

MEDIA RELEASE

BCA ACADEMY BUILDS FOR THE FUTURE

- *BCA Academy will become a living lab and a microcosm of BCA's initiatives for the built environment*
- *2014 BCA Academy's graduating cohort consist of 569 specialist diploma and 401 diploma holders*

Singapore, 14 November 2014 – The Building and Construction Authority (“BCA”) has unveiled its new extension to the BCA Academy (“The Academy”) as it continues to lay the foundations for a future-ready built environment for Singapore.

2. With the new extension, the BCA Academy will become a living lab for built environment disciplines and professions, the first of its kind in Singapore. Future students of the Academy will learn and experience about how a building “lives”, “breathes”, functions and “interacts” with its occupants, thanks to features that facilitate experiential learning.

3. Commenting on the new extension, the BCA CEO Dr John Keung said: “Shaping a future-ready and highly productive built environment industry is not only about new technologies and equipment. People – talents and professionals – are as important to our industry, which is crucial to Singapore’s economic growth. The new extension is the BCA’s plan to nurture our industry talents of tomorrow and inspire our industry professionals of today. It represents a microcosm of the future of the built environment that the BCA envisages for Singapore – safe, high quality, sustainable and friendly.”

A living lab and a microcosm of BCA’s initiatives

4. As a living lab and a smart campus, students and professionals can learn through direct experience in the latest building technologies, equipment and methods at the Academy. Such an experience will enrich their skills, expertise and knowledge, reinforcing their course content and theory in their programmes. Through these

experiential learning, students and professionals can strengthen their decision-making skills and apply what they learnt in their work.

5. The new extension, which has attained the BCA Green Mark Platinum certification, boasts many **green building features** that contribute to 35% energy savings – one of the highest in Singapore. To raise awareness of the importance of accessibility and **Universal Design** among students and professionals, the new extension also incorporates Universal Design features extensively. People of different abilities and needs can learn in an inclusive and user-friendly campus. They can also understand how considerations made to designs that benefit people of different abilities and needs through educational signs.

6. The new extension also features many advanced technologies and methods that **improve construction productivity**. One of the features is that the structural elements are constructed 88% pre-cast, one of the highest ever in Singapore. The project achieved a high Constructability score of 65, with 40 being the minimum required.

7. A Rotatable Laboratory will be constructed on the roof of the new extension in 2015 – the first to be built in Asia. A collaboration between Lawrence Berkeley National Laboratory of the USA and the BCA, the Laboratory will allow professionals and researchers to test building materials, components and systems that they have developed and monitor their effectiveness under our local climatic conditions. This will strengthen Singapore’s position in nurturing ground-breaking research and as a leader in energy-efficient buildings in the tropics by hosting many new and exciting eco-friendly building technologies.

8. For this new extension, **Building Information Modelling** (“BIM”) has been extensively used in the design and construction phase. The information that has been captured can also be extended for use in facilities management. This is a new area which the Academy plans to demonstrate how BIM, through the new extension, can be applied in facilities management.

New diploma and certification courses

9. From 2015, the BCA Academy will roll out two new diploma and special diploma programmes to prepare future generations of professionals for an industry with an inspired future.

10. In April 2015, the BCA Academy will begin a new full-time Diploma in Architecture. The course will provide students with the fundamental knowledge and

technical skills in architecture with an emphasis on Building Information Modelling (BIM), detailing and sustainable design.

11. A part-time Specialist Diploma programme in Construction Productivity and an Advanced Certificate in Construction Productivity (ACCP) will also be introduced next year. Through these programme, professionals will become specialists in construction productivity, with expertise and knowledge of the latest in construction trends, processes and technologies.

12. Students of these new diploma programmes and the existing ones will stand to benefit from the experiential learning that the Academy will offer with the new extension. The curriculum for the Academy's programmes and courses will now offer experiential learning.

13. Added Dr. John Keung: "The BCA Academy plays a unique role in Singapore. It offers courses and programmes that are bespoke to our built environment, focusing on the skills needed for the future of the industry at all levels. Students and graduates of the Academy, from certificate to master degree level, will be equipped with the practical expertise and skills that are and will be needed in the industry. It promotes continuous education and learning for our professionals with programmes that update them on the latest trends, methods and practices of the industry from around the world and equip them with the relevant expertise. Like our graduates who have taken another important step in their careers, the Academy – as a smart campus – will lead the industry in taking another step towards a future-ready built environment in Singapore."

Note: Details of the new extension's top features are in the Annex.

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About the Building and Construction Authority

The Building and Construction Authority (BCA) of Singapore champions the development of an excellent built environment for Singapore. At BCA, our mission is to shape a safe, high quality, sustainable and friendly built environment, as these are four key elements where BCA has a significant influence. In doing so, we aim to differentiate Singapore's built environment from those of other cities and contribute to a better quality of life for everyone in Singapore. Hence, our vision is to have "the best built environment for Singapore, our distinctive global city". Together with our education hub, the BCA Academy of the Built Environment, BCA works closely with its industry partners to develop skills and expertise that help shape the best built environment for Singapore. For more information, visit www.bca.gov.sg.

