Building and Construction Authority

**MEDIA RELEASE**

# BCA AWARDS THREE PROFESSIONAL ENGINEERS FOR THEIR OUTSTANDING ACHIEVEMENTS

**Singapore, 21 September 2023** – Building on top of MRT tunnels and close to a conserved bungalow, while safeguarding the integrity of these structures, were among the challenges faced by award winners of the Building and Construction Authority's (BCA) Design and Engineering Safety Award.

2. The Award recognises Professional Engineers and their teams for applying innovative designs and engineering solutions in challenging projects. Three Professional Engineers were conferred with the Award this year.

**Engineer Teoh Eng Sin – lyf one-north Singapore**

3. Engineer Teoh Eng Sin, a third time winner for this award, had designed and supervised the safe construction of lyf one-north Singapore, a co-living residential development at One North Buona Vista. The building comprises two seven-storey blocks of rooms with attached bathrooms but shared communal kitchen, loungers and entertainment areas. Engineer Teoh's challenges for this project were that part of the development's area sits on top of the MRT Circle Line tunnels, which limits the use of the site and its construction was subject to strict requirements in terms of tunnel movement. To add on to the challenge, the north of the site is bounded by a five-metre high slope with a conserved bungalow at its top.

4. To minimise tunnel movement, Engineer Teoh devised a solution where a swimming pool is supported on a shallow foundation on top of the MRT tunnels. He also conducted a detailed analysis which confirmed that the impact from his design of the foundation met stringent requirements. Based on the readings of the tunnel monitoring system installed, tunnel movement was limited to less than 0.1cm. More importantly, Engineer Teoh proposed and successfully supervised the safe construction of a structure – comprising steel structures called transfer girders which are supported by six slanted columns -- which becomes a link bridge connecting the two blocks. This not only simplified the construction for this part of the project but also allowed for some rooms to be built along the link bridge without comprising the architect's original design intent of a five-storey high viewing / ventilation corridor.

**Engineer Lim Keong Liam – Kallang Polyclinic and Long-Term Care**

5. Another winner was Engineer Lim Keong Liam who designed the structure for Kallang Polyclinic and Long-Term Care (Kallang Polyclinic), a healthcare facility where its first five storey is the Kallang Polyclinic and the next five storeys houses a long-term care. The challenges Engineer Lim faced was that the site is located next to the Kwong Wai Shiu Hospital and in close proximity to HDB apartment blocks. Also, part of its site area sits on top of two MRT tunnels along the North East Line with a diverse geology across varying depths.

6. To overcome these challenges, Engineer Lim employed a "hybrid" construction of pre-cast components for the first five storeys of the building which houses the Polyclinic and prefabricated prefinished volumetric construction (PPVC) modules which make up the next five storeys for the long-term care facility. This allowed both the Polyclinic and long-term care facility to be constructed concurrently as the components and modules were manufactured and finished in an off-site plant before being transported and assembled at the site. This solution also greatly reduced the amount of noise and dust that could affect the patients at the Kwong Wai Shiu Hospital throughout its construction. Engineer Lim also carried out detailed analysis and implemented solutions that resulted in minimal movements of the MRT tunnels during the project's construction.

**Engineer Heng Kim Huat – Whistler Grand**

7. Another winner was Engineer Heng Kim Huat for Whistler Grand, a private condominium at West Coast Vale comprising two blocks of 36-storey apartments with two basement carparks and a three-storey high sky terrace at each block. Engineer Heng's challenge was the Government Land Sales requirement for this project to incorporate productive construction methods. For this, Engineer Heng devised a plan such that at least 65 percent of the floor area for both blocks from the 2$^{nd}$ to the 36$^{th}$ storey were constructed using modules that were prefabricated and prefinished at a manufacturing plant. Each module would then be transported to the site, hoisted and assembled together, with a few modules combining to form a residential unit. With such construction method, all modules at Whistler Grand would have been installed and completed within a year if not for the COVID19 pandemic.

8. Another engineering feature was the gymnasium, which extends 7.4m in length over and above the swimming pool. Engineer Heng designed a rigid horizontal structural floor element called a cantilever, which is supported only at one end of the structure. To control the deflection, Engineer Heng designed the cantilever floor using closely spaced steel beams which are encased in concrete. For the comfort of gym users, he also conducted a floor vibration analysis.

9. BCA Group Director (Building Engineering) Engineer Tan Chun Yong said, "Professional Engineers have an important role to play in our built environment. They

not only ensure the safety of our buildings but also employ innovative engineering solutions to overcome challenges while improving the way we build.The Design and Engineering Safety Award recognises Singapore's top engineering professionals who have developed creative engineering methods for challenging architectural designs and overcoming site constraints so that their projects can be completed safely. We hope that they will inspire younger Singaporeans towards a fulfilling and rewarding career in our built environment, contributing to our country's development."

Annex – BCA Design and Engineering Safety Award winners

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## About BCA

The Building and Construction Authority (BCA) champions the development and transformation of the built environment sector, in order to improve Singapore's living environment. BCA oversees areas such as safety, quality, inclusiveness, sustainability and productivity, all of which, together with our stakeholders and industry partners, help to achieve our mission to transform the Built Environment sector and shape a liveable and smart built environment for Singapore. For more information, visit www1.bca.gov.sg.