COMPANY

Hip Hing Engineering Company Limited Hong Kong Science and Technology Parks Corporation

Andrew Lee King Fun & Associates Architects Limited

David S.K. Au & Associates Limited

PROJECT

Main Works Contract for Development of Micro-Electronics Centre

LOCATION

Fuk Wang Street, Yuen Long INNOPARK

Private – Industrial

SCHEDULED TIME OF COMPLETION Jan 2024

About Hip Hing Engineering Company Limited

Founded in 1964, Hip Hing Engineering Co., Ltd. (Hip Hing) undertakes the design and construction of building and civil engineering works for public sector clients. 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.

About Hong Kong Science and Technology Parks Corporation

Hong Kong Science and Technology Parks Corporation (HKSTP) fosters a culture of promoting innovation and a vision to adopt new technologies, so as to strengthen the industry's sustainable development and build a future with abundant innovation opportunities for the younger generation.

About Andrew Lee King Fun & Associates Architects Limited

Andrew Lee King Fun & Associates Architects was first established in Hong Kong in 1962 and was incorporated as a limited company in 1998. It is now one of the most innovative and technological forefront architect services in Hong Kong, offering professional architect services, innovative design proficiency and efficient project management.

About David S.K. Au & Associates Limited

David S.K. Au & Associates Ltd. (DAAL) is a well-established consulting firm, operating in Hong Kong since 1980. It offers a truly comprehensive, multi-disciplinary consultancy service package from one office.

AUTODESK PRODUCTS USED

Autodesk® 3ds Max® Autodesk® AutoCAD® Autodesk® BIM 360® Docs Autodesk® BIM Collaborate Pro Autodesk® Civil 3D® Autodesk® Desktop Connector Autodesk® Dynamo Autodesk® Navisworks® Manage Autodesk® Revit® Autodesk® Vehicle Tracking

Utilizing BIM for Seamless collaboration in fast-track construction project







Project Description

Micro-Electronics Centre (MEC) is a first state-of-the-art technological, industrial building to specialize in micro-electronic manufacturing in Hong Kong. The project consists of a 4-storey of Main Building and a 3-storey of Central Utility Building. Equipped with flexible design dedicated cleanroom and special chemical handling room. MEC is established to support the research, development and pilot production of new generation microelectronics products, thereby generating new business opportunities, high-skilled employment and a brighter future career for the young generation.

Project Challenges

For MEC project, the 132k-Volt Substation is included in the Central Utility Building (CUB) provide electricity to the building. To swiftly meet the strong and ever increasing regional market demand of microelectronics, the MEC has to be delivered in tight project schedule, with the handover of the Substation to be completed within first 5 months. Only a 1-month challenging window was therefore allowed for fully coordinating relevant underground utilities and E&M services, which was further strained by the coincidental overlapping with the 5th local wave of COVID-19. Team members had to work concurrently across different physical locations inevitably.

Solutions for Challenges

BIM coordination is the key to reduce rework while boost productivity. BIM360 Docs, a cloud-based CDE which enables all project stakeholders to review latest models and issues in real-time, and at different locations. Also, 4D Simulation was done using Navisworks Manage to simulate construction sequence for congested site planning in advance. In addition, Civil 3D and Vehicle Tracking were adopted to generate swept paths to visualize different scenarios for project team to determine the best route for site logistics. Dealing with the tight deliverables schedule, automated tools developed by Dynamo is adopted to facilitate drawing production, which reduced 30% of total required man-days.

How does BIM benefit the project?

MEC contains special equipment, which have specific spatial requirements for operation and maintenance. BIM is adopted to unveil the potential headroom issues and fine-tune the design earlier before construction. With Revit and Navisworks, clash analysis can be carried out to check the design-intent spatial requirements. In addition, BIM team has assist QS team to conduct quick Quantity Take-off using Revit and Dynamo. The concrete volume can be estimated to meet the tight approval schedule for the counter-proposal. Autodesk Docs provides single source of truth which enables virtual project coordination. Deliverables submission can be completed on schedule even facing unforeseeable challenges.

Better with BIM

Adoption of BIM plays an important role throughout the project stages. As Design for Manufacturing & Assembly (DfMA) and MultiTrade integrated MEP (MiMEP) are adopted into the proposed development, BIM visualizes the design and identify clashes and issues earlier before construction, so as to make sure the pre-fabricated items could be well-fitted into the design and be successfully installed into the particular location. In addition, the information-enriched BIM model with Virtual Reality (VR) technology could simulate the As-built environment. VR not only adopted for design review, but also for safety training and FM training in later project stage.





Rendered image of Main Building Main Entrance Lobby Image Courtesy of Hip Hing Engineering Company Limited and Hong Kong Science and Technology Parks Corporation and Andrew Lee King Fun & Associates Architects Limited and David S.K. Au & Associates Limited



Logistic Swept Path Analysis generated by Civil 3D Image Courtesy of Hip Hing Engineering Company Limited and Hong Kong Science and Technology Parks Corporation and Andrew Lee King Fun & Associates Architects Limited and David S.K. Au & Associates Limited



Transformer Installation Completion Image Courtesy of Hip Hing Engineering Company Limited and Hong Kong Science and Technology Parks Corporation and Andrew Lee King Fun & Associates Architects Limited and David S.K. Au & Associates Limited

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Rendered image of Main Building Main Entrance Image Courtesy of Hip Hing Engineering Company Limited and Hong Kong Science and Technology Parks Corporation and Andrew Lee King Fun & Associates Architects Limited and David S.K. Au & Associates Limited

. Heat-map of Headroom and Drawing Production using Dynamo Image Courtesy of Hip Hing Engineering Company Limited and Hong Kong Science and Technology Parks Corporation and Andrew Lee King Fun & Associates Architects Limited and David S.K. Au & Associates Limited







