

PILLARS

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Building and Construction  Authority



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PILLARS

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Dr Kelvin Lee is a Technical Manager at Samwoh Corporation. He was involved in the recent groundbreaking project awarded by the MND Research Fund to construct the region's first building using up to 100% recycled concrete aggregate. This achievement in modern construction was awarded the BCA Green Mark Platinum Award in 2010. Kelvin will continue the pursuit of exploring other waste materials that can potentially be recycled for applications in the construction industry in the near future.

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Pillars is published bi-monthly by the Communications Department, Building and Construction Authority
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CEO's Message



Dear readers,

Let me kick-start this issue by sharing a piece of good news with all of you - the construction industry is set for a promising outlook for the year ahead, where we can expect higher construction demand.

In fact, at the recent Construction and Productivity Prospects Seminar held in January, BCA projected the total construction demand to rise from \$25.7 billion in 2010 to a range of \$22 billion to \$28 billion in 2011. I am confident to say that we will continue to see sustained growth in the construction industry, especially after celebrating the architectural and engineering achievements upon completion of Singapore's two major integrated resorts - Resorts World Sentosa and Marina Bay Sands.

Certainly, we must persist on this zealous quest to push new boundaries in the construction industry. With upcoming projects such as the building of the Institute of Technical Education's 3rd regional campus at Ang Mo Kio and LTA's Downtown MRT Line Stage 3 contracts, public sector demand is projected to grow to between \$12 billion to \$15 billion this year, making up more than half of the projected overall construction demand. The same positive growth goes for the private commercial sector, which is seeing renewed interest due to buoyant office space demand and a vibrant retail sector. I am looking forward to see more vibrant and state-of-the-art buildings taking shape in Singapore's cityscape.

Another significant matter or rather, the "talk of the town" on the tip of everyone's tongue is the term "productivity". As part of the national productivity drive, BCA has just rolled out the Construction Productivity Roadmap, as announced by Senior Minister of State for National Development and Education, Ms Grace Fu, in Parliament recently. BCA will also be holding the first ever Singapore Construction Productivity Week from 25 to 29 April 2011. The main aim of this event is to promote the adoption of innovative construction technologies and methods that

enhance construction productivity. It also presents an ideal platform for industry stakeholders to come together to interact and learn from local and foreign experts and from each other's innovation and technological advancement. As a 3-in-1 event, the Week will host a Build Smart Conference, a BuildTechAsia Exhibition, as well as a Skilled Builder and BIM competition.

Speaking of BIM (which I am sure should be of no stranger to most of you by now), I would like to announce BCA's formulation of the BIM Roadmap. Under this roadmap, we have established a Centre for Construction IT to build capability, raise industry awareness and to provide funding and support to help companies along their BIM journey. So far, we have committed more than \$1 million for 26 companies tapping on the BIM Fund. Read about the case studies and success stories on BIM adoption in Issue 4 of Build Smart magazine.

"Singapore has to keep growing, thus the need to raise productivity" - P.M. Lee

With this, I leave you with a gentle reminder to mark down the important dates for the Singapore Construction Productivity Week in your calendar - it will be an exciting and enriching time- and I will see you there.

Dr John Keung
Chief Executive Officer

A PROMISING OUTLOOK IN 2011

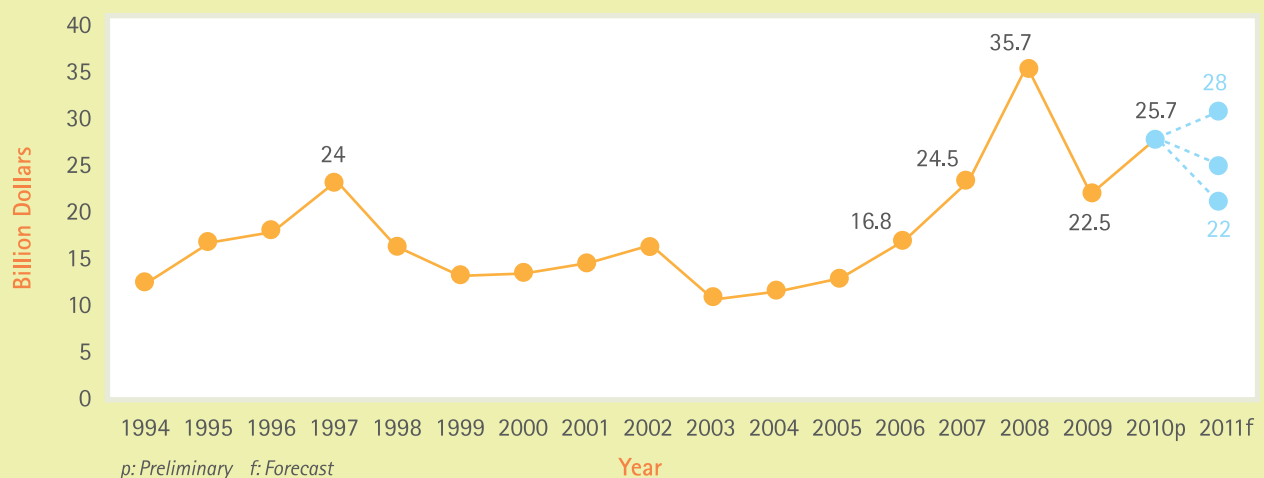
The construction industry can look ahead to increased demand in 2011, buoyed by a healthy projected GDP and the Singapore government's continued investments in public infrastructure to support the growing economic activities.



