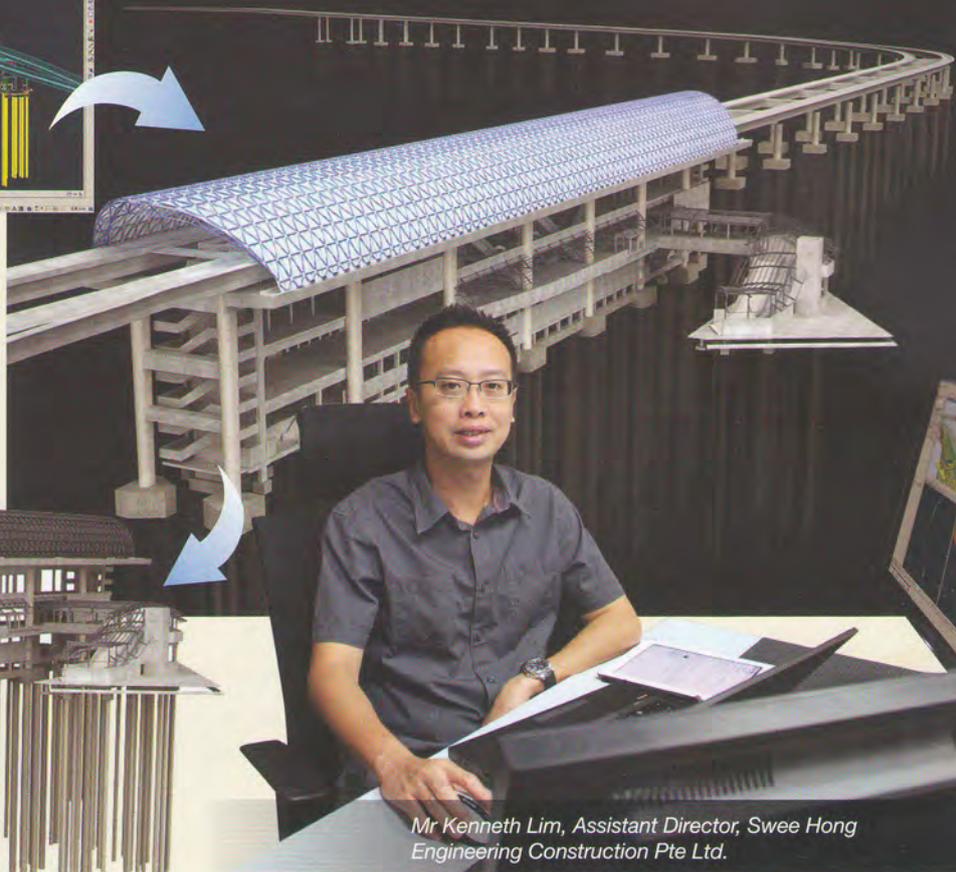


BIM and 3D simulation for Tuas West MRT extension project tender preparation.



Mr Kenneth Lim, Assistant Director, Swee Hong Engineering Construction Pte Ltd.

## SETTING THE BAR FOR BIM IMPLEMENTATION: SWEE HONG ENGINEERING CONSTRUCTION PTE LTD

Swee Hong believes that BIM can ensure the longevity and profitability of local construction companies in a competitive business environment

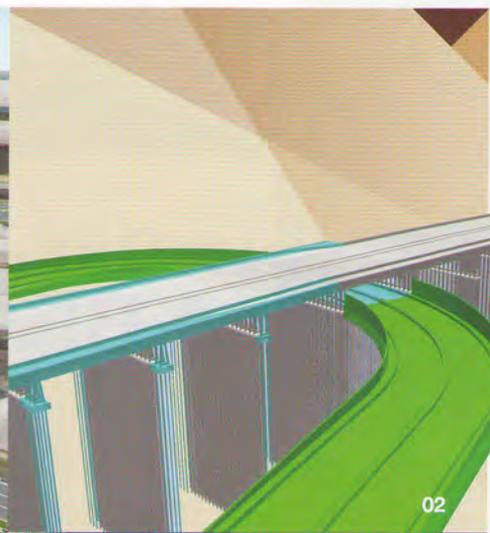
Swee Hong Engineering Construction Pte Ltd is a well-known civil engineering company in Singapore. But what makes it a leader in the industry is its aim to be at the forefront of technology and advancement.

