

# MAA Bulletin

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FEBRUARY 2019



中央研究院國家生技研究園區統包工程專案管理  
The National Biotechnology Research Park of Academia Sinica



亞新工程顧問(集團)公司  
MAA Group Consulting Engineers  
BANGKOK BEIJING HONG KONG MACAU  
SHANGHAI SINGAPORE TAIWAN YANGON

(模擬圖由劉培森建築師事務所提供)



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Founded in 1975, **MAA** (Moh and Associates) is a leading Asian engineering and consulting service provider in the East and Southeast Asian region focused in the areas of infrastructure, environment, buildings, land resources, and information technology.

To meet the global needs of both public and private clients, **MAA** has a full range of engineering capabilities providing integrated solutions ranging from conceptual planning, general consultancy and engineering design to project management.

**MAA** employs over 1000 employees with companies in the Greater China Region (Beijing, Shanghai, Chengdu, Hong Kong, Macau, Taipei ) and Southeast Asian Region (Bangkok, Singapore and Yangon), creating a strong professional network in East/Southeast Asia.

**MAA's** business philosophy is to provide professional services that will become an asset to our clients with long lasting benefits in a rapidly changing social-economic environment. **ASSET** represents five key components that underline **MAA's** principles of professional services:

project **A**dvanced Technology  
client's **S**afety  
**S**atisfaction  
**E**conomical Solution  
**T**imely Completion

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## ISO 9001 and LAB CERTIFICATIONS

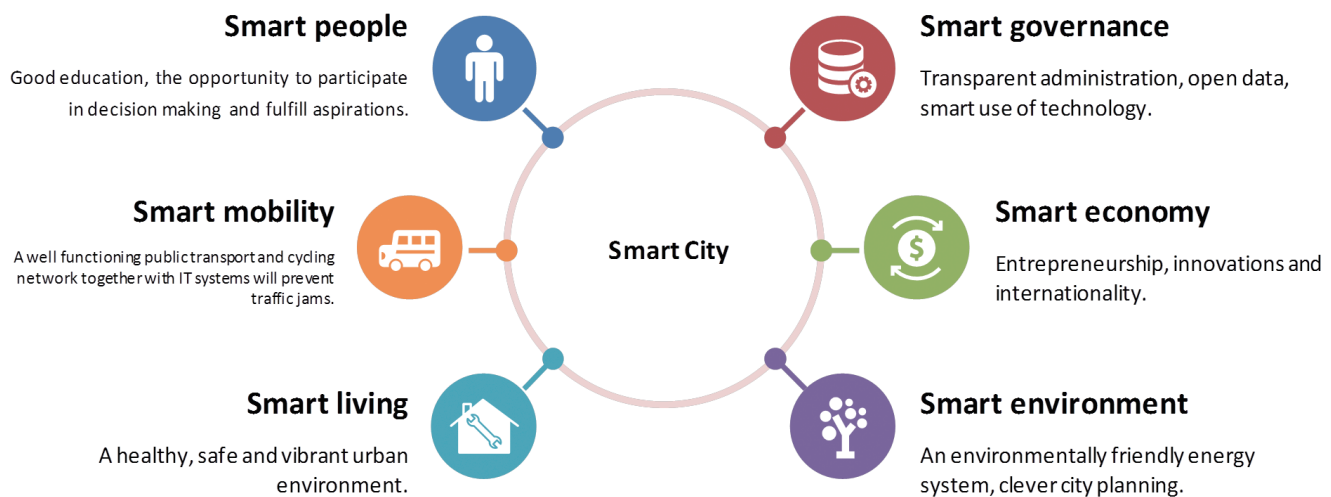


# BIM FOR SMART CITY

## SMART CITY

With the advent of new technologies, the costs of collecting, storing, and processing data have enabled innovating methods for the design and management of cities. “Smart Cities” have become a global trend as cities begin to seek for new cost-effective methods to manage its systems and services, while also improving the overall quality of services provided. “Internet of Things” (IoT) and other recent developments have facilitated communication between all stakeholders, from systems, service providers, general public, etc.

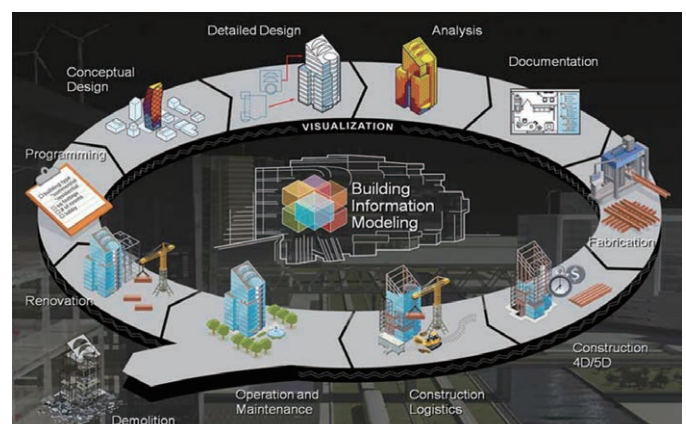
MAA prides itself in assisting private and public clients in achieving their goals for smart cities and smart communities. By working closely with local government, MAA provides its consultancy services in particular to deliver smart buildings and smart infrastructure projects. Recent trends in engineering have progressed towards integrating smart technologies into public services, modernizing conventional management methods for public infrastructure and for building projects.



*Six Components of Smart City*

## WHY BIM + SMART CITY

One of the major topics in the engineering field has been Building Information Modeling (BIM). Through the process of incorporating building modeling in combination with integrated databases, BIM has revolutionized project lifecycles from its original “Building” projects to now including infrastructure projects. With a greater breadth of public works projects requiring BIM, including for transportation (railway projects), buildings (government, public housing, hospitals, etc.), utilities (power plants, utility lines, etc.), projects provide an opportunity to create a well connected database not only throughout its planning to construction process, but also for its operations. BIM is able to provide a basis and platform on which smart services can build upon, through well-detailed and documented infrastructure throughout the project.



