

# PILLARS

JUN  
2018

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

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# A GUIDE TO TOPPING BUILDING QUALITY STANDARDS IN SINGAPORE

A glimpse into the new age  
of construction.

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# WE HAVE GONE DIGITAL!

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Design

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Building and Construction Authority

# CEO'S MESSAGE



**Hugh Lim**

Chief Executive Officer  
Building and Construction Authority

## DEAR READERS,

While we often admire the architectural design of a building, workmanship and quality is what homebuyers and tenants look out for once they move in. Better and higher quality projects are more marketable and they improve the living environment for occupants. BCA is constantly looking at ways to uphold the high quality standards of buildings in Singapore. Do you know that BCA has a Quality Housing Portal where building owners can compare the quality standards of their buildings with other projects? Find out more about the portal and our quality schemes in this issue of Pillars.

I shared BCA's core priorities during the BCA-Industry Work Plan Seminar earlier this year, including BCA's efforts to partner industry in driving the pace of industry transformation. This includes the setting up of BuildSG, a transformation office to help achieve goals set out in the Construction Industry Transformation Map jointly launched with industry partners last year. BuildSG will help Trade Associations and Chambers, firms and individuals build capabilities to contribute to the transformation of the built environment sector.

On the research and innovation front, we are intensifying efforts and funding in the

areas of Automation, Robotics, Advanced Materials and Digitalisation. We are in the process of launching several grant calls for Design for Manufacturing Assembly solutions under the \$150 million "Cities of Tomorrow R&D Programme". There will also be efforts to build up capabilities in the Facilities Management sector. To this end, BCA has set up the Tripartite Facilities Management (FM) Implementation Committee to look into how we can enhance the nation's FM capabilities through adopting Smart FM-related technologies.

While we continue to push for transformation in the sector, it is also important to continue attracting and grooming future leaders. Therefore, I am glad to hear that the participants of the Built Environment Young Leaders Programme have benefited immensely from their work experience in our sector. Two of them, Dawn Neo and Hansen Goh, have shared their experience in advocating productive construction technologies such as Building Information Modelling and Prefabricated Prefinished Volumetric Construction in this issue. I hope their stories will continue to inspire others to join the built environment sector and to transform the way we Build Singapore.

# WHO CAN BUILD THE STRONGEST BRIDGE?

Fifteen teams of future engineers pit their skills against each other in a battle of technical ability, creativity and craftsmanship at the 5<sup>th</sup> NTU Design Bridge Competition.

## About the NTU Design Bridge Competition 2018

**When:** 10 and 11 March 2018

**Where:** Nanyang Technological University Singapore (NTU)

Organised by NTU's Civil and Environmental Engineering Club, the event saw 51 teams (26 and 25 for the polytechnic and university categories respectively) of Construction Engineering, Quantity Surveying and Digital Engineering students from local and overseas Institutes of Higher Learning gathering to vie for the top five places. Participants, in teams of two, were tasked to analyse, design and fabricate 3D physical prototypes of bridges. Teams were assessed on their model bridges' structural efficiency, sustainability, aesthetic appeal, and how well they presented and defended their solutions.

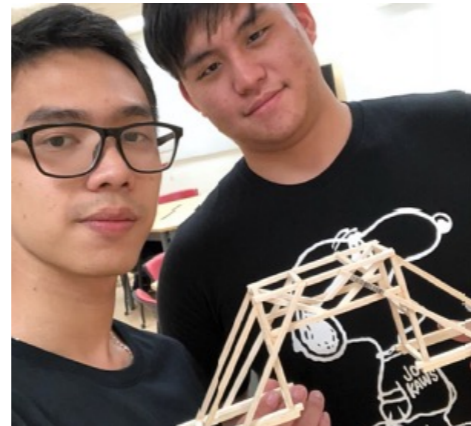
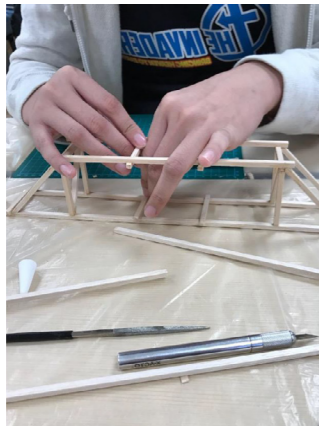


A team working on its bridge design

## Day 1 Competition in Progress

The teams analysed, designed and fabricated 3D physical prototypes within 5.5 hours using the provided materials resources (balsa wood, bass wood and cyanoacrylate adhesive). Each model bridge had to weigh below 30g.