In fact, BCA announced, at the Construction and Property Prospects Seminar 2011 held on 12 January, its projections that the construction demand¹ was likely to reach between \$22 billion and \$28 billion, reflecting a continued and sustained workload in 2011.

In 2010, Singapore's construction demand saw an increase of 14% year-on-year from \$22.5 billion in 2009 to \$25.7 billion, in tandem with the strong economic growth last year. The total construction output² (payment made for work done) was estimated to moderate from a record high of \$31 billion in 2009 to about \$27 billion in 2010, as a result of the near completion of a number of major projects including the two integrated resorts.

Construction Demand (Contracts Awarded), 1994–2011



Growth Drivers

According to BCA's forecasts, public sector construction demand will strengthen to \$12 and \$15 billion in 2011, contributing about 55% to the overall construction demand. Key projects fuelling the rebound include Institute of Technical Education's third regional campus at Ang Mo Kio, the new Jurong General Hospital with a community hospital at Jurong East, Victoria Theatre and Victoria Concert Hall redevelopment and Land Transport Authority's Downtown MRT Line Stage 3 contracts.

Private sector construction demand will moderate between \$10 billion and \$13 billion in 2011, from \$17.6 billion the previous year. This reflects the more cautious industry sentiments among developers amidst a more moderate economic outlook.

Private sector residential construction demand will also moderate between \$5.1 billion and \$6.1 billion in 2011, from \$8.3 billion the previous year. Private sector commercial construction demand will most likely be backed by a buoyant office space demand and vibrant retail sector, while high-specification and state-of-the-art buildings will continue to dominate the private sector industrial construction sector.

Based on preliminary data provided by the public sector agencies, the industry can expect the following for 2011:

- 253 construction consultancy tenders to be called, with about 80% from building projects.
- 283 construction tenders to be called, with fairly equal distribution between building and civil engineering projects.

Beyond 2011

To facilitate the industry in project and resource planning for the medium term, BCA projects the following:

- Average construction demand to range between \$19 billion and \$26 billion per annum in 2012 and 2013.
- Public sector construction demand to reach between \$9 billion and \$12 billion per annum in 2012 to 2013. About 65% of the total demand will come from building projects, with the remaining 35% from civil engineering projects.
- On-site construction activity or output to range from \$24 billion to \$26 billion in 2011 and \$20 billion and \$27 billion per year in 2012 and 2013.

Call to Raise Productivity

BCA continues to urge the industry to adopt productivity and capability building for the future. As the use of precast concrete is one of the key means to raise construction productivity, BCA recognises the value in giving the industry an overview of the medium-term demand prospects for precast concrete to facilitate resource planning in the construction sector.

Based on the projected construction output for various development types, BCA expects the demand for precast concrete to:

- Increase from 0.66 million m³ in 2010 to 0.8 million m³ to 1.1 million m³ in 2011,
- Sustain at 0.75 million m³ to 1.15 million m³ per year in 2012 and 2013.
- Increase in tandem with the drive towards higher productivity through wider adoption of precast construction method in the longer term.

¹ Construction demand is measured by total value of construction contracts awarded. All construction demand figures stated here exclude reclamation projects.

² Construction output is measured by total value of certified progress payments.

³ Demand forecast beyond the immediate 1 year will be done on a rolling basis to take into account subsequent changes in economic outlook and other pertinent factors.

Table 1a: Review and Outlook for Construction Demand & Output (Year 2010–2013)

Year	Construction Demand (Value of Contracts Awarded)			Construction Output (payment made for work done)
	Public	Private	Total	
2010	\$-8.1 billion	\$ 17.6 billion	\$25.7 billion	\$27 billion
2011	\$12 to 15 billion	\$10 to 13 billion	\$22 to 28 billion	\$24 to 26 billion
2012	\$9 to 12 billion per year	-	\$19 to 26 billion per year	\$20 to 27 billion per year
2013	<i>(65% from building projects & 35% from civil engineering projects)</i>			

Table 1b: Contracts Awarded (Excl. Reclamation) by Sector and Type of Work

	2008	2009	2010 (Preliminary Actual)	2011 (Forecast)	
Both Sectors	35.7	22.5	25.7	22.0	- 28.0
Building Work	27.1	13.5	22.7	15.0	- 19.5
<i>Residential</i>	11.1	6.7	11.1	7.9	- 9.4
<i>Commercial</i>	8.5	1.6	2.8	2.2	- 3.1
<i>Industrial</i>	3.7	2.0	4.0	2.0	- 3.3
<i>Institutional & Others</i>	3.8	3.1	4.8	3.0	- 3.7
Civil Engineering Work	8.6	9.0	3.0	7.0	- 8.5
Public Sector	15.5	13.9	8.1	12.0	- 15.0
Building Work	7.8	5.7	5.9	5.6	- 7.2
<i>Residential</i>	4.7	2.8	2.8	2.8	- 3.3
<i>Commercial</i>	0.1	0.1	0.1	0.1	- 0.1
<i>Industrial</i>	0.1	0.2	1.0	0.2	- 0.7
<i>Institutional & Others</i>	2.9	2.6	2.1	2.5	- 3.1
Civil Engineering Work	7.7	8.2	2.2	6.4	- 7.8
Private Sector	20.2	8.6	17.6	10.0	- 13.0
Building Work	19.3	7.8	16.8	9.5	- 12.3
<i>Residential</i>	6.4	3.9	8.3	5.1	- 6.1
<i>Commercial</i>	8.3	1.6	2.7	2.1	- 3.0
<i>Industrial</i>	3.7	1.8	3.0	1.8	- 2.6
<i>Institutional & Others</i>	0.9	0.5	2.7	0.5	- 0.6
Civil Engineering Work	0.9	0.8	0.8	0.5	- 0.7