The core concept of BIM is the collaborative development and management of asset information to enable the many practices that support its entire life cycle. (Image courtesy Autodesk)

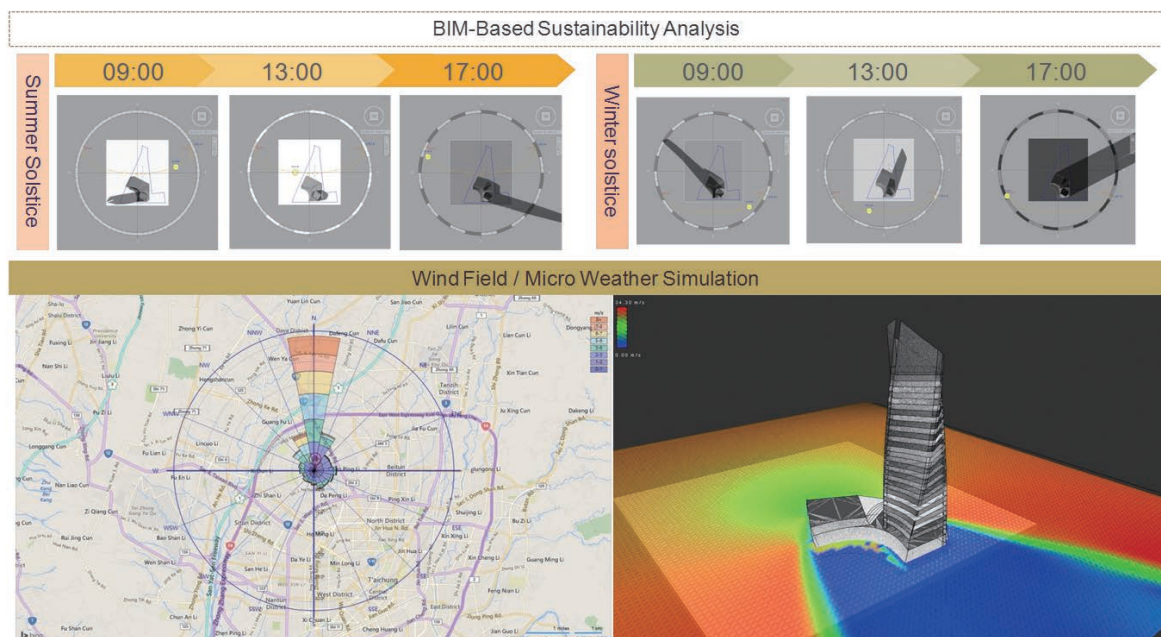
## SMART BUILDING

As with public infrastructure, buildings are designed to last for decades, if not longer. All buildings must be carefully planned and designed to ensure the comfort and safety of its residents and occupants. Recent trends in smart buildings include designing energy-efficient buildings, from choosing its materials, layouts, and other passive methods, to installing sensors which can actively control building systems.



*BIM Applications for Taipei Main Station C1/D1 Land Development Project*

Through careful planning, design, project and construction management, MAA is able to assist its clients to create smart buildings which meet their needs. As early adopters of BIM, MAA is able to assist the client in BIM advisory services and manage the overall process, ensuring the integrity of the data and models for use into operations and management purposes. Due to the complex systems of a smart building, whether it be in its design or operations, MAA can assist in interfacing and communication through BIM. Visual interfaces and federated models to ensure projects proceed as planned, reducing often unnecessary and costly changes. BIM models can be incorporated into facility management programs, offering building managers an as-built model with necessary data upon handover.



*BIM Based Sustainability Analysis for Taichung Intelligent Operations Center*





Taichung Intelligent Operations Center

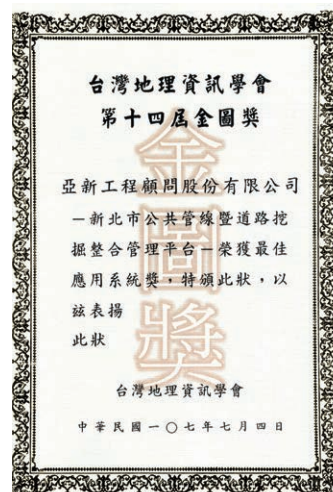
## SMART UTILITY

The rapid global economy growth in recent years has led to increased population density within urban cities, leading to the need for improvements to infrastructure. As space increasingly becomes a commodity, buildings and pipelines become complex networks which can often result in disastrous consequences without careful planning. Conventional use of Geographic Information Systems (GIS) has provided governments with sufficient information to make key decisions in the past. However, MAA has assisted clients in applying innovative solutions through the use of 3D GIS technologies. Through interactive 3D models, planners, government officials, and operators can make better informed decisions regarding utility routing, maintenance, and other such works. Since a majority of these utilities are buried underground, the use of 3D technology assist in providing clear visual interfaces in which pertinent information can be retrieved for use.



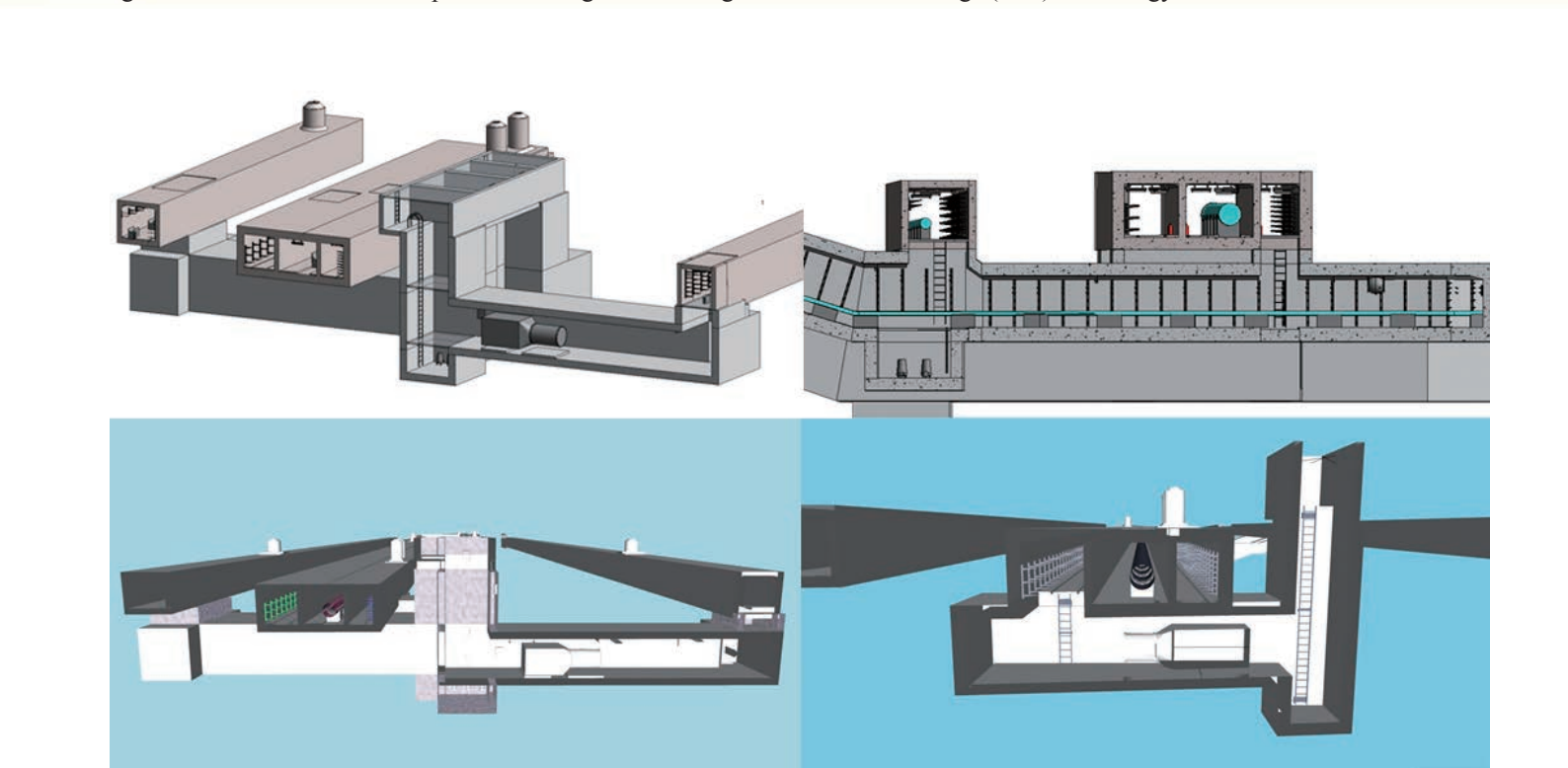
3D Underground Utilities GIS Information System

