

COMPANY

Civil Engineering and Development Department,
The Government of the Hong Kong Special
Administrative Region
AECOM Asia Company Limited
DCKJV and TYFRON Consultancy Limited

PROJECT

Kwu Tung North and Fanling North New
Development Area (First Phase)

LOCATION

Fanling Bypass Eastern Section
(Shek Wu San Tsuen North to Lung Yeuk Tau)

TYPE

Infrastructure construction

SCHEDULED TIME OF COMPLETION

Year 2025

BIM for Fanling Bypass Eastern Section (Shek Wu San Tsuen North to Lung Yeuk Tau)



About Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region

CEDD of HKSAR Government is a leading organisation for development of Hong Kong who is committed to provide high quality high civil engineering services to meet its development needs. Its missions include striving for engineering excellence, creating a safe, green and sustainable environment, partnering with the community in infrastructure development and building a caring and motivating working environment for staff.

About AECOM Asia Company Limited

AECOM is the world's trusted infrastructure consulting firm, delivering professional services from planning, design and engineering to program and construction management on projects of transportation, buildings, water, new energy and environment with our technical expertise in innovation, culture of equity and diversity, and commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of \$14.4 billion in 2023.

About DCKJV and TYFRON Consultancy Limited

DCK JV is a joint venture of three companies including Daewoo E&C, Chun Wo Construction & Engineering Co. and Kwan Lee Holding Ltd. Daewoo E&C has participated in the construction of major highways in South Korea since 1978 and experienced in the tunnel construction. Chun Wo C&E and Kwan Lee are two Hong Kong local contractors with over 55 years of construction experience. The companies have involved in large-scale infrastructural projects and gained experience in the local practice. The formation of the joint venture enables the project team to adopt foreign technique and knowledge and allows higher degree of collaboration for the success of the project

Tyfron Consultancy Limited is a Hong Kong based BIM and Digitalization Consultant specializes in infrastructural and building works BIM Execution for design and construction stage. Services also include BIM Auditing, 3D Survey and Digital Strategies for construction projects.

AUTODESK PRODUCTS USED

Drawing Generation by Revit
Lighting Analysis through Revit

Project Description

The contract mainly comprises construction of 4km of transportation Networks, including an approximately 2-kilometre-long dual two-lane Fanling Bypass Eastern Section between Shek Wu San Tsuen North and Lung Yeuk Tau comprising viaduct, at-grade road and underpass sections; construction of Lung Yeuk Tau Interchange; construction of a footbridge across Ng Tung River and a Landmark cycle track feature; construction of two sewage pumping stations; reprovisioning of the On Lok Mun Street Playground and sports facilities; road junction improvement works; drainage and sewerage works, waterworks, noise barrier works.

Project Challenges

This project is a complex infrastructure construction project that involves site formation along two main rivers, including the construction of new viaducts, at-grade roads, pumping stations, and the relocation of existing government facilities. Therefore, site utilization must be well organized and frequently adjusted in different stages of construction, involving the diversion of numerous underground utilities for the construction of the underpass section and the Lung Yeuk Tau Interchange area.

Solutions for Challenges

Implementing BIM technologies for this project offers solutions to various challenges. Digitizing existing conditions aids in accurate data representation, facilitating clash detection for streamlined planning. Optimizing site utilization for construction methods enhances efficiency, while visualization tools improve stakeholders' communication. Open BIM applications ensure seamless collaboration among stakeholders. Implementing a Digital Works Supervision System enhances project monitoring. Utilizing an All-in-One BIM platform with photogrammetry enables comprehensive project oversight. Overcoming these challenges through advanced BIM applications ensures enhanced coordination, data accuracy, and project success across the extensive infrastructure development scope.

How does BIM benefit the project?

Leveraging BIM technologies for the skateboard park construction to meet Olympic standards introduces technical complexities. Generating detailed drawings in Revit demands precise modeling of intricate lighting setups and terrain dynamics to ensure optimal performance. Conducting lighting analysis using BIM tools requires accurate simulation for safety and design integrity. Integrating these aspects with the broader infrastructure development, including transportation networks and sewage systems, necessitates seamless data interoperability and interdisciplinary coordination. Achieving a high level of technical integration within a unified BIM environment throughout the entire project in Kwu Tung North and Fanling North New Development Area presents a good application of BIM technology for resolving project challenges.