Source: BCA as at 31 Jan 2011

Table 2a: Number of Construction Consultancy Tenders To Be Called by Public Sector Agencies

Development Type	Period	Project Management	Architectural	Quantity Surveying	Civil & Structural Engineering	M&E Engineering
Building	1Q11	10	22	23	25	24
	2Q11	0	8	8	8	8
	3Q11	2	10	10	10	12
	4Q11	0	6	6	6	6
Civil Engineering	1Q11	0	1	12	1	0
	2Q11	0	0	9	0	0
	3Q11	2	3	7	4	3
	4Q11	0	0	6	0	1

Note: Tentative schedules subject to change

Table 2b: Number of Construction Tenders To be Called by Public Sector Agencies

Development Type	1Q11	2Q11	3Q11	4Q11
Residential	13	18	14	8
Education	12	4	6	8
Other Buildings	21	17	18	8
Sub-Total (Building)	46	39	38	24
Roads & Bridges	13	12	6	15
Sewerage & Drainage	15	12	2	2
Rail & Related	5	0	0	0
M&E – Rail and Roads	3	0	3	0
Other Civil Engineering	23	8	9	8
Sub-Total (Civil Engineering)	59	32	20	25
Total	105	71	58	49

Note: Tentative schedules subject to change

The BIM Roadmap Forward

Building Information Modelling (BIM) is an integrated process that allows professionals to explore a project's key physical and functional characteristics digitally – before it is built. It thus allows for a more coordinated and consistent approach to managing the information used for designing and visualisation, simulation, analysis, documentation, delivery as well as facilities management. It also helps to avoid unnecessary rework downstream.

BCA's CEO, Dr John Keung, has identified BIM "as a key driver to improve the level of integration and collaboration across the various disciplines in the construction value chain." BCA targets to shift the industry from 2D to 3D BIM by 2015.

Centre for Construction IT and the BIM Roadmap

BCA has formulated a BIM Roadmap and established the Centre for Construction IT to build up capability, raise industry awareness and to fund and support companies on their BIM journey. The Centre will push the adoption of BIM through these five strategic thrusts set out under the Roadmap.



Incentivising Early Adopters

"A \$5.7 million fund has been set aside to defray the costs of training, consultancy, software and hardware within the industry. Since June 2010, more than \$1 million of funding has been committed."

Ms Cindy Liew Siew Ling, Technical Consultant



Building BIM Capability & Capacity

"The Centre will work with institutes of higher learning for intensive BIM training for graduating students and with industry associations on discipline-specific training. BCA Academy also plans to introduce a Specialist Diploma in BIM to engage existing practitioners. In addition, the Centre will provide chaperon services to handhold firms to jump start their first few BIM projects and to overcome problems during the initial learning period."

Dr Tan Kee Wee, Centre Director (CCIT)



Promoting Success Stories

"The Centre will launch a BIM portal and continue to run a series of seminars and workshops to reach out to the industry."

Mr Sonny Galoso Andalis, Technical Consultant



Removing Impediments

"The Centre will introduce a library of design objects that industry practitioners can use to build their digital building models in a LEGO-like manner. The information carried by these objects can be reused downstream for cost estimation and construction planning."

Mr Felix De Lara Batad, Technical Consultant

Creating the Demand – Public Sector Taking the Lead

"With new public sector building projects likely to make up 40% to 60% of the overall construction demand in the coming years, the Centre is working with several government agencies on pilot projects using BIM. At the same time, the Centre is developing BIM design templates for regulatory submissions and data sharing to facilitate BIM e-submissions by 2015."

Dr Tan Kee Wee, Centre Director (CCIT)

Creating the Demand – Enabling BIM e-Submissions:

"Acceptance of BIM e-submissions by the regulatory agencies will encourage BIM-ready qualified persons to submit their BIM building models. The Centre has developed a set of BIM design templates for Qualified Persons to prepare BIM for regulatory submissions and for data sharing within the project team. BCA will calibrate the need for mandatory BIM e-submissions for regulatory approval by 2015 to provide further impetus to change."

Mr Chidambaram, Senior Technical Consultant



BCA ACADEMY OPEN HOUSE

First Step towards Building Careers for the Future

BCA Academy's campus was abuzz with activities at the annual Open House on 14 January 2011. An estimated 400 students from the Institute of Technical Education and secondary schools, joined by 60 walk-ins, embarked on a discovery tour of the Academy.

Visitors began an exploratory walkthrough of seven designated stations spread around the campus, starting from the Centre for Construction IT. The tour provided them with insight into the learning environment and the available full-time diploma programmes offered by the BCA Academy. The tours were specially tailored to inspire potential students to enrol at the Academy for an enriching learning experience for a future career in the building industry.

Enthusiasm was evident as the students learnt about the Zero-Energy Building, which was the first of its kind in Singapore and South East Asia. The Stencilling station was a hit with the students at the next stop. The hands-on experience with different methods of painting, ranging from air-brushing to wood-graining, proved to be popular with the eager participants.

Along the route, students from different target groups attended talks at the auditorium to gain useful information about the Academy's background, study culture and selected learning programmes.