MAA was tasked with designing and implementing a 3D GIS database and system for New Taipei City's vast network of underground utilities. In addition to establishing this system, MAA also integrated the 3D GIS system with 2D GIS and Google Street Maps to provide an information inquiry system for public utilities. Users were able to navigate and search for utility information using the same platform, enhancing the process for management as well as planning for new utility lines. As the leading consultant for project "Implement on Underground Utilities Database and GIS Management System for New Taipei City" was awarded the first place by Construction and Planning Agency, Ministry of the Interior for four consecutive years, and also won the Best Application System Award of 14<sup>th</sup> Golden Map Award.



Best Application System Award of 14th Golden Map Award

However, 3D GIS as a standalone system may be insufficient for detailed management of utilities, in particular for common ducts. Applying BIM practices to utilities has allowed for more detailed models to contain additional attribute information for facility management use. An information inquiry system was also implemented to provide smart management services for common ducts, as well as access 3D models of the utilities to optimize maintenance procedures. In the future, it will also be used to assist the government agencies in maintenance and operation management through the Internet of Things (IOT) technology.



### BIM Model of Common Duct



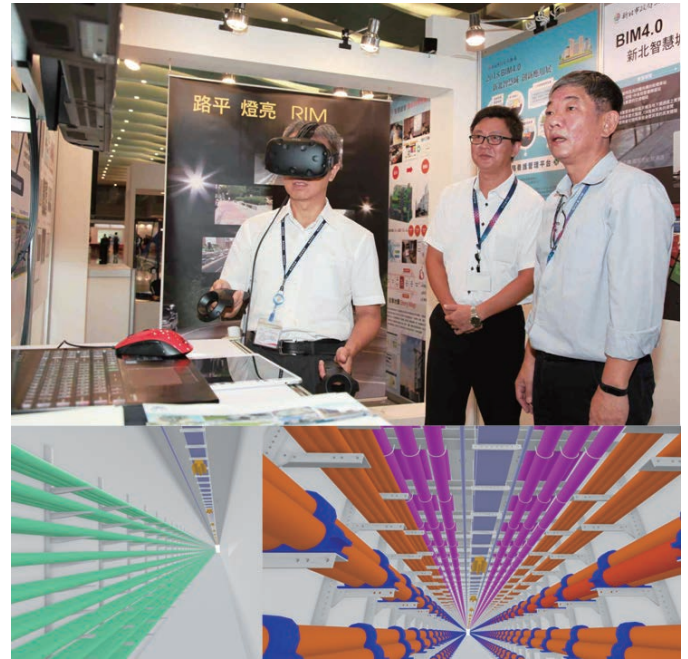
BIM Models and Properties for Facilities of Common Duct



In addition to modeling applications, MAA also integrated both Augmented Reality (AR) and Virtual Reality (VR) technologies into Smart Utility applications. AR technology was used to develop an inquiry system for on-site underground utilities, which could display the 3D models simultaneously through mobile devices such as smart phones or tablets. The positioning method adopted was applying Global Positioning System (GPS) with an electronic compass to calibrate and position the 3D model. Equipment information, such as maintenance records, planning schedules, or other data can be inquired for the specific equipment while on-site, allowing a consolidated repository of information with easy access for the users. VR technology allowed for off-site users to experience the 3D common ducts, and also provide another intuitive platform for smart management of utilities.