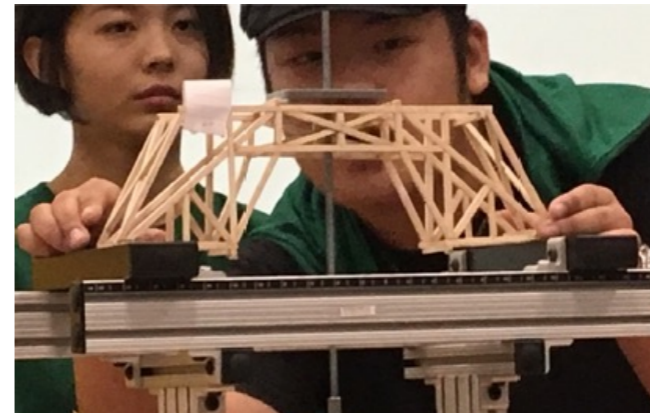
A BCAA team member fabricating a 3D physical prototype bridge model



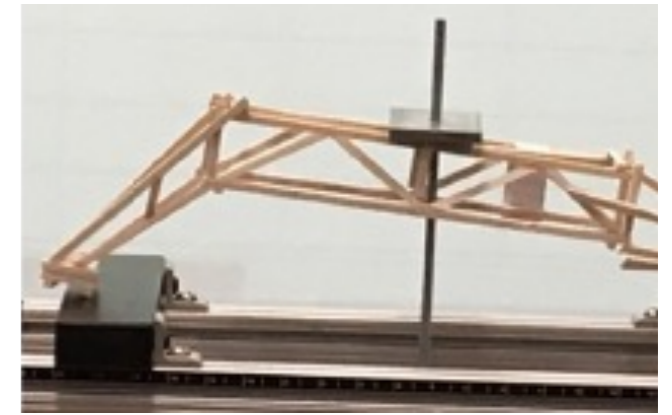
A BCAA team and its completed model bridge

## Day 2

Teams presented their bridge designs, and tested how much weight their bridges were able to withstand.



A BCAA team setting up a bridge model in the test rig for load testing



A typical bridge failure after a load test

## THEY DID US PROUD!

Two BCAA teams bagged two of the five top spots in the Polytechnic Category.

### Assessment Criteria

- Presentation (20%)
- Aesthetic Assessment (15%)
- Economical and Sustainability Assessment (15%)
- Load Testing Assessment (50%)

### And the Most Popular Award Goes to...

Congratulations to Team Champion Duck! Its project garnered 4.8k likes on Facebook, beating the second-highest record of 719 likes. The team received a certificate and a \$50 cash prize.



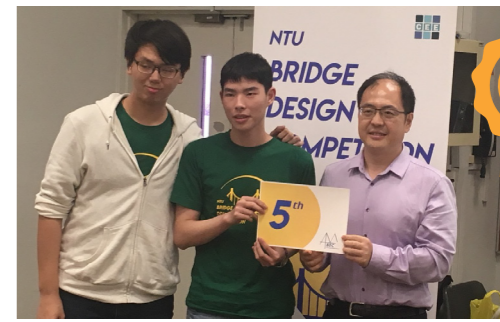
**1st Prize:** Vuong Duy Anh and Tran Huu Duc  
**Team Name:** P06 Duc  
**Prize:** Certificate + \$600



Weighing 21.1g, this duo's model bridge sustained a load of 26kg.



**Most Favourite Design Award:**  
Long Yilin and Irfan Enkisra



**5th Prize:** Wu Wen Xuan & Hao Pengfei  
**Team Name:** P25 Well-Played  
**Prize:** Certificate + \$100

This team's 24g model bridge took on a load of 19kg.

# A GUIDE TO TOPPING BUILDING QUALITY STANDARDS IN SINGAPORE

BCA's stamp of approval for quality standards can bring developers better branding, and contractors, more business opportunities. Here are some tips on getting the best out of BCA quality assessment schemes – and perhaps bagging a spot as one of Singapore's top 10 in quality workmanship standards!

## 01

### Subscribe to CONQUAS and QM Schemes

Today, some private sector developers and builders in Singapore are still not on board the CONQUAS and QM Scheme.

If you haven't already applied, you can start your quality building journey here:

**CONQUAS:** [https://www.bca.gov.sg/professionals/iquas/conquas\\_appli.html](https://www.bca.gov.sg/professionals/iquas/conquas_appli.html)

**Quality Mark:** <https://www.bca.gov.sg/Professionals/IQUAS/others/qmform.pdf>

## 02

### Adopt productive construction methods

As of January 2017, developers and builders using productive construction methods such as MET and PPVC are awarded higher bonus points. This means a higher rank on the CONQUAS and QM scoreboards, and potentially more business success for you!

## 03

### Compare your scores with industry benchmarks

[The Quality Housing Portal](#), created in September 2017, gives users a one-stop platform to make comparisons of quality standards for, contractors and developers. As a developer or contractor, you can see how you fare against the industry average, and evaluate areas of improvements for future projects.