Assistant Director of Swee Hong Mr Kenneth Lim said: "We embrace technologies that will increase productivity and, in turn, ensure on time, on target and on budget delivery for all projects we undertake."

Swee Hong's move towards using Building Information Modelling (BIM) technology was a natural progression. In 2009, the company first started exploring three-dimensional visualisations. Eventually, it realised that more can be gained with the actual data retrieved from the three-dimensional BIM models. The data can help the company detect clashes, calculate accurate quantities and improve collaboration among project parties. These benefits convinced Swee Hong to start its BIM journey in 2010.

### How BIM Benefited Swee Hong

Since 2010, Swee Hong has already adopted BIM for a spectrum of projects such as Gardens by the Bay and the construction of sewers at Tuas. It also used BIM for tendering for projects such as the Tuas West Mass Rapid Transit (MRT) extension, the vehicular underpass construction and the Nicoll Highway road widening.

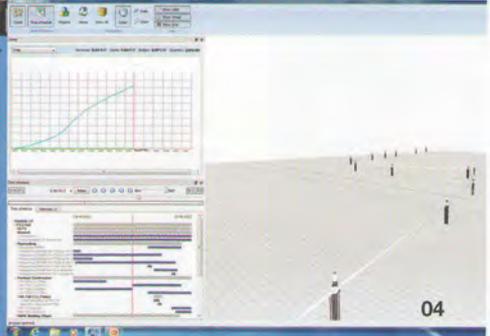


01: BIM 3D traffic simulation.

02: BIM and 3D simulation for Nicoll Highway road and bridge widening project.

03: BIM 3D simulation for Gardens by the Bay project.

04: BIM with 4D and 5D simulation for Tuas Avenue 12 pipe jacking project.



"BIM produces accurate project models and construction schedules. It is equally capable of keeping information up-to-date and accessible in an integrated digital environment. All these help our engineers, contractors, developers, owners and other stakeholders to have a clear vision of our projects, reduce expenses and costly mistakes and make informed decisions faster," said Mr Lim.

"It's also time-efficient as errors can be detected at an early stage and be corrected. With better visualisation, communication and simulation, there is enhanced judgement of projects," he explained.

Using BIM to their clients' benefit has also been an important milestone for Swee Hong. "With BIM, our clients can better appreciate the end-result of various projects. There is also more understanding of our work methods and processes during the tender presentation and interview stages. Decision-making is expedited," said Mr Lim.

Recalling the company's previous ways of doing things, Mr Lim said: "Our methods of calculation were still very traditional then. You can see rolls of paper piling up in the office!"

### The Process of BIM Adoption

Having gone through the process of coming up with its own integrated BIM solution to fit the company's needs, Mr Lim believes that the right implementation of the technology reaps limitless benefits.

"It was through the testing of different kinds of solutions that we finally decided to have our own integrated BIM solution. This encompasses a few selected applications into one process," said Mr Lim.

For Swee Hong, BIM was a S\$1 million investment which included hardware and software upgrades and staff training. "This investment means time savings for us," said Mr Lim. "And saving time helps us save future costs."

But the company's efforts were no bed of roses as change is always difficult to embrace. Swee Hong had to overcome a few challenges. To use BIM effectively, the company had to overhaul its workflow and operating procedures – from the project tender to the execution stage. It also had to encourage a change in mindset and systems among its staff, allow them the time to adapt to new procedures and attend training in BIM.

"Companies differ in their organisational structures, cultures, target markets and operational processes. These differences will affect how a BIM implementation plan is designed. There is no generic approach to implementation, especially in the civil engineering field," explained Mr Lim. "In fact, there is no magic button to it. To make BIM a success, everyone from CAD operator to chief engineer will have to change the way they think, build and work. It will require learning, patience and a can-do attitude from everyone."

### The Future of BIM

Mr Lim believes BIM technology in future will harness the concept of mobility. "I would like to call it 'BIM Mobility', where you can control data, review projects and simulate planned activities on the move," he said.

He added: "What I would also like to see more of is the advancement of emergent 6D life-cycle management, which uses the model to perform activities related to post-construction management of a facility. Hopefully, there will be 7D, 8D and many more Ds to come as well!"