*Development of Underground Utilities Information APP with AR Technology*

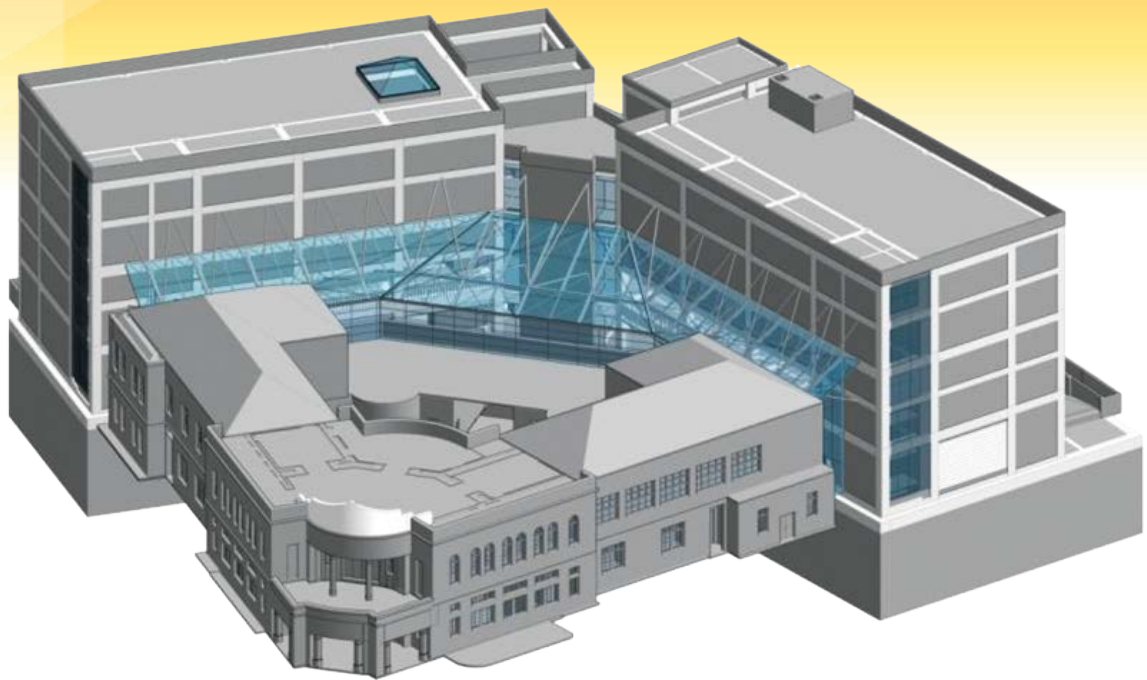


*Virtual Reality Visualization for Common Duct with VR Technology*

## DIGITAL ARCHIVE

The aim of a smart city is not only to improve the city through new developments and smarter facilities, but also to better manage existing infrastructure and buildings. One significant part of any city includes its cultural heritage and historical sites. One common issue with these historical buildings or sites is a lack of engineering drawings or similar documentation. The concept of a “Digital Archive” to record these cultural sites has become an emerging trend, using high-fidelity 3D models to establish and preserve records of these sites. Apart from use as technical documentation for engineering or renovation purposes, these models can also be used for educational purposes, such as to create a virtual museum.

Through the use of LIDAR (Light Detection and Ranging) scanning technology, an accurate 3D point cloud of the site or buildings is able to be captured. Through the use of BIM as well as the LIDAR model, a digitally accurate model of the cultural site can be reproduced, as well as used for further purposes.



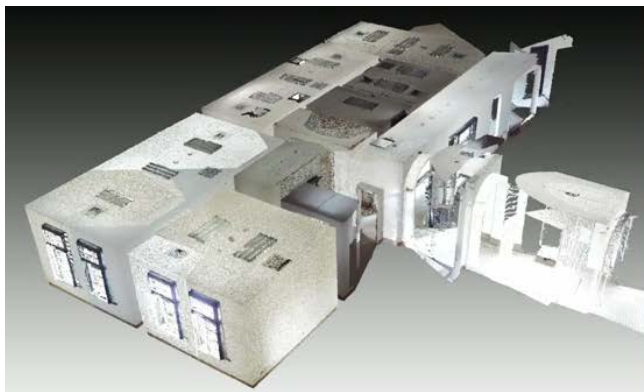
*BIM Model of Tainan Art Museum*



*Photo of Tainan Art Museum*



*3D Point Cloud of Tainan Art Museum – Building Exterior*



*3D Point Cloud of Tainan Art Museum – Building Interior*





# DRONE APPLICATIONS FOR DESIGN AND CONSTRUCTION MANAGEMENT

## BACKGROUND

In recent years, with the advent of new technologies, Un-manned Aerial Vehicles (UAV) has been adopted in several different applications for engineering practices. The ability to quickly capture aerial photography and generate 3D reconstructions of buildings or large-scale sites culminates in a powerful tool which can assist and provide advantages in design and construction.

## INTRODUCTION OF UAV

Currently, there are two types of UAV (commonly known as drones) which are commonly used, namely fixed-wing and rotary wing types, as explained below:

The fixed-wing drone is more aerodynamic, hence consumes less energy and has a larger cruising radius. However, it cannot hover while in the air, and its flying speed is greatly affected by the wind direction. Fixed-wing drones also need greater distances for takeoff and landing.



*Multi-rotor (4-axis) drone - DJI PHANTOM 4 PRO V2.0*

The rotary wing type is divided into a single-rotor helicopter and a multi-rotor. The helicopter can climb vertically, reducing takeoff restrictions, and also provides the drone with the ability to hover in place. However, it consumes more energy, is limited to a small cruising radius, and may be difficult to operate. Helicopter drones also contain more complicated mechanical transmissions, leading to increased difficulty for maintenance. Because of the difficulties with helicopter drones, in recent years, the popularity

of the multi-rotor has been risen. In contrast, multi-rotor drones have simpler mechanical transmissions, providing more user-friendly maintenance. These multi-rotor drones are also easier to control, resulting in it becoming more popular in use.

With the increase in popularity of UAVs in recent years, use of UAV has garnered more attention with concerns over the management and safety issues with these drones. Several countries have begun placing regulations and restrictions to drone use. In Taiwan, on 3<sup>rd</sup> April, 2018, the Legislative Yuan passed amendments to the provisions of the Civil Aviation Law, and added the special chapter for the “Remote Control UAV”. It will be officially implemented on 1<sup>st</sup> July, 2019. The Civil Aviation Administration of the Ministry of Communications is preparing a regulation for UAV. According to the current draft, the drones must be registered, and operated by a licensed user.

## CURRENT IMPLEMENTATION

At present, the application of drones by MAA primarily includes data collection for site investigations, construction progress monitoring, and constructing 3D models for Building Information Modeling (BIM). The different applications are briefly described below:

1. Site Investigation/Survey: Drones can be used to provide the Client as well as the working team with a clear view of the project site conditions and locations. These solutions provide a cost-effective method and overall picture of the local conditions for planning and design works. By using drones, efficiencies can be improved due to the short time necessary to acquire aerial photos of the site and therefore improves overall workflow.



*Aerial Photo of XiShuWanLi Area for the Project: Development of the F and G Sections of the Development Block of the Nanke Area in Tainan City*



*Aerial Photo of Construction Progress for the Project of Cathay O2 Residential Project Management Service*



*Aerial Photo of TsunShang Primary School for the Project: Remediation of the Soil Liquefaction Potential for the ChangHua County*



*Aerial Photo of Construction Progress for the Project: Design and Construction Supervision Technical Services of Hushan Training Course and its Connecting Road, and Diversion Work of Tainan No. 169 County Road.*

2. Construction progress monitoring: In order to meet the needs of various projects, aerial photos of the drones during the construction period allow for the project team to quickly grasp the progress of the project. Aerial photo images can also be used in tandem with BIM or GIS to confirm or to check construction progress. These tools can provide great assistance to the project team for project management, providing additional evidence and visuals on project progress.

