

We shape a safe, high quality, sustainable and friendly built environment

### BCA Academy Graduation Ceremony · p3-5

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with certificates, diplomas and specialist diplomas on 5 December. Senior Minister of State for National of-Honour. Joining the graduates at the Ceremony were their family and friends, as well as invited guests from the building and construction industry.



This year's Ceremony saw 183 Specialist Diploma, 51 Diploma, 222 Certificate and 37 Certified Specialist scrolls given out to the graduates.

At the event, the graduates and their loved ones also heard a Valedictory speech given by Ms Chaw Suu Hlaing, a Gold Award recipient from the Construction Engineering Diploma Course. She paid tribute to her family and lecturers at the Academy and urged her fellow graduates to make use of the skills learnt in order to meet future challenges.

"To all who are present, my sincere advice is never give up. Strive to make your dreams come true. BCA Academy has many good lecturers who are dedicated, friendly and approachable. Tap on their wealth of experience and knowledge and learn as much as you can. They will continue to be a source of help even after your graduation.

We stand as proud graduates of BCA Academy. I am honoured to deliver this Valedictory address. On behalf of all graduates, thank you, BCA Academy. You certainly have prepared us well, with the knowledge, skills and confidence to meet future challenges."

Ms Chaw is currently pursuing a degree in Civil Engineering at NTU as a direct-entry second year student.

For the first time, a commencement speaker – Mr Von Lee Yong Miang - was invited to address the graduating cohort. Mr Lee is the Executive Chairman of Expand Construction Pte Ltd. He was also one of the top entrepreneurs in this year's Rotary-ASME Entrepreneur of the Year Award.

About 30 BCA Academy staff were involved in the organisation of the Graduation Ceremony. Their hard work has paid off, with the successful and smooth running of this year's Ceremony.

Well done to one and all!





### UNDERSTANDING STEEL STRUCTURES

For the first time, BCA collaborated with the Singapore Contractors Association Limited (SCAL) to organise a one-day seminar for the industry on the 'Design and Construction of Steel Structures'. As steel is a more sustainable construction material compared to concrete, the seminar also reinforced BCA's efforts to educate the industry on topics related to sustainable construction.

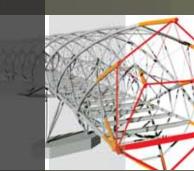
Among the speakers were Dr See Lin Ming and Mr Christopher Pynn of Arup, who presented the design and structural steel modelling of the world's first Double Helix structure bridge at Marina Bay. The structural detailing of this architecturally unique but geometrically complex structure was developed with the help of Building Information Modelling, allowing for improved coordination and integration with other disciplines of work in the project.

In another showcase of a project adopting structural steel, the project team comprising Mr Lai Huen Poh from RSP Architects Planners & Engineers, Mr Kelvin Teh from Penta-Ocean Construction Co and Mr C Harendran from Yongnam Engineering & Construction shared their design and construction engineering expertise and the technologies employed in the 218-metre-tall iconic Ion Orchard/Orchard Residences project. Their presentation also covered the assembly and erection sequence of the mega trusses spanning the Orchard MRT station.

Other speakers included Mr Adrian Billinghurst from Worley Parsons, Mr Matthias Volker Braun from ArcelorMittal and Dr Michael Liu from International Paint Singapore. The seminar was attended by more than 180 professionals, builders and practitioners from the construction industry.

Mr Simon Lee, Executive Director of SCAL said, "SCAL is pleased to work with BCA to organise this highly successful seminar which serves as a platform to educate the industry through sharing of knowledge and experience. We look forward to closer collaboration with BCA to develop our building and construction expertise for the built environment."

Besides SCAL, BCA will continue to collaborate with professional associations to organise more seminars to equip the industry with the knowledge and knowhow to ensure the sustainability of the built environment.









A new guidebook is out!

## Preventing Steel Corrosion

BCA has published its fifth guidebook under its Sustainable Construction Series. This latest 'Guide on Corrosion Protection for Steel Structures' was launched at the 'Design and Construction of Steel Structures' seminar held on 13 November.

Steel is an excellent sustainable building material which is highly reusable and very buildable. It can also be recycled repeatedly.

The Guide provides useful information on the selection, surface preparation, application, inspection and maintenance of various corrosion protection systems. It also offers good detailing tips for steel structures to minimise the chances of corrosion.