Better with BIM

Drawing Generation by Revit:

- Combined Services Drawings are developed from the model and preset into Revit drawing sheeting for automatic updating in the drawings.

Lighting Analysis through Revit:

- A skatepark to be built complying to Olympic Games standard, the Architect made use of Revit to visualize the lighting during different time of the day while to cater for the events need.



Lung Yek Tau Interchange Rendered Image from BIM
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited



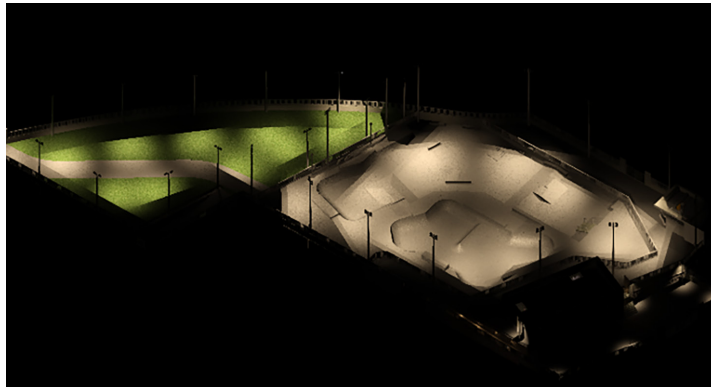
Underpass Underneath Interchange Simulation from BIM
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited



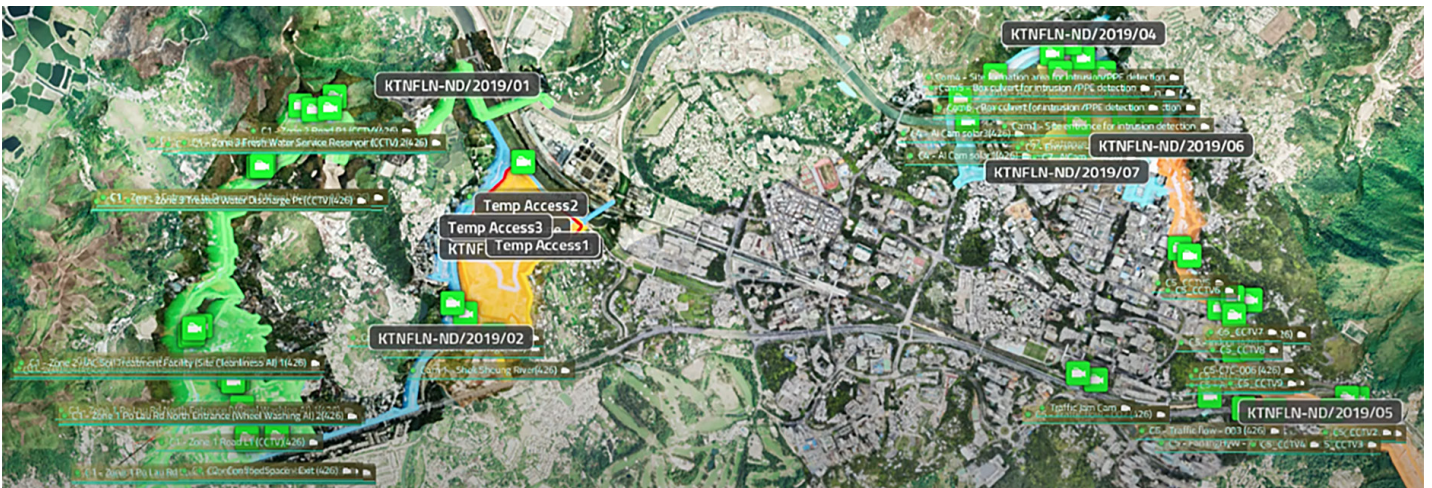
Construction Methodology Simulation for Bridges Construction Adopting Form Traveller
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited



Central Management Platform Integration BIM with IoT for Real-time Site Monitoring
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited



Skateboard Park Lighting Simulation and Lux Analysis through BIM
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited



Collaboration of Common Geospatial and Digital Platform for Project Interface
Image Courtesy of Civil Engineering and Development Department, The Government of the Hong Kong Special Administrative Region and AECOM Asia Company Limited and DCKJV and TYFRON Consultancy Limited