3. 3D Reconstruction and Integration with BIM: In order to capture a detailed environmental model of the project site and its surroundings, 3D reconstruction from UAV or other aerial photography methods have become a commonly adopted technology. 3D reconstruction from the 2D images through use of different reconstruction methods such as Structure from Motion (SfM), simultaneous localization and mapping (SLAM), and multiple view stereo (MVS) are commercially available, allowing detailed 3D reconstructions to be created within a short time frame. Combining these site models with BIM or GIS allows the team to clearly visualize as well as facilitate communication regarding plans or designs. These integrated models can be used to not only demonstrate above-grade structures and layouts, but is also used for planning below-grade structures, such as utilities or other facilities. The combination of these techniques results in reduced project costs and possible construction conflicts through improved cross-discipline communication.



*Aerial Photo of Construction Progress for the Project of Shueinan Trade Park Central Park Landscape PCM*





*Result of Integrated Depot and Underground Pipeline BIM Model with 3D Rreconstruction model of the New Taipei City MRT SanYing Line Project.*



*Result of 3D Reconstruction Model of the SanYing Water Recycling Center for the New Taipei City MRT SanYing Line Project.*



*Result of integrated SanXia River Bridge BIM Model with 3D Reconstructed Model of the New Taipei City MRT SanYing Line Project.*



*Integrated New Road Planning BIM Model with 3D Reconstruction Model for the Urban Development Project CaoTa area.*





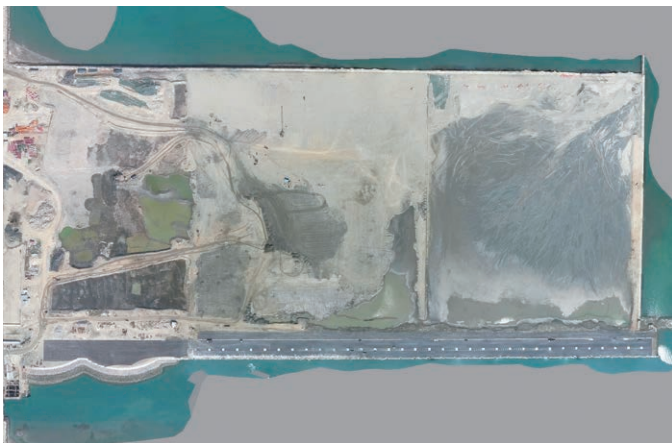
3D GIS-assisted Construction Progress of the New Taipei City MRT SanYing Line Project Planning and Turnkey Project, Showing the Completion, Construction in Progress, and Prospective Three Construction Phases



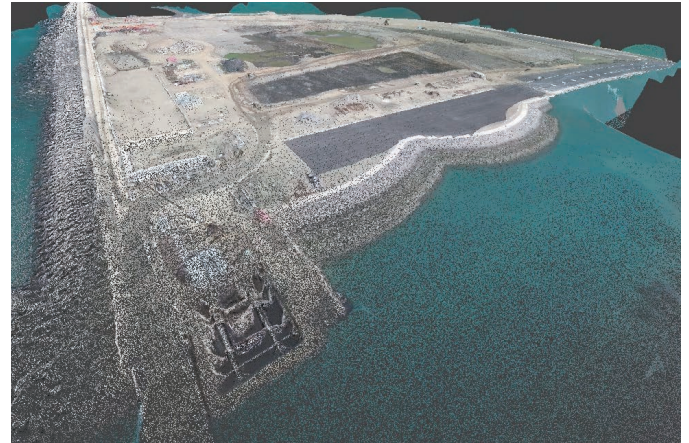
Orthophoto of DongGang High School for Pingtung County Soil Liquefaction Potential Area Prevention and Improvement Technical Service.

4. Orthophoto: UAVs are able to produce orthophotos, creating an accurate representation of the project site and its surroundings.

5. Point cloud: Apart from the 3D reconstruction demonstrated above, aerial photography from UAV may also be used to produce point cloud. Where performance of the modeling software and accuracy of the image (elevation, etc.) is a priority, it may be beneficial to use a point cloud instead of a full 3D reconstruction. As shown below, the overall quality of the original point cloud may be higher than that of the reconstruction, and can be used for different purposes.



Orthophoto of the 44-hectares Geological Improvement Project of the Reclamation Area at South Port Wharf, Taipei.



Point Cloud Result of the 44-hectares Geological Improvement Project of the Reclamation Area at South Port Wharf, Taipei.



# PROJECTS

1<sup>ST</sup> SEPTEMBER 2017 TO 30<sup>TH</sup> NOVEMBER 2018

## CONSTRUCTION SUPERVISION SERVICE FOR THE YELLOW MONORAIL LINE PROJECT, LAT PHRAO-SAMRONG, THAILAND

The Yellow Line from Lat Phrao to Samrong is the straddle monorail system on the elevated MRT structure in Bangkok, Thailand. It is 30.4 kilometers long with 23 stations. It is the interconnecting line between the Blue Line at Ratchada Station (Lat Phrao Station of the Blue Line) and the other 4 lines of mass transit system, i.e. the Grey Line (BMA) at Chalong Rat intersection, the Orange Line at Lam Sali intersection, Airport Rail Link at Rama IX interchange and the Green Line Bearing-Samut Prakan at Samrong Station. MAA services for this project include construction supervision services, ensuring international quality standards of works and compliance with contracts.

The service started in October 2017 and is expected to be completed in July 2020.