The new Guide is a further testimony to the construction industry's commitment to and conviction in sustainable construction practices. BCA had teamed up with industry associations and Institutes of Higher Learning to develop this Guidebook. An earlier collaboration led to the development of the 'Guide on Fire Protection and Performance-Based Fire Engineering'.



### EXPLORING CAREERS IN CONST

### **Building Careers Website Is LIVE!**

Log on to <www.buildingcareers.sg> for information on career opportunities and courses within the building and construction industry.

The new website was launched on 5 December at the BCA Academy Graduation Ceremony. As a 3-in-1 integrated portal for the built environment, it features three sections devoted to 'Build Knowledge', 'Build Careers' and 'Build Jobs.

The 'Build Knowledge' section aims to guide the user to a whole range of interesting courses relating to the built environment, offered by the Academy and Institutions of Higher Learning. 'Build Careers' shares tips and advice from BCA-Industry Built Environment scholars and young successful professionals involved in iconic projects. It also provides information on the job scope and training routes for various professions. Finally, the 'Build Jobs' section highlights exciting career opportunities offered by reputable industry firms. Here, job seekers can even upload video clips to introduce themselves to their prospective employers.

> Join us at the 'Built Environment Scholarship, Training and Career Fair' at the BCA Academy on 17 January 2009!

Time: 9am-5pm



### RUCTION INDUSTRY

### TARGET: A Highly Skilled Industry

The recent BCA Academy
Graduation Ceremony
introduced another 490
graduates to the industry
workforce. At the Ceremony,
Senior Minister of State for
National Development and
Education Grace Fu
encouraged further upgrading
of skills and knowledge base.
Here are some highlights of
her speech.



### Impact of the economic downturn

As construction demand is expected to slow down in the next two years, companies are urged to raise capabilities and exploit new growth areas and processes such as prefabrication and more automation on-site for greater competitive edge.

### Human resource development

In order for companies to make use of future opportunities and maintain high safety, productivity and quality standards, there needs to be a core of experienced and skilled workforce at all levels.

### Building up a core local workforce

BCA has stepped up its career promotion efforts and mapped out career progression paths to attract new entrants to the industry. This will sustain and continually improve the level of skills and knowledge base.

### Job training programmes

The Construction Re-skilling for Employment, or CORE training programme, provides subsidised skills training for new entrants in key construction trades. Locals can enroll in diploma programmes to prepare them to take on supervisory roles.

### CoreTrade

The Construction Registration of Tradesmen Scheme, or CoreTrade, recognises local and suitable foreign workers for their experience and skill sets in key construction trades. It will be implemented in 2009 to provide career development for skilled tradesmen to eventually progress to supervisory positions and beyond.

### **National Building Qualifications**

Introduced by the BCA Academy, the National Building Qualifications provide a progression path for working adults and school leavers to upgrade their technical and managerial skills. They also enable progression to diploma and higher-level qualifications.

### Focus on solid waste management

### ISWA/WMRAS World Congress 2008

The International Solid Waste Association/Waste Management and Recycling Association of Singapore (ISWA/WMRAS) World Congress 2008 was staged for the first time in Southeast Asia at the Suntec Convention and Exhibition Centre in Singapore from 3 to 6 November.

The event attracted 1,000 practitioners from over 50 countries with multiple technical sessions focused on solid waste management. Participants were able to gain in-depth knowledge on waste management challenges and opportunities in Asia.

BCA put up an exhibition booth at the event, with exhibits focusing on recycling in construction to encourage the industry to adopt recycled materials and reduce its reliance on natural resources. Its efforts were commended by Minister for the Environment and Water Resources, Dr Yaacob Ibrahim, who added that the use of more recycled materials in construction would greatly reduce waste disposal and reliance on natural resources.

BCA's CEO Dr John Keung gave an opening address at the Congress. He presented the Sustainable Construction Masterplan, an effort by the Sustainable Construction Steering Group, jointly formed by BCA, public agencies, industry associations and tertiary institutions.







### CONQUAS

goes paperless

August 2008 marked an important milestone for CONQUAS, with the introduction of mobile tablet PCs for CONQUAS assessment. Hardcopy score sheets would no longer be required as the tablet PCs would now include these forms. This new electronic assessment tool, which comes with a comprehensive system upgrade, is expected to yield several benefits for BCA and the industry.

