

Deeply grounded

Sato Kogyo takes on challenging projects to improve and excel



Bencoolen MRT Station is the deepest MRT station in Singapore at 43m below ground. PHOTO: SATO KOGYO

HAZEL TAN

IT WAS no mean feat constructing and completing the MRT's Bencoolen station for Stage 3 of the Downtown Line. The Bencoolen station, which is 43m below ground (equivalent to a 14-storey building), is the deepest MRT station in Singapore.

For its efforts, Sato Kogyo was honoured for construction excellence (civil engineering category) at this year's Building and Construction Authority (BCA) Awards.

Minimising environmental impact

The MRT station, which opened in October last year, consists of six underground levels, three entrances, ventilation shafts and an underground link way that connects to Singapore Management University.

Mr Hirotaka Onawa, general manager of civil engineering at Sato Kogyo, says: "The station had to be constructed at such a depth because of the existing North-South and Circle line tunnels which run above the Downtown Line, as well as the number of buildings above it."

Some challenges were the station's close proximity to other buildings — some as close as 1m between earth retaining stabilising structure (ERSS) and existing buildings — narrow construction site area and taut ground condition.

Hence, a top-down construction method was adopted. Mr Onawa explains: "This means using a permanent station structure reinforced concrete slab, which has greater stiffness than a normal conventional steel strut, as struts for ERSS to mitigate ERSS deflection and surrounding ground settlement during construction."

To ensure it was minimising environmental impact and noise pollution for the buildings around the construction site, Sato Kogyo used a rotary piling rig and a silent piler to mitigate vibration and noise, and avoid ground settlement during construction. It also provided a noise barrier and noise sheet around the construction site, and a portable noise barrier near working machines, adds Mr Onawa.

Sato Kogyo attributes the success of the

project to several factors, including a strong and value-added engineering proposal and design, unyielding support from its customer — Land Transport Authority — support of all stakeholders and a quality execution team.

He says: "Winning the award is like a 'gold medal' for us. It proves our company's capabilities. This win is especially meaningful for a civil engineering project, as only a handful of projects are awarded every year."

Tackling challenges

Founded in 1862, Sato Kogyo, a "tunnelling specialist" in Japan, has since evolved into an international name. It has handled a wide spectrum of building and civil engineering projects of varying nature, magnitude and complexity in Asia, Africa, the Middle East, Europe and North America.

In 1972, the company set up its regional headquarters in Singapore. Today, it also has offices in Malaysia, Thailand, Cambodia and Myanmar.

Taking on challenging projects is one way the company continues to grow and transform itself. Over the years, Sato Kogyo has managed several high profile assignments including the construction of Benjamin Shears Bridge, Changi Airport's Terminal 3, Supreme Court, Fort Canning Tunnel, National Museum, New OUB Tower and 13 MRT stations including associated tunnels and viaducts.

Sato Kogyo is also constantly improving its game by learning and adopting new construction technologies. For the Bencoolen project, the company worked closely with a Japanese construction machinery company to design a special excavator, which is smaller than a conventional one, but has a higher excavation capacity suitable for narrow construction sites and taut ground conditions.

Equally important is having a pool of top talents. Mr Onawa says: "We maintain a team of high quality employees who continuously acquire and apply knowledge to deliver innovative solutions. We also foster teamwork through mutual trust, respect and responsibility to fulfil our corporate mission and contribute to social development, which is our ultimate mission."



Winning the construction excellence award proves Sato Kogyo's capabilities, says Mr Onawa. PHOTO: LIM SIN THAI