The Yellow Monorail Line



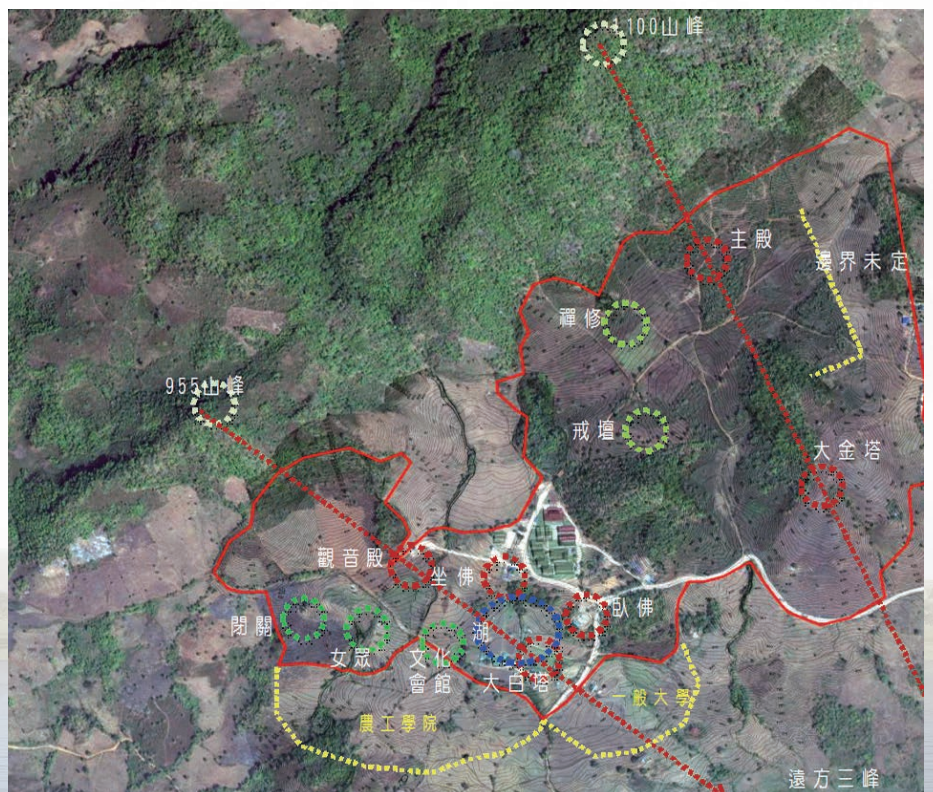




*Concept Rendering for LJM Dashanyuan Temple*

## **LING-JIOU MOUNTAIN (LJM) DASHANYUAN TEMPLE AND LOVE & PEACE UNIVERSITY PROJECT DEVELOPMENT & MASTER PLANNING SERVICES, LASHIO, MYANMAR**

The Dashanyuan Temple Love and Peace University in Lingmu Mountain, Layan, Myanmar, seeks to establish an integrated Buddhist university and temple based on green and sustainable practices. With a site area of 120-180 hectares, the project plans to include a Buddhist university, an agricultural college, a main temple, meditation centers, buddism schools, cultural center, etc. The scope of the project includes project development and master planning services for infrastructure and facilities, to best incorporate and demonstrate the monastery's values. MAA was commissioned by LJM to provide consultant service including project development analysis, conceptual planning and master plan development. The service period began from January 2018 and is expected to be completed in January 2019.



*Master Plan for LJM Dashanyuan Temple*



## SOUTH DAGON- THUWANNA BRIDGE, YANGON, MYANMAR

To facilitate transportation across Nga Moe Yeik creek between Thingangyun Township and South Dagon Township, the Yangon City Development Committee (YCDC) decided to construct a bridge to connect these two towns.

MAA was engaged by YCDC as the construction supervision consultant to implement international QA/QC practices into public infrastructure projects, aiming to enhance the public work quality in Yangon city. This is the second bridge that MAA was commissioned by YCDC to supervise the construction work. The service period was from November 2017 to May 2018.



South Dagon- Thuwanna Bridge (KaMar Kyi 2)



Commemorative Plaque Located at the Bridge

South Dagon- Thuwanna Bridge  
Archive  
South Dagon-Thuwanna Bridge which is constructed by Myat Noe Thu Construction Company and supervised by MAA Engineering Consultants INT'L., Ltd with the direction from Yangon City Development Committee under the guidance of Yangon Region Government is opened on 7th February, 2019.

## YEDAGON TAUNG DEVELOPMENT PROJECT IN MANDALAY, MYANMAR. (PHASE 1)

This development project seeks to establish a modernized urban city near Mandalay, one of the major cities of Myanmar. The project has recruited an international design team (including consultant firms from France, USA, Singapore and Thailand) since the project's inception in 2014. The Yedagon Taung Development project site area is around 227 hectare, including 22 sub-projects (villas, shopping centers, an international school, an amusement park, an international hospital, golf courses, low rise apartments, community houses and hotels). The project will also develop supporting infrastructure for this area, including arterial roads, electrical substation and water treatment plant, etc. Upon completion, the project is expected



Site Plan for Yedagon Taung Development Project

to become a highly sought-after community in Myanmar. The total of construction cost is estimated to be USD\$ 700,000,000. MAA was commissioned by Phwint Phyo Thit Co, Ltd to provide consultant service for the establishment of a project company, project design management and tender management. The service began in May 2018 and is expected to be completed in May 2019.