### Reduced paper consumption

There will be no more printing of hardcopy score sheets. Builders can also be provided with instant softcopy images of their assessment results.

### **Greater flexibility for assessments**

The tablet PCs have been loaded with all CONQUAS assessment forms. This means that assessors can be readily deployed for assessments, as long as they have the tablet PCs with them.

### Better customer service

Loaded with project information, the tablet PCs are useful for tracking CONQUAS assessment progress. They can also calculate Quality Mark unit scores instantly. Builders will no longer need to wait anxiously for scores to be computed manually.

### Improved work efficiency

The tablet PCs can be connected easily to the office system through the Intranet for faster, flexible and more efficient upload of assessment results and report generation.



### What Homeowners Want

The CONQUAS scoring system has been modified to reflect actual homeowners' quality expectations. Homeowners can now see a more meaningful score aligned to their priorities on workmanship quality.

CONQUAS scores for architectural internal finish elements, like floor and internal walls, are assessed based on defined standards and defects. These include finishing, alignment and evenness, crack and damages, hollowness and delamination, as well as jointing.

Equal points are allocated to each defect discovered, and no weightage is applied for the various standards and defects within each element.

Contractors, private developers and partner agencies had given feedback that this system did not accurately reflect

homeowners' priorities on workmanship quality, especially in highly visible internal finishing works. Some homeowners regarded certain defects, such as functionality and damages, to be more important than others like joints and evenness.

To align itself to homeowners' priorities, CONQUAS has introduced defect-level weightages for all architectural internal finishes assessments. This means that the resulting CONQUAS scores will correlate more closely to homeowners' expectations on workmanship quality. The defect level weightages will apply to all CONQUAS and Quality Mark assessments for projects called on or after 1 December.

Find out more about the defect-level weightages in the 7th Edition of CONQUAS at:
<a href="https://www.bca.gov.sg/Professionals/IQUAS/others/CON21.pdf">www.bca.gov.sg/Professionals/IQUAS/others/CON21.pdf</a>

### TWO NEW SEC(K) TESTS

The SEC (K) trade tests for Crawler Drill Operation and Jet-Grout Piling Operation were launched recently to expand the range of trade tests available to the industry. Contractors can now certify their workers' skill sets and skill standards in the operation of plant machinery associated with soil improvement and underground tunneling works.

The two new trade tests are expected to benefit the industry. Jet-grout piling works are often used to improve the soil condition of areas which consist mainly of marine clay. The concentration of construction activities around the Marina Bay area has seen increased demand for soil improvement works.

"We are pleased that there is a trade test for jet-grouting works to certify our workers in, as we are looking to bring in more manpower resources to support our operations," said Mr Augustine Lee, Manager of Dae Sung Construction, which is currently carrying out jet-grout piling works for the Marina Coastal Expressway project.

Additionally, the construction of projects such as the underground cavern storage facilities on Jurong Island will involve extensive underground tunneling works. This requires the deployment of the crawler drill.

"To maximise land use in our land-scarce country, we see the potential for more underground storage facilities to be built," said Mr David Sim, Director of contractor Tunnel & Shaft. "Getting the skills competency of our workers certified in the operation of the crawler drill is a welcome development. This puts us in good stead in promoting our capabilities and competencies to our clients."

Both SEC (K) trade tests are conducted using the plant machinery provided at the contractor's worksite. This allows the skill proficiency of the workers to be assessed in a real-time working environment.

Contractors who would like to enroll their workers for the SEC (K) trade tests may email Ms Shirley Chia at <shirley\_chia@bca.gov.sg>.

Test candidate taking the crawler drill operation trade test



### **SEC (K) trade test in Crawler Drill Operation**

The crawler drill is used in the "drill and blast" method for the construction of tunnels and shafts in locations consisting predominantly of rock strata. The crawler drill forms boreholes in the rock strata, where explosives are later inserted and detonated, breaking up the rock.