The visitors were also invited to join in a Singing Competition at the basketball court and take part in the friendly Futsal Competition, the highlight of the day. Eleven teams of football players, including a staff team, displayed their dribbling skills as well as great teamwork and camaraderie in competing for the championship trophy.

The tour ended at the cafeteria where the participants visited the various booths, which showcased the Academy's academic programmes. Throughout the tour, our diligent student guides were ever ready to assist and answer the visitors' questions.



Built Environment Scholarship, Training & Career Fair 2011



BCA organised the 3rd run of its Built Environment Career Fair on 15 January 2011, in conjunction with BCA Academy's Open House which was held on 14 January 2011.

This annual event received strong support from 28 major industry stakeholders across the construction value chain in setting up booths to attract new entrants in joining the building and construction sector.

Through various publicity initiatives, BCA was able to entice a large number of both students and mid-career conversions jobseekers to attend the event. In addition to the networking opportunities with the bigger firms at the career fair booths, students and jobseekers had the chance to learn more about the development and progress of the construction sector through the informative career talks and tours of BCA's Zero Energy Building as well as the BCA Gallery.

There has been positive response and feedback received from both firms and participants on the effectiveness of such dedicated fairs. Going forward, BCA will ride on this success and continue to work closely with the industry stakeholders to step up its career promotion efforts through initiatives such as organising career talks and learning journeys to BCA Gallery.

SINGAPORE CONSTRUCTION PRODUCTIVITY WEEK



Mark Your Calendars!

Date: 25 – 29 April 2011

Venues: BCA Academy and Singapore Expo

A week of knowledge and activities to promote the adoption of technology, skills and methods used to enhance construction productivity.

The inaugural Singapore Construction Productivity Week, organised by BCA, has much in store for representatives of all levels from the building and construction industry. It will be a unique learning experience as innovations and technologies are showcased, with experts to present some of the best practices and case studies on construction productivity. Exciting competitions are also lined up, featuring the key skills required for productivity gains.

Singapore Construction Productivity Week comprises three key events:

At BCA Academy		At Singapore Expo		
Mon (25 April)	Tue (26 April)	Wed (27 April)	Thu (28 April)	Fri (29 April)
Launch of Productivity Week		2. Build Smart Conference		Build Smart Site Tours
1. Skilled Builder and BIM Competition		3. BuildTechAsia 2011 Exhibition		

The Skilled Builder and BIM Competition (25 - 26 April) is a prelude to the Conference and Exhibition held from 27 to 29 April. The half-day Build Smart Site Tours on Friday, 29 April, will allow visitors to visit some winning projects from the BCA Construction Productivity Awards that have adopted productive methods of construction.

Skilled Builder and BIM Competition

Organisers: BCA, Singapore Contractors Association Ltd, Building Smart, SPHERE Exhibits

Venue: BCA Academy

The Skilled Builder and BIM Competition provide a platform for the development of the right skill sets which reinforces positive skill building to improve construction productivity.

The skills competition will be in these categories: Telescopic Handler, System Formwork Installation, Drywall Installation, Crane Operations, Building Information Modelling (BIM).



Telescopic Handler



System Formwork Installation



Drywall installation



Building Information Modelling

With a maximum of 15 teams competing in each category, the competition will be an excellent opportunity for firms to showcase their capabilities and learn from fellow counterparts. All participants will be awarded a certificate of participation, and prizes will be given out to the winners of each category. Based on total aggregate scores of all participated categories, the prestigious Challenge Trophy will also be presented to the overall winner.

Build Smart Conference

Organisers: BCA, SPHERE Exhibits
 Venue: Singapore Expo
 Supported By: Singapore Contractors Association Ltd, Singapore Institute of Building, Singapore Institute of Surveyors and Valuers, Institution of Engineers, Singapore Institute of Architects, Singapore Manufacturers' Federation, Specialist Trade Alliance of Singapore, Singapore Electrical Trades Association

Build Smart is a two-day conference on raising construction productivity. Set to attract 600 – 700 delegates, the conference aims to update the industry on innovative construction technologies, raise industry awareness on productivity and showcase projects that have successfully adopted productive methods of construction.

Conference Topics:

- Track 1 - Adoption of Building Information Modelling (BIM) and Construction IT
- Track 2 - Effective Procurement Models and Construction Management
- Track 3 - Application of Precast and Prefabrication
- Track 4 - Regulatory Review by Government Agencies
- Track 5 - Innovative Construction Technologies

There will also be sharing sessions by the inaugural Construction Productivity Award winners on leading the change in construction productivity.

BuildTechAsia 2011 Exhibition

Organisers: SPHERE Exhibits
 Venue: Singapore Expo
 Supported By: Singapore Contractors Association Ltd, Singapore Institute of Building, Singapore Institute of Surveyors and Valuers, Institution of Engineers, Singapore Institute of Architects, Singapore Manufacturers' Federation, Specialist Trade Alliance of Singapore, Singapore Electrical Trades Association

Slated to be the largest building technology industry gathering in South East Asia, BuildTechAsia 2011 serves as a premier platform for exhibitors and visitors to network with government officials and industry players for business opportunities in the region. This event, which targets 5,000 to 7,000 visitors from the region, represents an unprecedented and unique experience to bring major industry players together in a three-day trade show event.