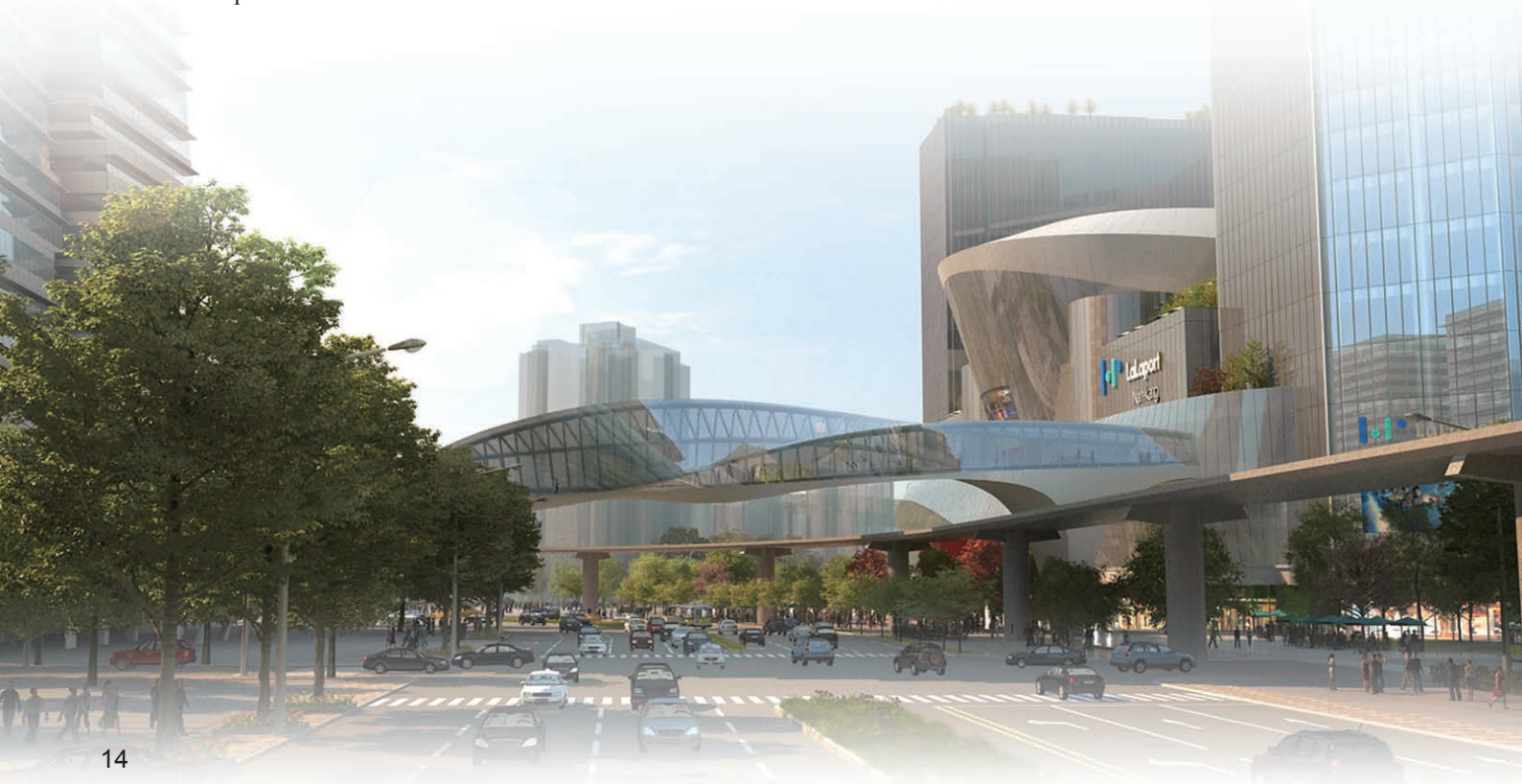


## PCM SERVICE FOR TAIWAN LIFE INSURANCE COMPANY NANGANG C3 PROJECT, TAIPEI, TAIWAN

The Taiwan Life Insurance Company won the 45-year land use right of C3 section land at Nangang district in Taipei in 2015. The planned location of this project is in eastern part of Taipei one minute walk from the Taipei Metro (MRT) Nangang Softwarepark Station, and 3 minutes on foot from the Nangang Exhibition Center Station. With the site area of about 41,400 sq.m., this development is planned to house hotels, offices together with retail shops. By providing about 50,000 jobs, this project is expected to become the new major commercial complex of eastern part of Taipei. MAA was commissioned by the client to provide PCM services, which includes:

- Support the selection of planning and design team
- Design consulting and review
- Design schedule control
- Design coordination and supervision of all disciplines
- BIM coordination and supervision
- Bidding management: bidding strategy, tender list suggestion and qualification review
- Project schedule control, construction supervision and project handover

The service period is from December 2016 to December 2020.







## PROJECT CONSTRUCTION MANAGEMENT FOR THE CHUNGHWA POST LOGISTICS PARK, TAIWAN

The park is near the National Taiwan Sport University Station (A7) of the Taiwan Taoyuan International Airport Access MRT System, an area with booming business activity. The property is on an area of about 13,223m<sup>2</sup> which is near a 2 hectare flood-detention pond, serving both a functional purpose while creating a friendly environment for employees and local residents. The park plans to adopt renewable energy sources including wind power, as well as promote green buildings, reducing power consumption by 30%.

This logistics park is also planned to become a smart park, leveraging big data analysis, artificial intelligence and Internet of Things in its operations.

The park area is 17.14 hectares and consist of five central buildings: a logistics center, a northern Taiwan mail processing center, an information center, a training center and an industrial plaza. In addition to parcel-sorting machines, robots and

automated vehicles, the park will also be equipped with the latest information and communications technology to monitor the delivery of mail and parcels. MAA was commissioned by the Chunghua Post Company to provide PCM service as well as BIM model database application for the project. The contract period for MAA's services in this project is from March 2018 to June 2022.

## WAN-DA FIRST FRUIT AND VEGETABLE WHOLESALE MARKET RECONSTRUCTION PROJECT, TAIWAN

The Wan-da First Fruit and Vegetable Wholesale Market will include two RC and steel composite buildings on a site area of approximately 7.52 hectares. This includes a 6 story and basement Fruit and Vegetable Market, and an 8 story fish wholesale market with a basement level. The project seeks to establish a modernized facility, incorporating an electronic auctioning system to improve management efficiency of the wholesale markets. The project will also establish a transparent and fair environment, and promote improvements to grading and packaging methods to create a sustainable market.

A temporary fish market will also be implemented prior to completion of the reconstruction works to ensure the market operations continue, with an area of approximately 6,500 m<sup>2</sup>, while the temporary fruit/vegetable market will be located on a nearby 39,000 m<sup>2</sup> site area. MAA was engaged by the

Taipei City Government to provide PCM and site supervision services for this project, including: project management, design review, construction supervision and interface coordination works. The service period began in January 2018 and is expected to be completed in January 2025.





## PROJECT CONSTRUCTION MANAGEMENT SERVICES OF COUNTY ROAD 157 LINE 29K +800 ~ 30K +759 WIDENING RECONSTRUCTION, TAIWAN

The project intends to widen the bridge into a two-way four-lane road to improve road safety by avoiding lane merges. The bridge reconstruction will also resolve concerns regarding the existing bridge structural safety and flood drainage problems. The integration of landscape design and the use of landscape and long-span bridges can serve as a new landscape landmark and reflect the beauty of the adjacent Southern Branch of the National Palace Museum.

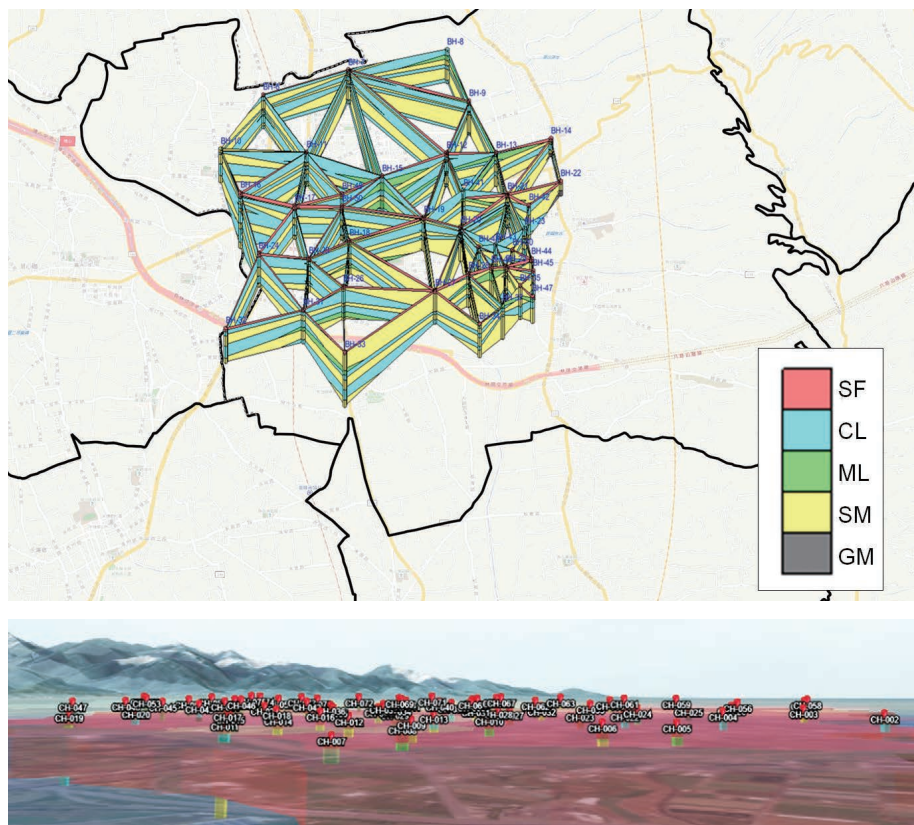


The bridge consists of a single asymmetrical pylon cable stayed bridge (main span 110m) with a total length of 165m. To emphasize the landscape