### The Quality Mark "Hall of Fame"

A key feature of the portal is the publication of top 10 developers, contractors and private residential projects. The scoreboard is updated quarterly, so up your quality game to make it to the top 10!

## 04

### Monitor workmanship quality on the go

Download the CONQUAS mobile app, so that you can keep track of your projects under quality assessment anytime and from anywhere. Features also include a checklist of CONQUAS requirements and procedures, as well as an e-calculator to generate the QM scores of residential units. You can also access the CONQUAS manual for the latest updates on CONQUAS initiatives and changes.

## CONQUAS and Quality Mark Scheme in a Nutshell

	Construction Quality Assessment Scheme (CONQUAS)	Quality Mark for Good Workmanship Scheme (QM)
What is it	For all types of new buildings.  Assesses a new building's quality of workmanship on structural, architectural, and mechanical and electrical works.	For new residential buildings.  An extension of CONQUAS – it uses the CONQUAS standard. However, assessment focuses on architectural internal finishes and water tightness of bathrooms/toilets in each dwelling unit.
When was it incorporated	1989	2002
What it assesses	Overall workmanship and quality of new buildings. The higher the score, the better.  For example, a CONQUAS score of 80 means 80% of the items checked for workmanship quality met the CONQUAS standards.	Workmanship quality of every dwelling unit in new residential buildings. The higher the unit's score, the better.  Residential buildings are further recognised with Star, Excellent and Merit (in descending order of recognition) ratings if they achieve higher performance than the minimum requirements.
How it assesses	Sampling of housing units in a building/development. On average, every one in four units is assessed.	All units in the building/development are assessed.

	Construction Quality Assessment Scheme (CONQUAS)	Quality Mark for Good Workmanship Scheme (QM)
Other assessment details	CONQUAS scores are determined solely on initial assessments.	No limit to the number of re-assessments. However, the ratings are based on results from initial assessments.  If the unit does not meet the standard at first assessment, the developer may rectify the unit and apply for re-assessment.
Who can sign up	Assessment is compulsory for:  - All public sector building projects with contract sums above \$5 million under the Bonus Scheme for Construction Quality (BSCQ)  - Private projects with CONQUAS requirement under URA/SLA/HDB/JTC land sale agreements  Participation is voluntary for all other private sector building projects.	Open to all new private residential projects e.g. condominium, apartments, cluster housing, landed housing, residential units in mixed developments, etc.  Participation is voluntary.

# SEE WHAT QUALITY MARK ASSESSORS LOOK OUT FOR

## Floor

- Finishing
- Alignment and evenness
- Cracks and damages
- Hollowness and jointing

## Ceiling

- Finishing
- Alignment and evenness
- Cracks and damages
- Roughness and jointing

## Doors

- Material and damages
- Functionality
- Defective accessories such as missing items, improper fixing, alignment and evenness, and joints and gaps between door frames and walls

## Bathrooms

All bathrooms in the unit are ponded with water for 24 hours. The assessor will check for signs of leakage directly below the ponded bathroom.

## Components

These refer to permanent fixtures like kitchen cabinets, wardrobes and sanitary ware.

Assessors look out for:

- Gaps and joints
- Defective accessories
- Alignment and evenness
- Material and damages
- Functionality

## Mechanical and electrical fittings

These include switches, air-conditioners and etc.

Assessors look out for:

- Gaps and joints
- Defective accessories
- Alignment and evenness
- Material and damages
- Functionality

## Windows

- Material and damages
- Defective accessories such as missing items, improper fixing, alignment and evenness, and joints and gaps between window frames and walls

## Wall

- Finishing
- Alignment and evenness
- Cracks and damages
- Hollowness and jointing

# IN SEARCH OF TOMORROW'S CHANGEMAKERS

See what happened at the 10<sup>th</sup> and largest-scale edition of the Built Environment Career, Education and Training Fair, where students, jobseekers and prospective employers sought each other out to transform the built environment together.

## About the Event

A BCA-NTUC Employment and Employability Institute (e2i) Collaboration

**When:** 21 to 24 March 2018

**Where:** Devan Nair Institute of Employment and Employability

Organised to attract Singaporeans to join the built environment sector, this four-day affair attracted about 1,000 jobseekers and students, as well as over 40 organisations offering over 500 job and internship opportunities. The first three days saw workshops and seminars aimed at training and supporting human resource (HR) practitioners in best HR Practices, and the last day was dedicated to the members of the public looking for new career and internship opportunities.