For more information or to register for the events under the Singapore Construction Productivity Week, please visit www.sgcpw.com

Protected by Innovations

BCA's CEO Dr John Keung and Director (Special Functions Division) Mr Ong Chan Leng visited the Circle Line's Caldecott MRT Station on 6 January, hosted by the Land Transport Authority's Deputy Chief Executive Mr Lim Bok Ngam and other senior directors. Find out some of the latest innovations showcased at this Circle Line (Phase 4) station, when it doubles up as a civil defence shelter.

At Caldecott MRT Station, a centralised locking mechanism is used to lock the big and heavy doors installed. Shelter blast doors in previous stations had to be secured by manually locking 20 bulky latches using an electrical hand tool, which was tedious and time consuming. Now that it is centralised, only one person is needed to turn a spindle wheel effortlessly by hand to lock each door, saving manpower and time. This innovation secured the first runner-up award at the BCA WITs Convention and Gold Award in the National Innovation Quality Convention in 2008.

Other recent improvements in transit sheltering found at Caldecott MRT Station included the centralisation of the civil defence communications and monitoring systems and continuous over-pressure monitoring of the shelter's interior leading to its exterior. These innovations were economical and effective solutions that boosted operational ease and lessened the workload for shelter management and maintenance personnel.

In addition, Caldecott MRT Station demonstrated sustainable design, green building, and energy and water conservation in most of its life-supporting systems, such as its water supply, electrical power and air-conditioning. The innovative and creative ways of incorporating emergency systems into peacetime systems also minimised costs and space. This approach had the advantage of ensuring that the shared systems would be operationally ready at all times. Furthermore, with creative and relatively cheap modifications of these systems and shelter spaces, the shelter would be able to increase the number of people it could house during emergencies.

All these innovations were the result of in-house brainstorming sessions, lessons learnt from the North-East Line and Circle Line (Phase 1 and 2) shelters and numerous interface meetings among officers from BCA, LTA and other industry players.



Young Leaders and Their Contributions

Developing Innovations in Green and Recycled Materials

Dr Kelvin Lee is into research on how waste can be recycled into useful construction materials. Here, he describes the challenges and achievements in his work at Samwoh Corporation.

Dr Kelvin Lee
*Technical Manager
 Samwoh Corporation*



As a Technical Manager of Samwoh Corporation, I play a key role in the company's research and development into innovative green and recycled materials as a substitute for imported natural materials. I hold a doctorate degree in civil engineering from the National University of Singapore, with over six years of research studies on waste materials for construction applications.

Samwoh Corporation is, in fact, a leading integrated construction company and green materials supplier in Singapore. It is here I can get involved in major green research projects, such as a recent groundbreaking project awarded by the Ministry of National Development Research Fund. The project involved the use of recycled concrete aggregate (RCA) to construct the Samwoh Eco-Green Building, the first building in the region to be constructed using up to 100% of this material. This revolutionary achievement in modern construction charted a positive direction for future sustainable design and was awarded the BCA Green Mark Platinum Award in 2010.



Aerial view of Samwoh Eco-Green Park





Waste materials (asphalt waste and incinerator bottom ash) transformed for use in road construction.

I am also involved in other intensive research studies to evaluate the use of RCA and other waste materials such as asphalt waste (derived from maintenance of road pavements) and incinerator bottom ash (from incinerated refuse waste) for road construction applications. The recycled materials developed from the studies have been approved by Land Transport Authority for use in road construction in 2010. These studies have also clinched several awards, such as the National Innovation & Quality Circles Assessment Star Award in 2009 and 2010 as well as the Minister's Innovation Award 2009 by the Ministry of Transport.



Apart from research work, I have participated in many international conferences and seminars to share my knowledge and experience on green technologies and the use of recycled materials for construction applications. At the moment, I am also serving as a Council Member in the Pavement Engineering Society in Singapore, a non-profit organisation that aims to promote knowledge exchange in pavement engineering among fellow professionals in the pavement industry.



A key challenge I am facing is the acceptance of recycled materials by industry stakeholders. There is a need for greater awareness that recycled materials can deliver comparable performance with that of natural materials. With the advent of technologies, recycled materials can be processed into building materials that can provide a substitute for natural materials.

Another challenge is the commercial viability of using recycled materials. Most industry stakeholders perceive that recycled materials have to be more economical than natural materials. However, this may not be the case as the cost of recycled materials is largely dependent on the market demand of building materials and the production cost of recycled materials. Nonetheless, with the government's call for sustainable development and the implementation of the BCA's Green Mark Scheme, I foresee a positive growth on the use of recycled materials in the construction industry in the near future.

In the meantime, I plan to continue exploring other potential waste materials that can be recycled for construction applications as we move towards a future where, hopefully, nothing will go to waste again.



What is the Young Leaders Programme?

Dr Kelvin Lee and many other young professionals are part of the BCA's Build Environment Young Leaders Programme. This initiative was launched in 2009 to nurture young professionals with the dedication, passion and leadership qualities to lead the construction sector in the near future.

The programme aims to proactively engage these capable professionals within the industry by giving them a greater stake in the advancement of the industry. In addition, it facilitates their training and upgrading progression so that they can constantly enhance their competency and enjoy greater job satisfaction.



Hillview Estate Blossoms with Estate Upgrading Programme

Following its recent Estate Upgrading Programme, Hillview Estate welcomed Mr Mah Bow Tan, Minister for National Development, and members of the media for a visit on 2 December 2010. The visitors marvelled at the improved infrastructure and facilities in this private estate.



