

COMPANY

Drainage Services Department,
HKSAR Government
AECOM Asia Company Limited
Paul Y. – CREC Joint Venture
The Jardine Engineering Corporation Limited

PROJECT

Yuen Long Effluent Polishing Plant - Stage 1

LOCATION

Yuen Long

TYPE

Infrastructure Project

SCHEDULED TIME OF COMPLETION

2027

Our Journey with BIM




About Drainage Services

Department, HKSAR Government

Drainage Services Department provides world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong. Since the establishment in September 1989, DSD has strived to upgrade sewage treatment and flood protection levels in Hong Kong, and has acquired noticeable achievement and has committed to strengthening relationships with community, industry and worldwide counterparts.

About AECOM Asia Company Limited

AECOM is the world's trusted infrastructure consulting firm, partnering with clients to solve the world's most complex challenges and build legacies for generations to come.

About Paul Y. - CREC Joint Venture

Paul Y. Construction Company Limited, China Railway Group Limited, and China Railway First Group acting in joint venture under the name Paul Y. – CREC Joint Venture was awarded the project by DSD in Nov 2020 and has committed in delivering and completing this project successfully.

About The Jardine Engineering Corporation Limited

The Jardine Engineering Corporation Limited enables customers to operate their facilities at world-class standards by providing the contracting expertise to design, supply and install building and specialized processes; facility operation and management.

BIM PARTNERS

Syntegrate Limited

Tyfron Consultancy Limited

AUTODESK PRODUCTS USED

Autodesk® AutoCAD®

Autodesk® Docs

Autodesk® Civil 3D®

Autodesk® Navisworks®

Autodesk® ReCap® Pro

Autodesk® Revit®

Project Description

The existing Yuen Long Sewage Treatment Works (YLSTW) now serves Yuen Long Town, Yuen Long Industrial Estate and Kam Tin area with treatment capacity of 70,000 m³/day at secondary sewage treatment level.

To cope with the population growth and development needs, YLSTW will be transformed into Yuen Long Effluent Polishing Plant (YLEPP) with treatment capacity of 100,000 m³/day in stage 1 and at tertiary treatment level within the same tight footprint to meet the more stringent discharge requirements.

Project Challenges

The nature of the project is very unique with various challenges in design and construction including:

Design - The E&M design involves various types of sewage and sludge treatment processes which requires precise civil and structural design to support these system design not only during construction but also future operation and maintenance.

Construction - The existing sewage treatment plant is still in operation, thus the construction of the new sewage treatment facilities are carried out in phases with sophisticated temporary works design both in terms of civil and E&M works within the same footprint of the existing plant.

Solutions for Challenges

To overcome these challenges in both design and construction of the project, it takes tremendous efforts from project team members across different disciplines to work closely and collaboratively. As such, an effective communication channel is established enabling project team members to exchange ideas, comments, drawings and information etc..By taking a proactive approach via a well established communication channels, each project team members are able to identify problems / conflicts early and solutions are developed jointly to overcome the problems efficiently and effectively.

How does BIM benefit the project?

Project team members of different disciplines including Client, Architects, Civil & Structural Engineers, E&M & Building Services Engineers, communicated using BIMs and Common Data Environment. They are able to evaluate designs for feasibility, functionality and aesthetics within an immersive environment. Changes become more easily identified and design options can be evaluated more quickly.

Using BIM models during construction phase enables the contractors to improve their works planning, construction phasing and method of construction by allowing the site information to be visualized in three dimensions. These also support other application e.g providing immersive experiences to partitioners to enhance their safety awareness.

Better with BIM

With BIM, it is now possible to visualize the BIM model on-site at any time. The BIM model can be automatically and accurately mapped on-site, so that the user will be able to isolate focused digital information and understand the geometric relationship between BIM and the site.

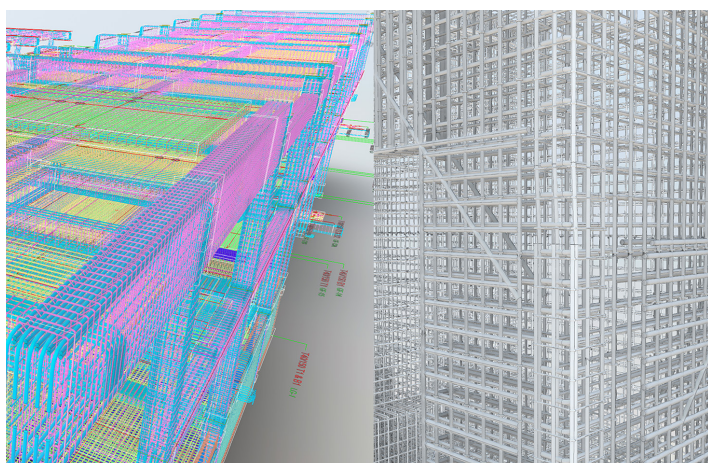
Autodesk BIM 360 provided a excellent common data environment to allow multiple stakeholders to collaborate on the project, including;

1. Reduction of risk and increased reliability of data.
2. Streamlining the process of checking, versioning, and reissuing information.
3. Enhance collaboration and improve outcomes.