*The Fair is a good platform for companies to showcase their corporate images and source for new talents to join the sector. We are able to interact with potential jobseekers at the event. It also serves as a useful platform for the public, as well as working professionals looking for career switches, to access new opportunities in the built environment sector.*

**Ms Cheryl Kok, HR Manager**  
Tiong Seng Contractors Pte Ltd



*The Career Fair and HR seminar enables our staff to network with industry partners, gain new knowledge, and discover more technologies that enhance the productivity and efficiency in our day-to-day work.*

**Ms Juslene Aw, Group HR & Admin Manager**  
KTC Group Holdings Pte Ltd



The Built Environment Career, Education and Training Fair 2018 attracted about 1,000 jobseekers and students.



*I gained valuable insights on the direction the built environment sector is moving towards. This gives me the opportunity to prepare myself well for the future.*

**Sridharman Jing Yao Thulasidas**  
NUS Civil Engineering, Year 2 student

## EVENT HIGHLIGHTS



01

### Establishing a Better Built Environment Workplace

#### Topic: Building a Better Workforce

This three-part talk series by BCA and EY Solutions LLP shed insights on good HR practices for firms in the built environment sector. Areas covered included recruitment and selection, performance management, career pathway planning, rewards and staff welfare, as well as communication with employees. Attendees also learnt about various tools and schemes to enhance their HR capabilities.

02

### Helping Companies Prepare for the Career Fair

#### Topic: Professional Hiring Workshop

This workshop was specially conducted for employers taking part in the career fair. Guided by e2i trainers, employers learnt best practices in job fair recruitment such as crafting accurate job descriptions, attracting candidates, managing resumes and more.

03

### Shaping Tomorrow's Built Environment

#### Topic: Construction Industry Transformation Map (ITM) Engagement Session

At the Construction ITM Engagement Session with NTUC, BCA shared on current and upcoming plans to transform the built environment sector. We also showed union members and jobseekers the future jobs in the transformation areas of Green Buildings, Design for Manufacturing and Assembly (DfMA) and Integrated Digital Delivery (IDD), including the related career progression pathways. In addition, Greyform Pte Ltd, which launched Singapore's third Integrated Construction and Prefabrication Hub (ICPH) last year, shared how the industry can benefit from off-site prefabrication. It also gave participants a glimpse into the working environment in the highly-automated hub.

04

### Paving the Way for New Talents

#### Topic: Industry Briefing Session on BCA-Industry Scholarship and Sponsorship and HR Pledge

Employers from the built environment sector learnt about various support schemes that can help them attract young talents, as well as working adults considering mid-career switches.

05

### Getting Firms Primed for IDD

#### Topic: Digital Transformation – Are You Ready?

Industry practitioners from the building consultants such as Aurecon and Mott MacDonald, as well as prefabricators/contractors, such as Greyform, Straits Construction Singapore and SMM Pte Ltd, spoke about their experiences in adopting Integrated Digital Delivery (IDD) for design, fabrication and asset management at this masterclass.

# WHAT'S NEXT?

BCA CEO Mr Hugh Lim shares BCA's core priorities in accelerating industry transformation at the BCA-Industry Work Plan Seminar 2018.

Held on 27 April, this annual gathering of industry minds traditionally celebrates key achievements in the year. This year, it also highlighted BCA's key action plans in advancing BCA's industry transformation roadmap. Here's what's next based on Mr Lim's address at the event.

01

## Stepping up on Industry Building

BCA has set up a new office – BuildSG – as part of efforts to achieve goals set out in the Construction Industry Transformation Map launched late last year. This new outfit will help firms and individuals build capabilities to excel in the built environment sector.

BuildSG comprises three centres:

- SGBuilds
  - To focus on internationalisation – building stronger networks in key markets to help firms build capabilities and capture overseas opportunities
- iBuildSG
  - To promote careers in the built environment sector. It will work on retaining and upskilling current talents while attracting new ones
- weBuildSG
  - To strengthen outreach to the industry - individuals and firms from the built environment sector - and forge close partnerships with them
  - To tap the various Trade Associations and Chambers' (TACs') knowledge and expertise in sub-sectors of the built environment to drive industry transformation



“

*BCA wants to see local firms invest in human capital and capability building to maintain their competitiveness in the industry. We are confident that local firms which continue to scale up and invest will be able to secure contracts for major projects.*

“

*At a recent conference in Hong Kong, it was mentioned that there is a newly discovered demand for PPVC as they realised the importance of such construction technologies in the midst of the rising cost and ageing workforce. Companies there are eager to consult Singapore firms on DfMA adoption. This will bring Singapore many opportunities to promote our construction technologies to foreign markets.*

02

## Intensifying funding support for R&D

From 2018, BCA will focus its funding support for R&D in the areas of Automation, Robotics, Advanced Materials and Digitalisation. It will soon launch R&D grant calls for DfMA solutions under the \$150 million “Cities of Tomorrow (CoT) R&D Programme”.