Quick Facts about EUP

- The Estate Upgrading Programme (EUP) rejuvenates and upgrades the infrastructure and common facilities of older private estates. Complementing this is the Interim EUP (I-EUP) which carries out small-scale improvements in some estates without having to wait for major works under EUP.
- BCA is the agency that facilitates EUP along with other agencies such as the National Environment Agency, National Parks and Public Utilities Board.
- EUP has invested \$117 million since 2000, benefitting more than 34,000 households in 44 private estates.
- EUP has set aside another \$21 million to upgrade six estates over the next three years.



- Senior Citizen's Fitness Station
- Community Garden
- Swings
- Basketball Court
- Pavilions
- Entrance Signage
- Notice Boards
- Benches



A thumbs up by Mr Mah and the residents to BCA for a job WELL DONE!

Arm Yourself for CONQUAS

How do you meet CONQUAS's stringent criteria? What knowledge or skills do you need to prepare yourself for assessment?

Did you know that BCA Academy conducts a one-day CONQUAS training workshop each month for builders? To further encourage participation, four complimentary training places are provided for every CONQUAS project that is submitted for assessment. In addition, there are customised CONQUAS training workshops available for developers and consultants.

Find out all you can about CONQUAS, the objective measure of workmanship quality in new building projects, developed by BCA in cooperation with leading public sector agencies and industry professional bodies.

For more details or to download the application form, please visit BCA Academy's website at www.bcaa.edu.sg.



Participants using CONQUAS® tools.

What Participants Say

"Good course. It has greatly improved my knowledge of CONQUAS and its assessment criteria."

"The training and facilities provided at this workshop are really useful and effective",

"I have a much clearer understanding about CONQUAS after taking this course."

ZEB Wows Brazilian Delegation



A BCA Senior Research Officer leading the tour of the ZEB.

Delegates from the Federal University of Rio Grande do Sul, led by Brazil's Minister of Science and Technology Mr Sergio Machado Rezende, visited BCA's Zero Energy Building (ZEB) on 16 November 2010. Among some of the features that wowed the Brazilian delegates was ZEB's solar panel roof, with its simple but effective natural daylighting and ventilation features.

The occasion ended with a short discussion between BCA representatives and the Brazilian delegates about green buildings and sustainability. They also explored the potential for visits and participation in international seminars and exchanges between both countries.



Enhanced Guidelines

For Safe Demolition Work and Proper Recycling of Demolition Waste

High-rise buildings are increasingly being demolished due to enbloc sales and the Selective Enbloc Redevelopment Scheme. To ensure such demolitions are carried out safely without posing a hazard to the public, BCA worked with SPRING to review and launch code SS 557: 2010 – Code of Practice for Demolition, to replace the current SS CP 11: 2002. The new code provides enhanced guidelines for the safe demolition of structures and the recycling of demolition wastes, including details on the development of a demolition plan and stability report, waste minimisation and recycling.

Safe Demolition of Structures

The demolition plan includes comprehensive guidelines on the demolition sequence of particular structural members, especially building elements that are located along the building's perimeter, which pose a greater risk from falling off the building.

SS 557:2010 has made it mandatory to install a catch fan, an inclined catch-platform at the perimeter of the building at a vertical spacing of not more than 10 metres. The catch fan will catch any loose demolition debris from falling off the building.

The new code also provides guidelines on the provision of steel ramps to facilitate the descending of demolition machines. It strictly prohibits any use of demolition debris to serve as a ramp to prevent overloading of the structural members.

Propping requirements are to be based on the imposed load on the floor slab, as seen in the following table.

Requirement on propping	Minimum design imposed load of floor slab (KN/m ²)			
	1.5	3.0	5.0	7.5
Maximum weight of each machine on floor slab (tonnes)	11	11	11	11
Minimum no. of floors to be propped	7	5	4	3
Maximum spacing of steel props	1.2m	1.2m	1.2m	1.2m

NOTES: The values are derived based on a 300 mm thick transient demolition debris.

Temporary props are to be set up with bracings to transfer load to floors below.



The enhanced code strongly encourages the use of CCTV for site monitoring.



There is also greater emphasis in the revised code on the demolition of high-rise buildings. Before the commencement of demolition work, protective hoarding with full-height nettings and covered walkway must be put in place as precautionary measures for public safety. Guidelines for the design of roofs of the covered walkways are provided. For the safe demolition of high-rise structures, the code specifies a minimum imposed load for the design of roof shelters for pedestrian walkways.



Item	Purpose & Requirements	Documentation
Pre-demolition audit	<ul style="list-style-type: none"> Identify materials in the building to be torn down, that can potentially be reused back in the new built Set materials recovery/recycling targets Estimate quantities of salvageable materials Identify appropriate steps for demolition to achieve those set targets 	Pre-demolition audit form ¹
Sequential demolition	<ul style="list-style-type: none"> Strip existing fixtures and fittings (e.g. false ceiling, air conditioning units, doors, wooden floors, partitions, ceilings, windows, etc) Carry out demolition in reverse order to the construction process Plan for separation and sorting of building materials Demolish structures with higher concrete content (such as concrete parapet walls, etc) 	Method statement
Site waste management	<ul style="list-style-type: none"> Draw up site plan of the building/structures to be demolished, indicating available temporary storage space for different types of waste materials, and feasibility for mobile/on-site recycling Separate demolition debris into different groups whenever possible (such as concrete, bricks, metals, wood/timber, plastic, etc) Proper labeling and storage of sorted waste generated in the demolition process 	<ul style="list-style-type: none"> Waste management plan Records of debris disposal Records of debris management system and movement of waste

¹ The pre-demolition audit form is downloadable from BCA's website (http://www.bca.gov.sg/SustainableConstruction/others/sc_swmp.pdf) and is to be submitted to BCA before any demolition works are carried out.