New Extension to the BCA Academy (*operational by the second quarter of 2015*)

Project cost: S\$62.2 million

The BCA Academy: A smart campus and a living lab

a. Throughout the new extension including the corridors, **exposed mechanical and engineering services** are not concealed, unlike most conventional practices. Students are in a better position to appreciate the designs and arrangement of the services' systems for optimal energy savings.

b. **The use of Building Information Modelling extends to facilities management.** It presents a three-dimensional immersive environment for facilities personnel to navigate the building. They can use the tool to identify and manage their facility maintenance needs quicker. The tool also provides them with detailed information about the specific rooms or spaces and their environment so that they can plan their work better and resolve any problems without having to be there physically.

Details of each component and object – such as their dimensions, dates of scheduled maintenance, maintenance data and their manufacturers' specifications – are stored so that managers can retrieve them easily and instantly. The tool can also remind the managers of scheduled maintenance dates so that disruptions can be minimised.

c. **The Education Deck**, situated on the roof, includes a chiller plant and a green lab.

i. The **chiller plant** serves two purposes – functional and educational. It is designed as a spacious room so that students can learn about how an efficient chiller plant is designed. This is unlike conventional chiller plants which are congested, dimly lit and that pipes are not labelled.

ii. The **green lab** allows students to experiment with the different types of vegetables and plants they can grow on rooftops in the tropical climate. This is known as urban rooftop farming.

d. The **Classrooms** are designed to be energy-efficient. To allow students to appreciate how different chilling systems work under various conditions and their

efficiencies, screens are installed to show the energy efficiency performances in real time.

e. The **Rotatable Laboratory** is a collaboration between Lawrence Berkeley National Laboratory of the USA and the BCA. Professionals and researchers can test building materials, components and systems that they have developed and monitor their effectiveness. Lawrence Berkeley has a similar laboratory in the USA which conducts tests in temperate conditions, the Academy's Rotatable Laboratory at the Academy allows tests to be conducted in a tropical environment.

The BCA Academy: Microcosm of BCA's vision for the future of the industry

The Green Future

Introduction:

The new Academy extension exceeds BCA's Green Mark Platinum certification. It boasts many sustainable features that will bring about 35% energy savings – one of the highest in Singapore. Some of the interesting features are:

- a. **Regenerative lifts** convert gravitational force into renewable energy that can be used for the building.
- b. **Deep corridors** reduce heat from the sun and improve natural ventilation for better thermal comfort for its occupants.
- c. **"Pumpless" water tanks** provide a consistent supply of water throughout the building; it uses gravitational force instead of electrical pumps.
- d. **Air cooling systems:**

Passive Displacement Ventilation relies on the natural convection of heat transfer (e.g., warm air rises and cool air sinks) without the need for mechanical fans. Chilled air produced by the cooling coils sinks to the floor because it is denser. From the floor, the chilled air takes in heat throughout the room and moves up.

Chilled Beam works in a similar manner. Pipes of water are passed through a "beam" (a heat exchanger) which is suspended from the ceiling. As the beam cools the air around it, the chilled air becomes denser and sinks to the floor. It is replaced by warmer air moving up from below, causing a constant flow of convection and cooling the room.

- e. The structure of the new extension is built using **recycled construction materials** (or aggregates) so that there is very little consumption of mined natural resources (e.g., granite).
- f. The external walls of the building are flushed with **vertical greenery** which not only improves it aesthetically but also reduces the urban heat island effect.

The Inclusive Future

Introduction

To raise awareness of the importance of accessibility and Universal Design among the students and professionals, the new extension incorporates Universal Design features extensively.

- a. **Education signs** that spell out details of the various Universal Design features are placed across the campus so that students can appreciate how intelligent designs can benefit people of different abilities and needs. For example, such life-sized signs at lift lobbies present how the differences in levels of the lift buttons can be accessible to wheelchair users and even children. Signs are also placed at staircases where students are shown how two sets of handrails at specific heights can support and are meant for a child and an adult.
- b. **Induction loop** for the hearing impaired is available in all theatrettes. The loop takes a sound source and transfers it directly to a hearing aid without background noise, interference or acoustical distortion. Students, professionals and visitors wearing hearing aids can hear the lecturers and speakers being delivered clearly without disturbances from ambient noises.

The Productive Future

Introduction

The new Extension is a showcase of the latest technology, equipment and products.

- a. It was also constructed using fully **precast and prefabricated methods** and technologies, with 88% of the building's structure made of precast concrete, beam, walls, staircases and façade components.
- b. **Fabric ducting** is made of light-weight fabric material so that it can be easy to mount. As it is manufactured in the factory, it requires no assembly on site without any need for additional works such as applying insulation or painting.
- c. **Pre-insulated chiller piping** does not require additional insulation works on the site unlike conventional piping that needs to be insulated first.

Workshop block

- User Test Bed Facility
- Indoor Game Hall
- Workshops and Lab
- CPC Gallery



- Research
- Students
- Academic use
- Gallery