03

## Speeding up promising pilot innovations to large-scale adoption

BCA, together with JTC Corporation (JTC), has embarked on a joint initiative to enable innovation. Called the “Accelerate To Market (A2M) Programme for the Built Environment (A2M)”, this initiative aims to help speed up promising innovations' journeys from the pilot stage to industry acceptance and large-scale adoption. A2M will provide innovators with mentorship from industry experts, as well as prototyping facilities. It will also help innovators source for and market their solutions to investors.



“

*There are many technologies out there, but they may not have been adapted to be applied in our sector. We need companies to be prepared to adapt and adopt these technologies for our industry. BCA is also prepared to sponsor projects if there are at least two industry backers who are keen to adopt the technology developed.*

04

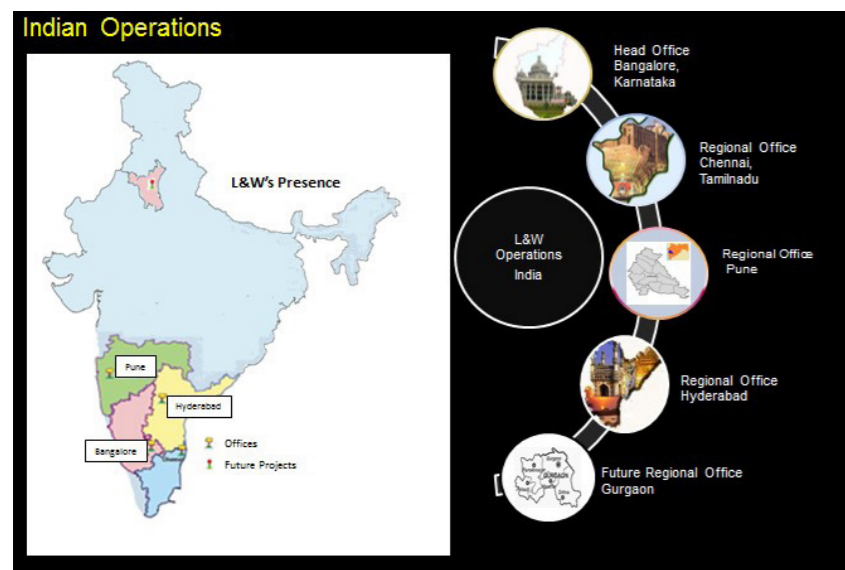
## Driving adoption of Smart Facilities solutions and practices

In first quarter of 2018, BCA formed the Tripartite Facilities Management Implementation Committee. The Committee, comprising industry partners, unions and various government agencies, aims to enhance the nation's facilities management (FM) processes – to ensure that all buildings in Singapore are well maintained for effective operation, optimal performance and sustainability - through enhancing processes such as adoption of Smart FM-related technology, outcome based procurement and manpower development.



# BREAKING INTO INDIA'S MARKET

L&W Construction's strong presence in India started off fraught with challenges – and the team spent two years navigating the construction environment before commencing on its first project. It shares its success story with *Pillars*.



## About L&W Construction Private Limited

L&W is a subsidiary of Lee Kim Tah – Woh Hup Pte Ltd, a joint venture between two of the oldest construction companies in Singapore. The company commenced operations in Bangalore, India in 2006. Today, it has offices in Chennai, Pune and Hyderabad, and is looking at expanding into the Southern region of India. Its accolades include awards such as the State Level Safety Award, Construction Industry Development Council Award and the National Safety Council Award in India.

## Why India?



Situation	Benefits for Singaporean companies like L&W
<ul style="list-style-type: none"> <li>- Growing middle class</li> <li>- Rapid urbanisation</li> <li>- Young population (50% below 30 years old)</li> </ul>	<ul style="list-style-type: none"> <li>- Higher demand for infrastructure</li> <li>- More future opportunities</li> </ul>
<ul style="list-style-type: none"> <li>- Minimal restrictions on foreign ownership</li> <li>- Legal system is based on British Laws</li> </ul>	<ul style="list-style-type: none"> <li>- Ease of setting up company in India</li> <li>- Familiarity with law</li> </ul>

# 5

## Lessons Learnt from L&W's Expansion into India

Glean insights on how L&W's resourcefulness and resilience resulted in a successful expansion into India.



### Lesson 1: Get up close and professional

The L&W team spent two years familiarising themselves with the Indian market. During that time, it worked to get a good grasp of the country's market dynamics, potential customers, and develop a good supplier/sub-contractor ecosystem. Formed by a specially-selected team of leaders from the organisation, the team today has grown into an 800-person company based in India.



### Lesson 2: Identify your best allies

Developers and contractors have been known to fail to commit to quality and on-time delivery at times. It is therefore vital to find out if they have any history of delays before making the decision to collaborate. Also, some developers may lack the financial resources to see projects through smoothly. So, companies have to place emphasis on identifying quality and time-conscious developers with strong financial resources before starting any project.