Other safety requirements include the criteria for a safety zone in situations where demolition is carried out by machines. The code clearly specifies the safety zone needed for the movement of the machine so as to prevent it from operating too close to the building's edge.

The Demolition Protocol is now recognised in the revised Green Mark Scheme- Green Mark Version 4, which will award Green Mark Points to developers who encourage their appointed contractors to adopt the protocol.

Implementation of the SS 557: 2010 Code

BCA has already conducted a few dialogue sessions with industry stakeholders, such as professional engineers and demolition contractors on the latest guidelines in the revised code. Following these sessions, BCA has sent out circulars informing its stakeholders that SS 557: 2010 would be included in the Approved Documents, with effect from 1 July 2011.

In the meantime, BCA is encouraging qualified persons and builders to start familiarising themselves with SS 557: 2010 when carrying out demolition works.



New Regulations Safer Use of Glass in Buildings

BCA has announced new regulations on the use of glass at critical areas in buildings. These regulations will apply from 1 July 2011 to address the issues of spontaneous breakage of glass elements and bond failure of structural sealants used to support glazing.

Use of Glass at Critical Areas in Buildings

With the increasing use of glass in critical areas in building interiors and exteriors, such as roofs, canopies and safety barriers, BCA has introduced requirements on use of glass installed at critical areas. Where glass is used in a safety barrier to prevent fall from height, it must be laminated glass. Where tempered glass is used in any facade, roof, canopy, or other overhead glazing located at 2.4 metres or more in the building interior or exterior, appropriate measures should be put in place to protect occupants in the event of spontaneous shattering of the glass.

Use of Structural Sealant Glazing in Buildings

Glass, when used in building facades, was traditionally held onto aluminium frames through mechanical supports. However, the use of structural sealant glazing to bond the glass to the aluminium frames is becoming more prevalent. The new regulations will apply to the use of structural sealant glazing in a curtain wall or other glass installations – either within the interior or exterior of a building – located at a height of 2.4 metres or more.

For further information or clarification, industry professionals may email bca_enquiry@bca.gov.sg



Understanding New Building Plan Submission Guidelines

Two half-day seminars held in August and December 2010 helped the industry understand the new building plan submission procedures and requirements. Participants learnt about relevant administrative and technical requirements for submissions and received an update on the Building Control (Environmental Sustainability) Regulations. Case studies of pilot Building Information Modelling (BIM) submissions were also presented.



BCA has introduced the new SS 555:2010 – Code of Practice for Protection against Lightning to replace the former CP 33 standard. All developments whose building plans are submitted from 1 July 2011 will need to meet the requirements of the new standard.

The SS 555:2010 standard is aligned to the IEC 62305 International Standard on Protection against Lightning.

Under the Building Control Regulations, buildings (including rooftop gardens) and their occupants must be protected from the direct effects of lightning strike and the risk of lightning current being discharged through buildings.

At the very minimum, buildings must achieve a Class III lightning protection system under the SS 555:2010 standard to comply with the Regulations. Buildings with higher risks, such as those storing explosive and flammable content, would require a higher level of lightning protection.

For further information or clarification, industry professionals may email bca_enquiry@bca.gov.sg or contact the BCA's Building Plan and Management Division at 6325 7159.

Introducing the SS 555:2010 Standard Against Lightning Strikes



'Lightning Gurus' from various agencies, academic institutions and industry associations responsible for drafting the new code.

