tap into the various CPCF incentive schemes. Those who need advice can attend one-to-one productivity consultation sessions at the BCA Productivity Clinic.

To request for a hard copy of the poster, builders and contractors can contact Ms Ng Geok Kuan at 6325 5068 or email ng_geok_kuan@bca.gov.sg.

An online copy of the poster is also available at http://www.bca.gov.sg/cpcf/others/BCA_CPCF_Clinic_Flyer.pdf
WHAT ARE PREFABRICATED BATHROOM UNITS?

Industry stakeholders to get more information on PBUs

The bathroom is usually one of the smallest rooms in a dwelling unit. However, it is also one of the most labour-intensive parts during construction. It involves almost all building trades such as waterproofing, finishes, accessories, plumbing, sanitary and electrical works.

To improve construction productivity, a number of projects have adopted the Prefabricated Bathroom Unit (PBU). PBUs are pre-assembled in factories and delivered to construction sites for installation. This saves time, reduces the need for skilled workers on site and ensures uniform and superior quality.

The Building and Construction Authority (BCA) recently introduced a brochure on PBUs. It will be available in hardcopy and on the BCA website at http://www.bca.gov.sg/Publications/BuildabilitySeries/buildability_series.html

Be sure to look out for it!

WHAT’S NEW

HAPPENINGS

CALENDARY OF EVENTS

<table>
<thead>
<tr>
<th>Event Name / Organiser</th>
<th>Date/Time/ Venue</th>
<th>Contact Person &amp; Details</th>
</tr>
</thead>
</table>
| BCA Productivity Clinic BCA | 7 Dec 2012 9:00 – 12:00 | Ms Ezrin Raof  
Tel: 6325 5093  
Email: ezrin_raof@bca.gov.sg |
| Workshop on Site Management of Precast Concrete Construction BCA Academy | 19, 22 & 26 Nov 2012 18:30 - 21:30 | Marketing & Business Development  
Tel: 62489843 / 824  
Email: bca_academy@bca.gov.sg |
| Code of Practice on Buildable Design BCA Academy | 7 Dec 2012 9:00 – 12:30 | Marketing & Business Development  
Tel: 62489843 / 824  
Email: bca_academy@bca.gov.sg |
| Architectural BIM e-Submission Industry Briefing 2012 BCA | 7 Dec 2012 2.30pm-5.00pm | Ms Soon Lay Kuan  
Tel: 63251102  
Email: soon_lay_kuan@bca.gov.sg |
| Architectural BIM e-Submission Template Hands-On Workshop (for Revit Users) BCA | 10 Dec 2012 9.30am-5.30pm | Ms Soon Lay Kuan  
Tel: 63251102  
Email: soon_lay_kuan@bca.gov.sg |
RIDE ON THE PRODUCTIVITY WAVE
BY SIGNING UP FOR THESE COURSES

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 equipment 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