

MEDIA RELEASE

FOUR ENGINEERS HONoured WITH BCA DESIGN AND ENGINEERING SAFETY AWARD FOR GROUNDBREAKING PROJECTS IN SINGAPORE

Singapore, 29 August 2025 – Four Professional Engineers have been recognised with the Building and Construction Authority's (BCA) Design and Engineering Safety Award (DESA) for their exceptional contributions to five landmark projects that overcame construction challenges with safe, innovative solutions.

2. The Award celebrates structural and geotechnical engineering ingenuity across five categories – Civil Engineering, Commercial, Industrial, Institutional and Mixed Development. Since its launch in 2008, the Award has honoured engineers and their teams for innovative designs and construction solutions that ensure Singapore's built environment remains safe, resilient and future-ready.

3. BCA Group Director (Building Engineering) Engineer Tan Chun Yong said, "This year's DESA winners exemplify the pinnacle of engineering excellence – their ingenuity and technical applications have turned complex challenges into safe, enduring solutions that will serve Singapore for generations. Their work reminds us that behind every iconic building or infrastructure is an engineer's dedication to safety, engineering mastery and innovation. By celebrating their achievements and showcasing the projects, we hope to inspire more young talents to join the profession and shape the future of our built environment together."

Highlights of the 2025 DESA Winners

Engineers Chua Tong Seng and Michelle Lew – T226 of Thomson East Coast Line, Marina Bay Station (SCL Tunnels)

4. Building a new MRT interchange in the heart of the city is already complex – but at Marina Bay, the challenge was even greater. The Thomson-East Coast Line (TEL) tunnels had to be built 40 metres underground on reclaimed land, and right next to live MRT lines on the North-South and East-West lines, and through waterlogged soil under high water pressure. To complicate matters, existing foundations and bored piles stood directly in the path of the new tunnels and had to be carefully removed without disrupting train services.

5. Er. Chua Tong Seng and Er. Michelle Lew worked collaboratively as Qualified Persons for Design in Civil and Geotechnical engineering respectively, delivering crucial engineering solutions for the project. They applied advanced computer modelling to simulate construction and tunnelling sequences. This ensured tunnelling could be carried out safely beside operating train lines. They also customised a purpose-built machine, shaped like a giant rectangular cutter, to carve out space for transfer beam and remove obstructing piles safely while trains continued running. In addition, they had to tackle unstable ground conditions by strengthening soft marine clay using jet grouting and introduced an innovative ground freezing system, which pumped brine chilled to -30°C into the soil. This literally froze the wet ground into solid “ice walls” 1.8 metres thick, creating watertight barriers that allow safe and dry excavation. Without freezing, water and soft marine clay would have made tunnelling impossible. A network of sensors, including real-time tunnel monitoring and temperature gauges, tracked ground movement continuously to keep everything within safe limits. Through their teamwork, the engineers delivered a critical interchange that now seamlessly connects three major MRT lines while ensuring passenger safety and uninterrupted service.

Engineer Tan Chin Hock – Pan Pacific Orchard

6. Pan Pacific Orchard is a hotel project that brings nature into the heart of a vertical structure, made possible by the engineer's quiet genius in turning a daring architectural vision into reality. The striking 23-storey Pan Pacific Orchard stands on a highly constrained urban site, features dramatic multi-level sky terraces that demanded a complex and innovative structural system. To maximise underground space, Er. Tan reused and rehabilitated the original basement diaphragm walls as a sustainable and economical solution. He gave them a new waterproof concrete lining, effectively recycling massive structural walls instead of demolishing them. This reduced wastage allowed excavation to be done in a "semi-top-down" manner – carefully demolishing and rebuilding while keeping the site and adjacent buildings safe and stable.

7. Above ground, Er. Tan introduced long-span steel trusses and precast reinforced concrete to support the hotel's four distinct sky terraces stacked vertically. By applying Design for Manufacturing and Assembly (DfMA), many components were prefabricated off-site and assembled like a kit, improving safety and efficiency. To enhance long-term durability, the design integrated specialised bearings (like heavy-duty joints) and partially prestressed concrete, ensuring the tall structure could safely bear the unique loads of sky terraces and greenery. The result is a structurally efficient, sustainable, and safe landmark that realises an ambitious architectural vision in the heart of Orchard Road.

8. Er. Kam Mun Wai is recognised for his outstanding contributions across three projects: SGH Emergency/National Neuroscience Institute (Institutional), The GEAR (Industrial) and The Woodleigh Residences and The Woodleigh Mall (Mixed Development). These projects presented complex challenges, from deep basement excavation, long-span column-free spaces to integrated mixed-use developments. Er. Kam delivered designs that were not only

safe and efficient but also balanced functionality and sustainability, demonstrating the high standards of engineering excellence that DESA celebrates.

9. The four engineers will be recognised at BCA Awards, held on the evening of 3 Sep 2025 at Marina Bay Sands. Minister for National Development, Mr. Chee Hong Tat, will be gracing the ceremony as the Guest of Honour. For a complete listing of the winners and their projects, please refer to the Annex.

[Annex – BCA Design and Engineering Safety Award winners](#)

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About BCA

The Building and Construction Authority (BCA) champions a safe, sustainable, and liveable built environment for Singapore. As a leader in the sector, BCA is dedicated to driving industry transformation and setting rigorous standards in building safety, quality, and environmental sustainability. By advancing innovation, digitalisation, and the development of a skilled workforce, BCA fosters a dynamic industry that is ready to meet the evolving needs of the nation and build a resilient and progressive built environment for all. For more information, visit www.bca.gov.sg



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