### Lesson 3: Study the hurdles ahead

The construction industry in India faces a shortage of skilled labour and staff, as well as high turnover rates. Other common problems include shortage of materials, good equipment and machinery, as well as delays in deliveries. Insolvency of sub-contractors and suppliers can be common. Also, high fluctuations in material prices and currency can affect the overall costs of the project. Thus, companies should do extensive research before making plans to expand.



### Lesson 4: Make training mandatory

L&W has received numerous quality and training awards in India, and it credits a large part of this success to its training efforts. It sees this strategy as one that ensures high quality, safety, timely completion and profitability. The company's investment in training extends from workers to senior staff, sub-contractors and suppliers, and even to consultants and customers.



### Lesson 5: Be prepared for anything

Construction projects incur many variations along the way and this sometimes leads to delays and critical failures. Having a contingency plan is key. For example, laws and regulations may change frequently. This could affect the approval and issuance of construction permits and in turn, cause delays and possibly impact business earnings. L&W's task force is constantly on the watch for such changes, ready to manage them before business operations are affected.





# SHINING BEACONS OF TOMORROW'S BUILT ENVIRONMENT

Young. Promising. Ready to ignite change. Dawn Neo and Hansen Goh are advocates of productive construction technologies, nominated by their companies to join the Built Environment Young Leaders Programme (YLP) and lead the industry into a new era of construction.



A PPVC specialist for The Wisteria (an upcoming shopping and residential development), Dawn leads the Modena Homes design team in developing strong collaboration with the developer, consultant teams and builders through BIM.

**Dawn Neo, 36,  
Deputy Technical  
Manager**

**Company:**  
Modena Homes Pte Ltd

**Specialisation:**  
BIM/PPVC

## What excites you most about productive construction technologies, in particular BIM/PPVC?

BIM enables different members in the construction value chain to look at the same model and resolve potential conflicts at the design stage, saving time and manpower onsite while producing high-quality construction. As for PPVC, it transforms the way we build, enabling us to achieve higher levels of productivity and sustainability compared to traditional construction methods.

## Tell us more about what you do in YLP.

Through YLP, I have gained insights on the possibilities of buildings and infrastructure of the future and how they will become smarter and greener as we integrate new technologies with innovative building designs. I've had the opportunity to learn from and exchange knowledge with industry heavyweights, built environment companies and fellow Young Leaders involving some of the most crucial phases of transformation in the built environment sector. Being in YLP gives me the chance to represent my company as I share how it supports and pushes for industry transformation.

## What words of advice do you have for other young talents in the built environment?

As we move towards industry transformation through the adoption of DfMA technologies, we must constantly think out of the box to innovate in design and construction. Only then can we establish and promote good careers in the sector, as well as attract, develop and retain talents for the industry.



**Hansen Goh, 35,  
Project Manager**

**Company:**  
Straits Construction  
Singapore Pte Ltd

**Specialisation:**  
Construction Management  
for projects involving DfMA,  
BIM-VDC and IDD

Hansen is currently involved in the development of a new state-of-the-art flagship campus for Nexus International School Singapore as part of maintaining Singapore's position as a global leader in education. He leads a team in the coordination of advanced precast solutions (DfMA) with consultants and precasters, as well as the adoption of BIM-VDC for the project.

## What excites you most about productive construction technologies?

I think it's great how technological advancements can help to relocate gruelling onsite activities to a controlled environment offsite. These not only help to boost productivity, enhance safety and minimise disruptions – they also create higher-value jobs that will, in turn, attract more talents to consider pursuing careers in the built environment.

## How's your experience in YLP been like so far?

Since joining the YLP, I've been exposed to high-level discussions on the future of the built environment with current and future leaders of the built industry, policymakers, companies and more. For example, I've been involved in several focus group discussions with Second Minister for National Development Desmond Lee and the Built Environment Cluster Sub-Committee.

YLP has offered me many opportunities. The first programme that I was involved in was the Smart Nation Taskforce to explore Smart Nation initiatives for the built environment sector. I'm also a member of the Built Environment SkillsFuture Tripartite Taskforce, where I play

a part in planning initiatives to upskill the built environment workforce by 2025.

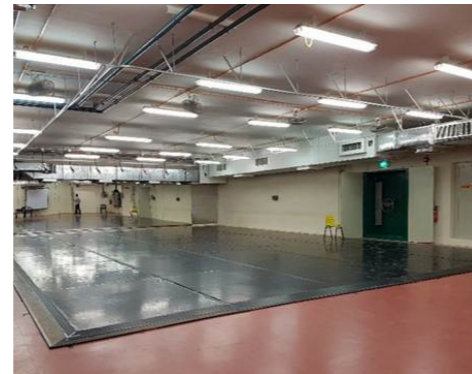
Overall, I feel privileged to have a voice and be involved in shaping the future of the built environment.

