COMPANY
Architectural Services Department, HKSAR
Hip Hing Engineering Company Limited

PROJECT
Design and Construction of Immigration Headquarters in Area 67, Tseung Kwan O

LOCATION
Between Po Yap Road and Chi Shin Street, Tseung Kwan O

TYPE
Government Offices & Specialist/Departmental Building

SCHEDULED TIME OF COMPLETION
September 2023

BIM the Future: Shaping New Lives in Immigration Headquarter

建築署 Architectural Services Department

協興工程有限公司 HIP HING ENGINEERING CO LTD

About Architectural Services Department, HKSAR

Architectural Services Department (ArchSD) was found in 1986 serving as one of the works departments under the Development Bureau of the HKSAR Government for the development and upkeep of public facilities.

Our aim is to provide efficient and cost-effective professional and project management services for the design, construction, maintenance and refurbishment of government buildings and facilities. We also provide professional and technical advice to the Government and quasi-government organisations.

Our mission is to serve and care for our community by enriching the living environment through high quality professional services; and to promote best practices in the building industry.

About Hip Hing Engineering Company Limited

Founded in 1964, Hip Hing Engineering Co., Ltd. undertakes the design and construction of building and civil engineering works for public sector clients, and it is one of the members of Hip Hing Construction Group ("Hip Hing"). Over the past decades, Hip Hing has grown to become one of the leading contractors in Hong Kong, and has been trusted by our clients to construct many of the landmark buildings which define Hong Kong. Our experience and expertise in the design, procurement, engineering and construction disciplines enables us to provide comprehensive project delivery services. We have also been embracing advancing technologies to take our services to the next level, so as to meet our clients' needs.

BIM PARTNERS
P&T Architects and Engineers Limited
Wong Pak Lam & Associates Consulting Engineers & Architects Limited
J. Roger Preston Limited
isBIM Limited

AUTODESK PRODUCTS USED
Autodesk® 3ds Max®
Autodesk® AutoCAD®
Autodesk® BIM 360® Docs
Autodesk® Civil 3D®
Autodesk® Dynamo Studio
Autodesk® Navisworks®
Autodesk® ReCap® Pro
Autodesk® Revit®

Project Description

The project involves constructing a new 17-storey Main Administration Tower (T2) with North Wing and South Wing, a 16-storey Enforcement Tower (T1), and 1-storey basement carpark to accommodate the Immigration Headquarters (IMMHQ). This modern government office aims to improve connectivity in the TKO district, with design objectives that include responding to urban planning needs, caring and anti-epidemic design for public areas and facilities, ensuring security and building resilience design, and green and sustainability.

Project Challenges

The Immigration Headquarter project encountered significant challenges in designing and constructing from design to construction stage. There are some major challenges as below

1. Elevated Long-Span Building Structures
2. Multi-Trade Integrated MEP (MiMEP) in various building services system
3. Immersive experience for layman to achieve the design goals
4. First large Scale 3D Metal Printing Pavilion in Asia

To overcome these challenges, the project required new technology and process that leveraged the potential of BIM to drive efficiency and precision throughout the design and construction process. This collaborate approach not only enhances design flexibility but also significantly time, cost and quality, setting a new benchmark for sustainable building practices in Hong Kong.

Solutions for Challenges

To address these challenges, the Immigration Headquarter project employed innovative solutions:

1. The use of advanced simulation review and risk reduction strategies minimized potential hazards.
2. Full digitalization in design and construction process enabled comprehensive evaluation and strict management of environmental impact, quality standards, and costs within tight budget and timeline constraints.
3. Autodesk's products integrated into the project, facilitating accurate and precise execution from design to execution.
4. The implementation of 3D Metal Printing technology utilizing Wire Arc Additive Manufacturing (WAAM) enabled parametric modeling, minimizing deviation between design and actual structures.

These innovative solutions not only addressed specific challenges but also set a new benchmark for sustainable building practices in Hong Kong, demonstrating the potential for collaborative approaches to drive efficiency, precision, and time savings.

How does BIM benefit the project?

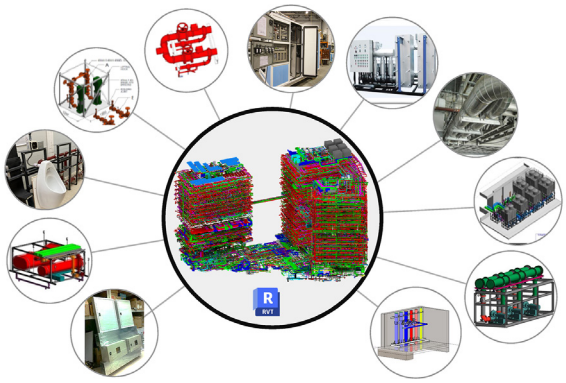
The BIM process significantly benefited the Immigration Headquarter project. It enabled clear information exchange among stakeholders, enhancing collaboration and communication throughout the project lifecycle. The use of BIM streamlined construction, saving 2 months and 23% on cost for elevated long span building structures. Simulations ensured safer design and installation outcomes, while reducing MiMEP installation time from 28 days to 14 days and shortening the period from 4 weeks to 1 week. Combining BIM with technologies like VR/MR/BIM Cave and 3D metal printing led to significant cost savings and improved project outcomes, making it a crucial strategy for successful project execution.