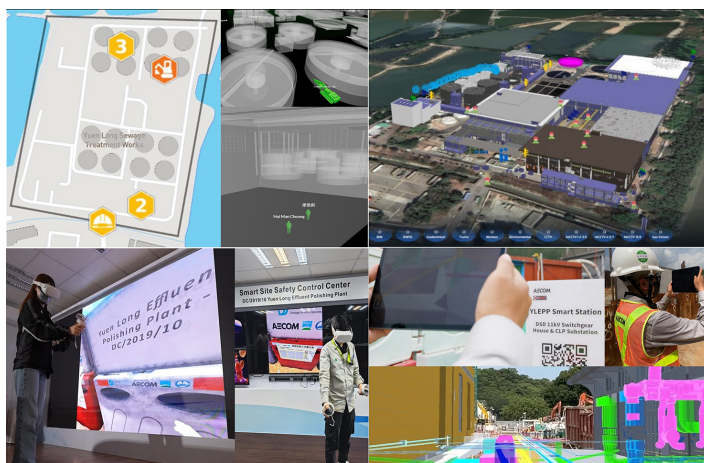
Overall View for YLEPP (with Artist Impression)

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



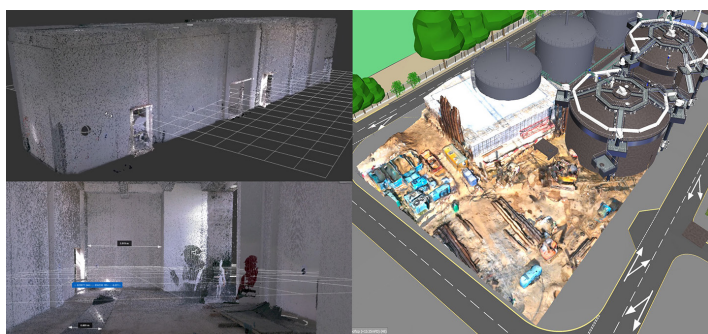
Bar Bending Schedule from BIM Model for Digital Fabrication

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



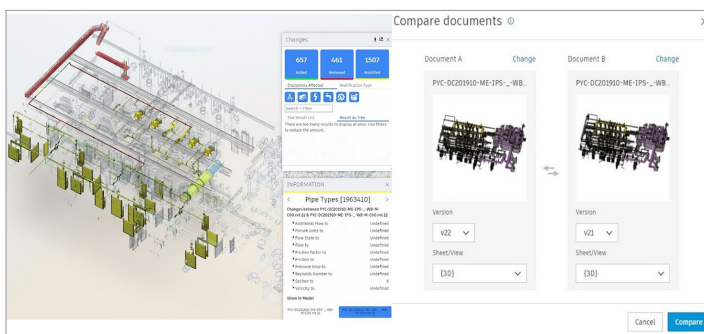
BIM with Innovative Technology

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



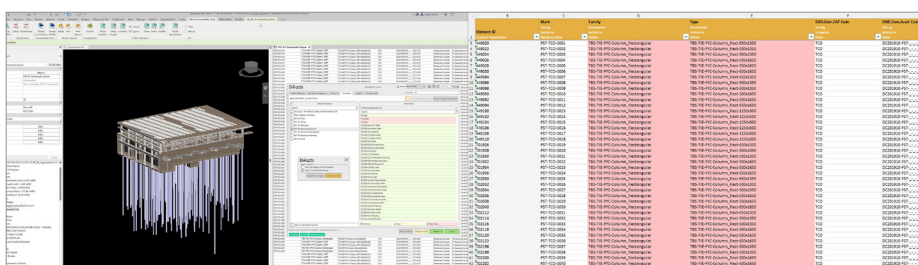
Existing Conditions Modelling using Point Cloud & 3D Photogrammetry

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



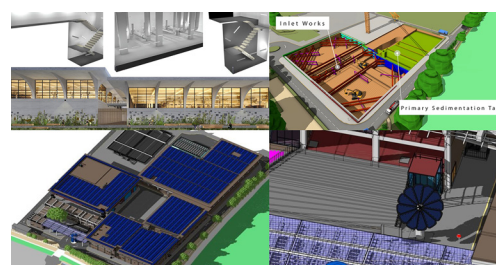
Clash Analysis and Comparison of 3D model in ACC

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



Revit Plugin for Data Management

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited



Engineering Analysis

Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and Paul Y. - CREC Joint Venture and The Jardine Engineering Corporation, Limited