## How do you envision the built environment in the next 10 years? Why?

I think the industry will see a quantum leap in productivity gains as firms come to terms with the need to improve or face the risk of being phased out of the competitive business landscape. This will likely be due to the rapidly-increasing adoption of prefabrication technologies, as well as an influx of other productivity-enhancing technologies. I also see more potential in international ventures. With a finite amount of projects in land-scarce Singapore, the built environment sector will increasingly become more competitive. To increase revenue, firms will naturally have to consider extending their reach beyond Singapore. Moreover, the Singapore brand is well respected around the world and there will be many opportunities for our nation's firms to excel overseas.

# DO MORE WITH LESS HASSLE

BCA is helping businesses and building owners in Singapore to work better, faster and easier. Here's how.



Peacetime usage of Public Shelter in school as a dance room.

## SOLUTION 1:

### Easing the Application Process for Outdoor Advertisement Displays

#### Background

In Singapore, all businesses planning to display outdoor advertising signs must obtain the Outdoor Advertisement Licence from BCA. Applicants have to ensure their displays or signage comply with BCA's Outdoor Signage Guidelines. Information such as size, placement, display medium and duration of display of their advertisements have to be submitted for approval.

#### Challenge

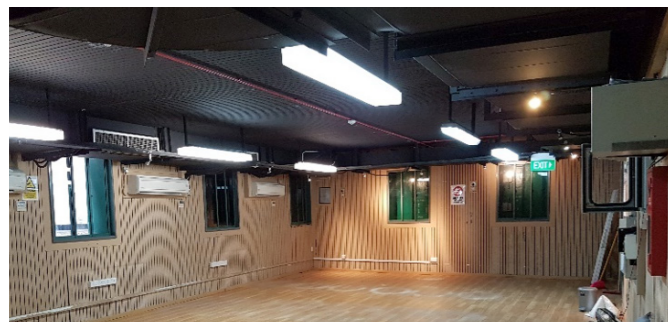
Applicants may have trouble identifying the right guidelines for their advertising projects. This results in deviation from the guidelines and in turn, rejected proposals and the need to resubmit applications. Such occurrences were frustrating, especially with time-sensitive projects.

#### Solution

BCA designed an e-service called the "Self-Help System" which was implemented in September 2017. The System streamlines Outdoor Signage Guidelines and enables users to filter out only the relevant ones for their unique application. Applicants now get a clearer and more accurate view of requirements they have to comply with.

#### Benefit

This System can reduce the number of revisions and resubmissions for applicants by an estimated 20%.



Peacetime usage of Public Shelter in community centre as a games room.

## SOLUTION 2:

### Working Smarter: A Cross-Agency Collaboration

#### Background

The Singapore Civil Defence Force (SCDF) inspects each public shelter in Singapore once every two years. Public shelters are constructed as part of buildings for civilians to take refuge in during war emergencies. Separately, BCA's Civil Defence Shelter Engineering Department, together with SCDF, carries out audit inspections on selected public shelters for defects, including structural defects. If any defects are detected, building owners have to rectify them. Additionally, under BCA's Building Control Act, building owners are required to engage structural engineers to carry out Periodic Structural Inspection (PSI) to their buildings every five years and submit a report to BCA.

#### Challenge

As the inspections carried out by SCDF, BCA and structural engineers engaged by building owners are usually scheduled at different times of the year, repair works for structural defects detected could not be carried out at the same time. This meant that building owners have to employ resources for repair works on separate occasions, which incur additional costs and cause disruptions to building operations.

#### Solution

BCA and SCDF worked together and came up with coordinated inspection schedules. The aim was to arrange for building inspections to take place within the same period, so that any defects detected could be repaired at the same time.

#### Benefits

Building owners can now coordinate their resources to conduct structural rectifications. This reduces costs incurred by tenders for repair contractors and structural engineers; coordination among operation managers, facility managers, administrative officers, and rental of alternative areas for activities. This would minimise inconvenience to people in and around the building.

# BCAA EVENTS

SkillsFuture Credit, SkillsFuture Study Awards, Mid-Career Enhanced Subsidy, Workfare Training Support (WTS), SDF, e2i and other subsidies are available for BCAA courses!