### Test candidates are assessed on their proficiency in:

- Performing pre-operational checks on the crawler drill rig
- Maneuvering and positioning of the crawler drill rig to a specific location
- Drilling different sets of boreholes according to specific test parameters
- Safety aspects involved in handling the crawler drill rig
- Communicating with the signalman involved in the drilling operation

Test candidate taking the jet-grout piling operation trade test



### SEC (K) trade test in Jet-Grout Piling Operation

Jet-grout piling is used for soil improvement works. This involves injecting at high pressure a jet of fluids which breaks up the soil and replaces it with cement grout.

### Test candidates are assessed on their proficiency in:

- Performing pre-operational checks on the jet-grout pile rig
- Maneuvering and positioning of the jet-grout pile rig to a specific location
- Drilling and controlling the injection of cement grout according to specified test parameters
- Safety aspects involved in handling the jet-grout pile rig
- Communicating with the batching plant operator

### ENERGY-EFFICIENCY THROUGH INNOVATION

The Residential Envelope Transmittance Value, or RETV, was introduced to the industry in February 2008. Guidelines and detailed information were released in the 'Code On Envelope Thermal Performance For Buildings (2008)'. Find out how this innovation came about, resulting in all-round energy efficiency benefits for everyone.

The thermal performance of a building's envelope impacts the energy required for cooling the building. This is because heat gained from the exterior would require the airconditioning system to work harder, thus consuming more energy.

In the past, the Building Control Regulations prescribed a mandatory measure of thermal performance, Envelope Thermal Transfer Value (ETTV), for air-conditioned buildings. However, residential buildings were classified as non air-conditioned buildings, normally cooled via natural ventilation. At that time, BCA did not have regulatory control over the thermal performance of residential building envelopes.

However, as it was becoming increasingly common to use air conditioning in residential buildings, there was a need to look into the design of the building envelope so as to limit the heat gain into the space when air conditioning is used.

Research was carried out with the help from NUS on residential buildings to study the potential application of the ETTV criterion on residential air-conditioned buildings. From information obtained through the survey of households combined with data gathered on building construction and building materials, computer models on public and private residential buildings were developed. These simulations and analyses allowed an equivalent ETTV equation for residential buildings to be devised. The result was named the Residential Envelope Transmittance Value.



The study successfully developed and tested the application of the ETTV criterion on residential air-conditioned buildings. A new formula of RETV was obtained, arriving at a realistic cut-off of 25 watts per square metre. From 15 April 2008, all new residential buildings with a gross floor area of 2,000 square metres or more would have to comply with an RETV of 25 watts per square metre.

### **Benefits of RETV**

### **For Home Owners**

With the envelope thermal control in place, home owners enjoy higher quality homes with better facade materials. They would also reap the benefit of lower energy bills. With every unit decrease in RETV, the annual cooling energy decreases by approximately 4%.

### For the Industry

As a key parameter in the Green Mark award criteria, RETV challenges designers to improve and create better designs. RETV is especially challenging to architects, as a facade is a passive (non-mechanical) technology and an integral part of a building's design.

### For Building Control

RETV has made the Building Control Regulations more comprehensive, updated and relevant to the modern built environment.

### For the Natural Environment

With the expected reduction in energy consumption for residential buildings, RETV helps to conserve Earth's natural resources.



# Keep Buildings in Good Health

Maintaining buildings regularly in good health ensures structural safety. This was emphasised at a BCA seminar on 'Structural Inspection and Rectification of Buildings', held on 17 October. The seminar attracted and benefitted about 480 participants, including building owners, management corporations, government agencies, property managing agents, professionals and practitioners.



Using case examples, speakers from BCA showed that mandatory periodic structural inspection is an effective way to detect and rectify structural defects so as to maintain building structures in good health. They also discussed various ways to prevent buildings from becoming dangerous and highlighted the danger of illegal additions and alterations of structures.

Industry experts at the seminar also shared their experiences on methods to maintain and prolong the structural life span of buildings. They further spoke on how to maintain and ensure slope stability by adopting a systematic approach to risk and impact assessment and management.

To create greater awareness, BCA has, among other efforts, produced a leaflet on 'Safe Slope and Slope Protection Structure'. This was given out to participants of seminars and to more than 1,000 households as part of the advisory on proper maintenance of slope stability.

While BCA continues its public education and improvement efforts, Mr Ong Chan Leng, BCA's Director of Special Functions, urged property owners, management corporations, property managing agents and professional engineers to be committed to mandatory periodic structural inspections. They should also remain proactive in regular inspections and maintenance of structural safety and be vigilant in taking preventive measures against structural defects promptly.

