

COMPANY

Architectural Services Department,
HKSAR Government

PROJECT

Lung Tsun Stone Bridge Preservation Corridor

LOCATION

Kai Tak Development Area

TYPE

Public Open Space

SCHEDULED TIME OF COMPLETION

Tentative: 2025

AIM --Archaeological Information Modeling

Unveil the Covered Remnants through BIM



About Architectural Services Department, HKSAR Government

Architectural Services Department (ArchSD) performs the following three core functions in relation to Government-owned and Government-funded facilities:

- 1) Monitoring and advisory services;
- 2) Facilities upkeep; and
- 3) Facilities development.

ArchSD commits to provide quality services to the public and explore every opportunity to integrate innovative and sustainable elements into its projects for the betterment of the society with due consideration on cost effectiveness. In recent years, ArchSD projects received some recognition including but not limited to the Hong Kong Institute of Architects Annual Awards, the Hong Kong Institute of Landscape Architects Design Awards, Quality Building Award and Green Building Award.

BIM PARTNERS

Archaeological Assessments Limited

Building Information Technology Limited

Ove Arup & Partners Hong Kong Limited

AUTODESK PRODUCTS USED

Navisworks

Recap

Recap 360

Revit

Project Description

This project is a proposed development in Kai Tak Development Area with significant archaeological content. The project aims to provide a landscaped open space within a 30-metre wide Preservation Corridor for heritage conservation and public appreciation of the Lung Tsun Stone Bridge remnants in situ at Kai Tak. The remnants were backfilled with soil and were fully covered in 2012 by CEDD. No remnants can be seen currently on site.

As there are remnants in the site, a Heritage Impact Study is required to assess the archaeological impact arising from the design and construction and to propose any necessary mitigation measures at the design stage for the approval by Antiquities Advisory Board.

Project Challenges

A big challenge of the project is to carry out archaeological study based on the unexposed remnants and to design an effective exhibition area for the remnants.

The archaeological study has to be carried out with minimized archaeological excavation and remnants exposure to minimize damages and weathering on the remnants. Accurate estimation on the impact of the construction works on the remnants without exposing the remnants are critical.

Coupled with these technical difficulties, the level of excavation, the location of viewing decks and the form of remnants display are in responsive location with sophisticated setting out.

Solutions for challenges

It is the local industry's practice that archaeological study is carried out by exposing the remnants for coordination on site.

In the process of archaeological study, exposing the remnants in early stage would easily cause damages and weathering of the remnants; if exposing the remnants in late stage, it would however attract a higher tender price due to the higher risk associated with the uncertain underground situation.

With the help of BIM, the project team could carry out detail archaeological study in early stage without exposing the remnants. Hence, in the early design stage, the project team has worked out the detailed design of the remnants displaying method rather than just conceptual design in the normal trade practice. All design details could be considered and well-coordinated in the design stage to achieve the buildability and constructability of the work. It is expected that the high accuracy of the archaeological study, design and quantification can lower contractor's risk and lead to a lower tender price.

How does BIM benefit the project?

The project team's access to the archaeological study in details during the early design stage will improve the constructability of the archaeological displaying system; minimizing abortive work and variation and achieving cost effectiveness of the whole project.

As the design of this project has been developed by BIM, it is anticipated that all appropriate information developed during design and construction stages is integrated in the BIM model which will be passed on for asset management. This facilitates easy retrieval of the information and hence efficient use of BIM data in asset management stage.

Better with BIM

1. BIM is a unique tool for analysis of archaeological works and remnants display.
2. BIM unveils the remnants more accurately off site without exposing the remnants on site.
3. 3D Visualisation in design stage and tender drawings allows better communication with future users, project teams and tenderers.
4. Problems are realised and resolved at project early stage before tendering.

BIM is a tool for carrying out effective Archaeological Investigation and designing an effective remnant displaying open space, collaborating multi-disciplines, enhancing current practise with BIM technology and visualized experience.



Rendering image for overall view of Lung Tsun Stone Bridge Preservation Corridor
Image Courtesy of Architectural Services Department, HKSAR Government



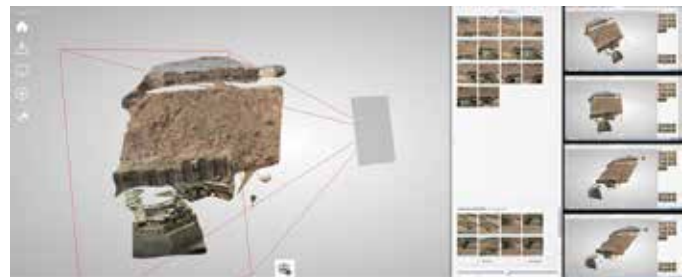
Existing condition of Kai Tak Development
Image Courtesy of Architectural Services Department, HKSAR Government



Old photo of Lung Tsun Stone Bridge Preservation Corridor
Image Courtesy of Architectural Services Department, HKSAR Government



Point Cloud Scanning the Profile of Remnants on Site by CEDD and Documenting the information of Remnants in BIM Model using Autodesk ReCap.
Image Courtesy of Architectural Services Department, HKSAR Government



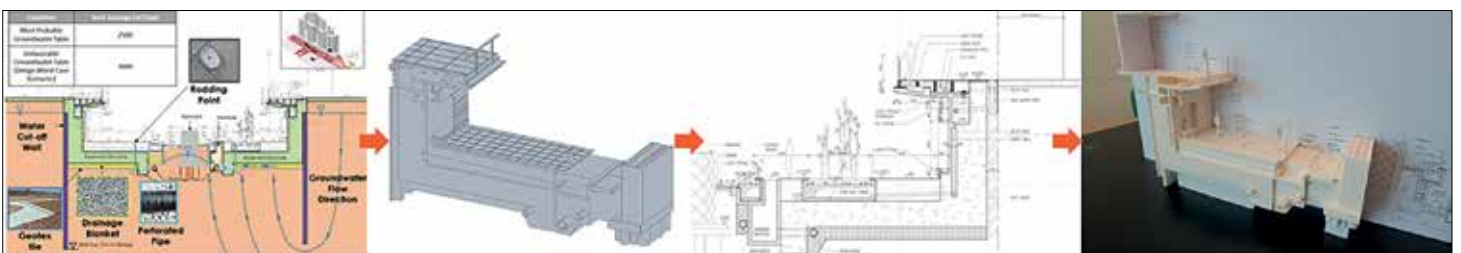
For area which is difficult to draw point cloud information, photo montage was adopted to reinstate the remnants outlook using Autodesk ReCap 360.
Image Courtesy of Architectural Services Department, HKSAR Government



Rendering image for Remnants of Lung Tsun Stone Bridge Preservation Corridor
Image Courtesy of Architectural Services Department, HKSAR Government



3D model of the remnants
Image Courtesy of Architectural Services Department, HKSAR Government



3D printing models show high accuracy and enhance communication with client, stakeholders and the public.
Image Courtesy of Architectural Services Department, HKSAR Government