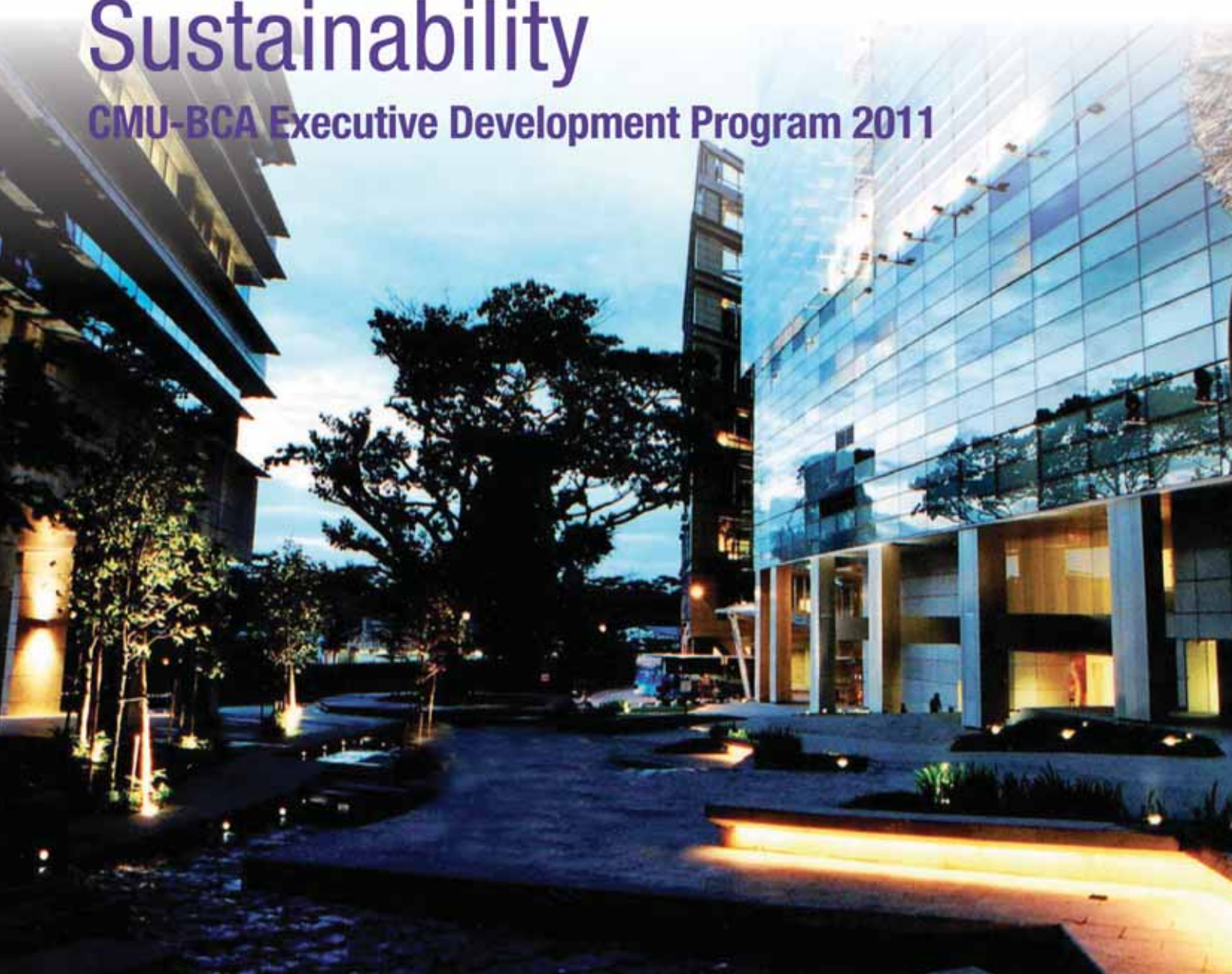
Events

(Mar ~ Apr 2011)

Date	Event	Contact
15, 17, 22 & 24 Mar 2011	Pile Foundations Design and Construction for Engineers	<p>BCA Academy – Business Development Unit DID: 62489843/824 Email: bca_academy@bca.gov.sg</p> <hr/> <p>visit www.sgcpw.com for more information</p>
16 & 17 Mar 2011	Construction Contract Administration	
22 Mar ~ 12 May 2011	Certification Course on Strategic Planning for FM Executives	
22 Mar ~ 5 May 2011	Certification Course on Construction Law & Contracts	
23 Mar 2011, am	Understanding the Green Mark Criteria for Existing Buildings and office Interior	
23 Mar to 4 May 2011	Project Management for Professionals in the Building and Construction Industry	
31 Mar 2011	Workshop on preparing and defending Loss and Expense Claims	
31 Mar & 1 Apr 2011	BCA-IFMA Regional Conference 2011	
1 Apr 2011	Code of Practice on Buildable Design	
4, 5 & 6 Apr 2011	Essential Knowledge in Construction Regulations & Management for Licensed Builders (Mandarin)	
13, 14 & 15 Apr 2011	Computational Fluid Dynamic (CFD) on Airflow Modeling for Green Buildings (GMP – Elective Module) _ NEW	
18 Apr ~ 23 Apr 2011 (Registration closes on 5th Apr 2011)	Carnegie Mellon University – BCA Executive Program 2011 – Leadership in Environmental Sustainability	
Starting in Sep 2011 (Registration closes on 27 May 2011)	Master of Science in Sustainable Building Design by The University of Nottingham _ 3rd Intake	
Starting in Sep 2011 (Registration closes on 27 May 2011)	Master of Science in Facility and Environment Management by University College London _ 2nd Intake	
25 Apr ~ 26 Apr 2011	Skilled Builder and BIM Competition	
27 Apr ~ 28 Apr 2011	Build Smart Conference	
27 Apr ~ 29 Apr 2011	BuildTechAsia 2011 Exhibition	
29 Apr 2011	Build Smart Site Tours	

Leadership in Environmental Sustainability

CMU-BCA Executive Development Program 2011



The CMU-BCA Executive Development Program in Environmental Sustainability aims to accelerate the development of executives in green stewardship roles that will steer Singapore's built environment towards the next level of environmental sustainability. This collaboration between Carnegie Mellon University and the Building and Construction Authority of Singapore offers industry leaders and senior management a global perspective of the sustainability movement by comparing geo-political and socio-economical policies as they relate to and influence the development of the built environment.

After the programme, participants will

- be able to present and manage the difficult trade-off between business goals and environmental goals.
- find the appropriate integrated solutions for higher energy efficient building design, construction and management.
- be exposed to state-of-the-art energy-saving technology, design and management support tools and best practices for project and business decisions.

Course Duration: 18 - 23 April 2011

(Program takes place at Pittsburgh and Philadelphia)

Program Fee <i>(GST is not applicable)</i>	SGD3,800
"Early Bird" Fee <i>(Payment received before 15 Mar 2011)</i>	
Group Discount Fee <i>(min 3 per group in the same organisation)</i>	SGD3,420
Discount Fee <i>(BCA Young Leaders, GMM and GMP graduates)</i>	

REGISTRATION NOW OPEN

Visit www.bcaa.edu.sg for more details