### Funding Available The Singapore Government has enhanced its business financing schemes to help all local firms gain access to credit in this current economic slowdown. The enhancements, effective from 1 December 2008, include increasing loan quantum and extending the schemes to all local enterprises. Local construction-related firms are also eligible for these schemes. Required Financing **Programme Brief Enhancements Financing** Scheme (Valid for one year with effect from 1 December 2008) • Interim fixed interest rate financing • New programme for all SME and Non-SME companies Working capital Bridging Loan Programme programme (except those with less than 10 employees) Maximum loan quantum of \$500,000 (unsecured) Default risk shared between Government and participating financial institutions at 50:50 Loan Insurance • Working capital loans secured against • Extended to include all SME and Non-SME Scheme (LIS) account receivables companies. (Domestic Loans) No limits but insurer has veto rights over • Default risk shared between the insurer and participating financial institutions at

• Government support of 50% of insurance

• Financing to assist enterprises to modernise

• Maximum loan quantum of \$15 million

75:25

Local Enterprise

Finance Scheme

Asset-based loans for

factory, machinery, equipment purchase or

lease/hire purchase

premium on loans

and upgrade operations

More Government

**Definition of SME** (small and medium enterprises): (i) Group has no more than 200 employees for services and construction sectors (ii) Group fixed assets are below S\$15 million for manufacturing sectors (iii) Registered or incorporated in Singapore, with at least 30% local shareholding.

**Definition of non-SME** (larger enterprises): (i) Group has more than 200 employees for services and construction sectors (ii) Group fixed assets are above S\$15 million for manufacturing sectors (iii) Registered or incorporated in Singapore, with at least 30% local shareholding.

For more information on the schemes, please log on to the EnterpriseOne website at <www.business.gov.sg - Announcements - Business Financing Enhancements> or SPRING Singapore at <www.spring.gov.sg - Financing Options>. Further enquiries can be directed to EnterpriseOne at 6898 1800 or <enterpriseone@spring.gov.sg>.

• Expanded to provide term loans using fully-paid

• Default risk shared between Government and

 Default risk shared between Government and participating financial institutions at 50:50

**Extended to Non-SME:** 

assets as collaterals and to include financing of more

types of construction equipment and heavy vehicles

participating financial institutions at 80:20 (from 50:50)

Date	Event	Contact
8 Jan'09	Seminar on Leveraging Workplace Safety & Health Certifications and Programmes to Improve Construction Safety	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
9, 12, 13 & 14 Jan'09	The Green Mark Professional - Core Module _ Building Energy Modeling & Thermal Simulation	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
12 & 13 Jan'09	BMSMA for Building Management Personnels	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
13, 14 & 15 Jan'09	Essential Knowledge in Construction Regulations and Management for Licensed Builders	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
14 Jan'09	Construction and Property Prospects Seminar	Pauline Goh DID: 63255078 Email: pauline_goh@bca.gov.sg
17 Jan'09	Built Environment Scholarship, Training and Career Fair cum BCA Academy Open House	Tan Hoon Wee DID: 63255027 Email: tan_hoon_wee@bca.gov.sg
19, 20 & 21 Jan'09	Certified QM/CONQUAS Managers Course	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
Starting on 2-Feb'09	National Building Qualification in Project Supervision	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
Starting on 2-Feb'09	National Building Qualification in Supervision and Coordination of M&E Works	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
25 & 26 Feb'09	Building Information Modelling (BIM) Asia	Jack Lee (GM of Tonkin Corporation) DID: 6829 2358 Email: merlion@TonkinCorporation.com

### **Contest**

- 1. Name the web portal that was launched at the BCA Academy Graduation Ceremony, as well as its website address.
- 2. Name 3 benefits of using mobile tablet PCs for CONQUAS assessment.
- 3. When do the government's enhancements to its business financing schemes take effect?

Please send in your entries by 16 January 2009 to Editor Pillars, Building and Construction Authority, 5 Maxwell Road, #16-00, Tower Block MND Complex, Singapore 069110. Or e-mail: bca\_enquiry@bca.gov.sg or fax to 63254800. Please indicate your name, designation, company, phone number and address. Selected entries will stand to win attractive shopping vouchers.

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Incentive Schemes
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