#### AUGUST 2018

##### 1 & 2 Aug 2018

CP5 on Low Voltage Electrical Installations (9th Run)

##### 6, 8, 13, 15 & 20 Aug 2018, evenings

Geotechnical Design using Eurocode 7 (17th Run)

##### 7 & 8 Aug 2018

Performance-Based Design for Fire Safety – Smoke Control Design (6th Run)

##### 8 Aug 2018

Preparing & Defending Loss & Expense Claims (28th Run)

##### 13 Aug 2018

CP88 on Temporary Electrical Installations (6th Run)

##### 13 - 16 Aug 2018

Certification Course in BIM Management (76th Run)

##### 13, 15 & 20 Aug 2018

Application for Extension of Time - Factors for Success (10th Run)

##### 14 Aug 2018

Good Industry Practices– Marble/Granite/ Ceramic Tiling (Re-run)

##### 14 & 15 Aug 2018

BIM Scheduling and Process Management (5th Run)

##### 16 & 17 Aug 2018

Designing and Constructing CLT & Glulam Structures (4th run)

##### 16, 17, 21, 22, 29, 30 Aug & 6 Sep 2018

Lift and Escalator Course for Engineers (8th Run)

##### 20 & 21 Aug 2018

Effective People Management for Construction Professionals (4th Run)

#### 23, 24, 30 & 31 Aug 2018

Certification course in BIM Modelling (MEP Track) 17th Run

#### 27 & 28 Aug 2018

Computational BIM (NEW)

#### 31 Aug 2018

Green Architecture & the Integrated Design Process (5th Run)

#### Starting on 1 Aug 2018

(Evening classes)

(Duration: 9 months)

Specialist Diploma in Construction Management (24th Run)

#### Starting on 2 Aug 2018

(Evening classes)

(Duration: 9 months)

Specialist Diploma in Building Cost Management (19th Run)

#### Starting on 2 Aug 2018

(Evening classes)

(Duration: 9 months)

Specialist Diploma in Underground Construction (2nd Run)

#### Starting on 13 Aug 2018

(Evening classes)

(Duration: 5 months Theory

+ 4 Months Final Projects)

Specialist Diploma in Design for Manufacturing & Assembly (4th Run)

#### Starting on 29 Aug 2018

(Evening classes)

(Duration: 5 months Theory

+ 4 Months Final Projects)

Specialist Diploma in Lean Construction (5th Run)

#### Starting on 28 Aug 2018

(Evening classes)

(Duration: 5 months Theory & Practicum + 4 months Project)

Specialist Diploma in MEP Modularisation (NEW)

#### Starting on 27 Aug 2018

(Evening classes)

(Duration: 9 months)

Specialist Diploma in Interior and Landscape Design (30th Run)

#### SEPTEMBER 2018

##### 3 Sep 2018

The Basics of Design for Manufacturing and Assembly (DfMA) (4th Run)

##### 6 & 7 Sep 2018

Certification Course on BIM for MEP Coordination (7th Run)

##### 13 Sep 2018

Planning, Design, Construction & Commissioning of Staircase Storey Shelters (5th Run)

##### 28 Sep - 13 Nov 2018 (12 evenings)

Project Management for Professionals in the Building and Construction Industry (14th Run)

#### CONTACT

##### Corporate Services (Marketing)

Tel : 6248 9999

Email: bca\_academy@bca.gov.sg

#### (Part-time - 2nd Intake)

##### Starting on 7 Jan 2018

##### Stage 1 application closing: 15 Jul 2018

Master of International Construction Management with major in Construction Productivity (awarded by the University of Florida)

#### CONTACT

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**NEW**

# stackable modular certificates

7 Specialist Diplomas are now modular:

- Architectural Technology
- Building Cost Management
- Construction Management
- Facility and Energy Management
- Interior & Landscape Design
- M&E Coordination
- Underground Construction



**LEARN @ YOUR OWN PACE**

You can take up to 3 years to obtain the 3 modular certificates.



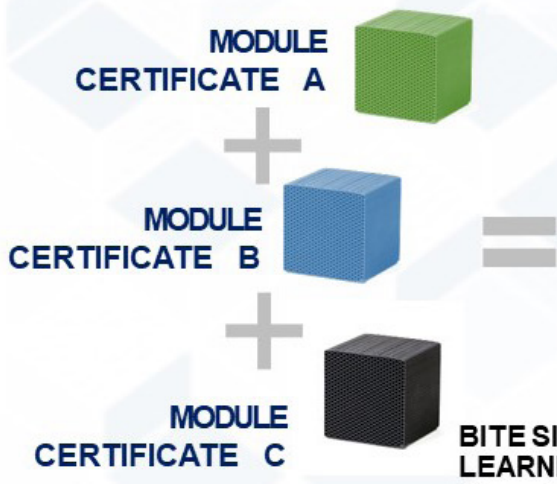
**FLEXIBLE**

You can opt to do just 1 or 2 modular certificate(s). Or complete all 3 to get a Specialist Diploma



**NO EXAMS**

100% Continual Assessments



## Specialist Diplomas

*specialist diploma awarded upon completion of modules A+B+C*

**BITE SIZED LEARNING**  
11 weeks per module



**Specialist Diploma Course Preview**  
Saturday 8 Sep, 10am @ BCA Academy

Scan for more details

For more information visit [www.bcaa.edu.sg](http://www.bcaa.edu.sg) or call 6248 9999