Better with BIM

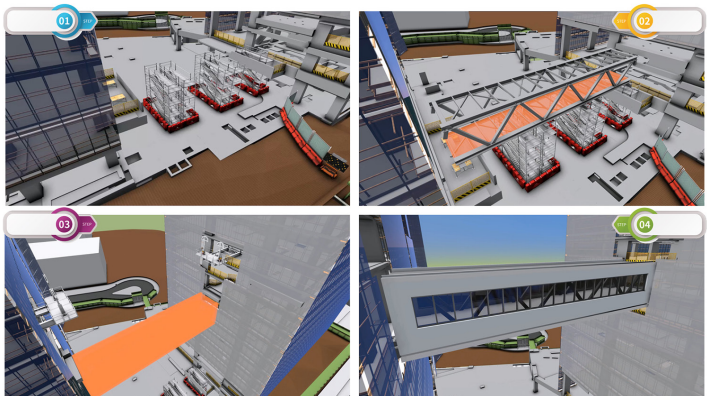
This project demonstrates the transformative power of Building Information Modelling (BIM). BIM could improve collaboration and communication, streamline construction processes, and empowers you to deliver better projects outcome, faster and more cost effectively. To fully realise the benefits of BIM, an integrative project delivery approach is required such as early engagement and expectations alignment with stakeholders, which is reinforced by a Virtual Design and Construction (VDC) mindset and Advanced Manufacturing Integration, such as integrated 3D metal printing with Wire Arc Additive Manufacturing (WAAM) technology.

Immigration Headquarters Overview
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited

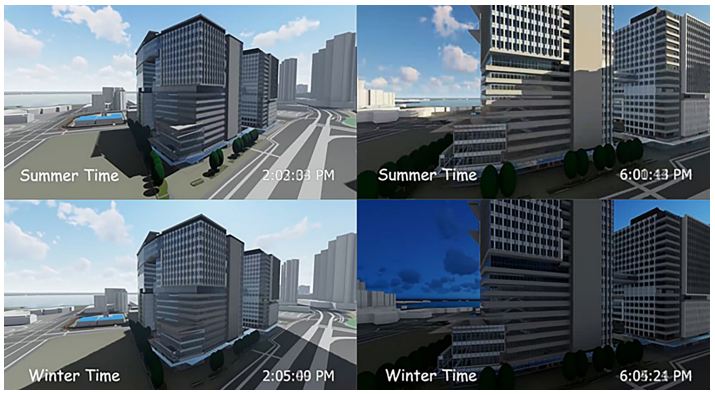
Marriage Hall
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited



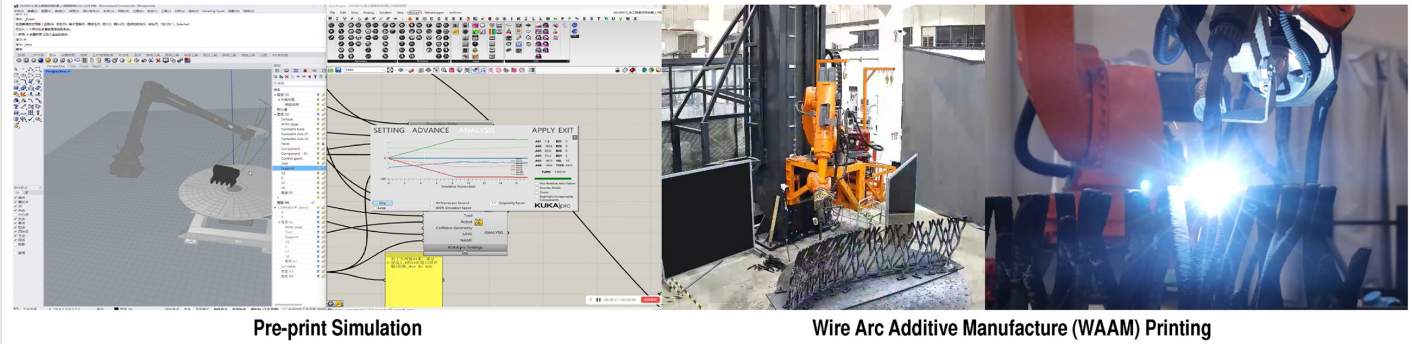
Multi-Trade Integrated MEP (MiMEP)
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited



Simulation of Steel Link Bridge
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited



Solar Study Simulation
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited



3D Metal Printing - WAAM Technology
Image Courtesy of Architectural Services Department, HKSAR and Hip Hing Engineering Company Limited

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