characteristics, inclined span bridge is adopted in part of the long span main bridge (deep river trench area) while the lead bridge is planned as

prestressed I-type bridge and steel box girder bridge connecting both sides of the approach road. The service period is from November 2017 to December 2020.

## DEVELOPMENT OF SOIL LIQUEFACTION POTENTIAL MAP AND GROUND IMPROVEMENT DEMONSTRATION DESIGN IN CHANGHUA COUNTY



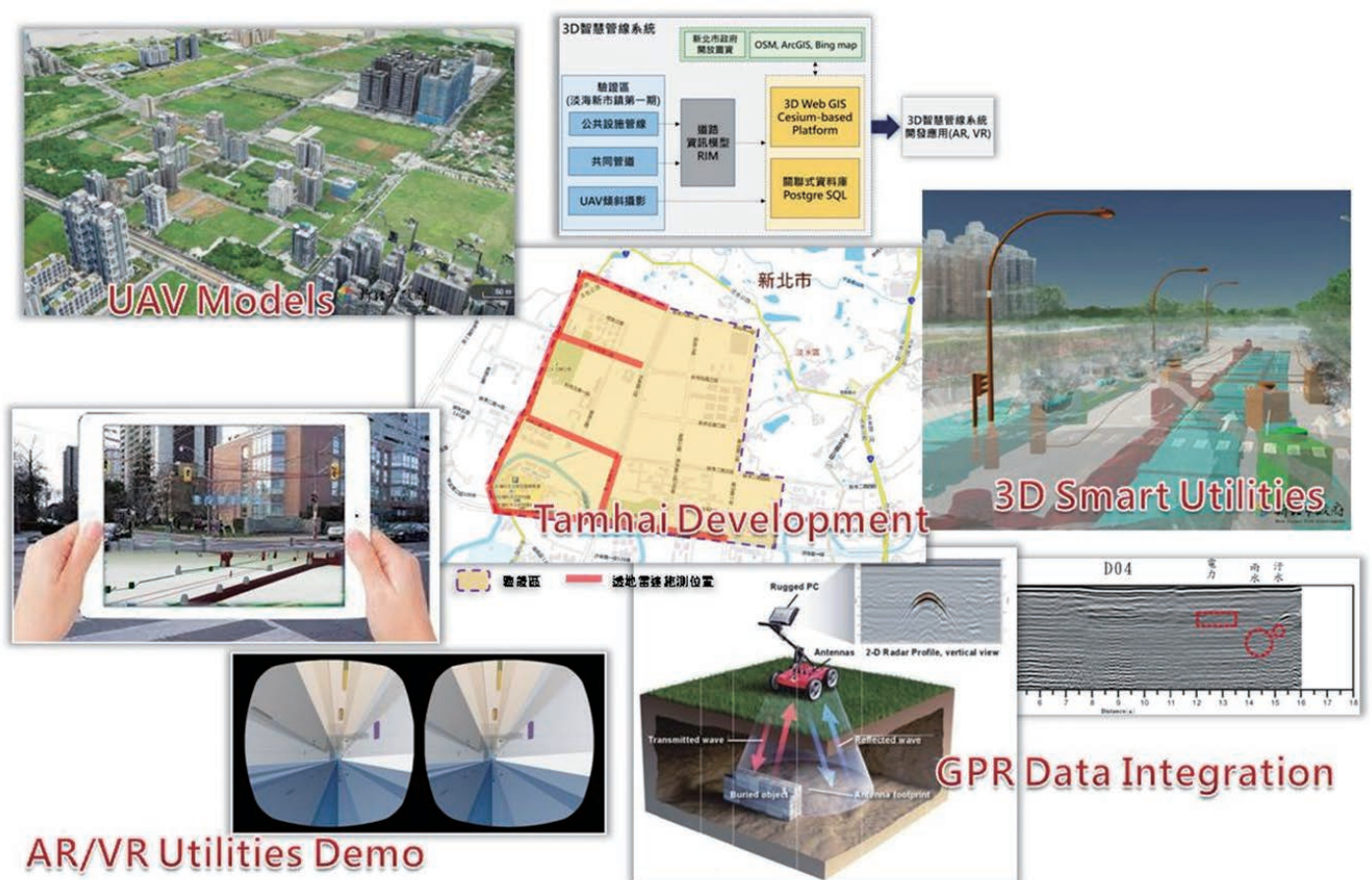
MAA was commissioned by the Changhua County Government to investigate and characterize the soil liquefaction potential in the area of Changhua County, including the development of a regional liquefaction risk map. Services also include providing ground improvement designs and recommendations for areas with soil liquefaction potential. MAA's service scope is to develop the regional soil liquefaction potential map for Huatan Township, Fenyuan Township, Yuanlin City, Dacun Township, Yongjing Township, Lugang Town, Fuxing Township and Xiushui Township of Changhua City as well as to develop ground improvement demonstrations for Yuanlin City, Dacun Township and Puxin Township of Changhua City. The contract period for MAA's services is from November 2018 to May 2021.



## NEW TAIPEI CITY 2018 3D-SMART UTILITIES QUERY AND MANAGEMENT SYSTEM IMPLEMENTATION

The New Taipei City began digitizing and establishing its public utilities database since the early 2000's to begin paving the path for smart utilities and applications. By 2015, all utilities databases for the 29 cities within New Taipei City were complete and ready to be integrated and used in innovative methods. With the modern trend of developing Road Information Modeling (RIM), and other 3D information models, the team developed 3D Smart Utilities Information System. Integrating updated digital utilities data with model has improved the accuracy data, and allows improved management and performance of these utilities. This project will help the New Taipei City push forth towards a new era of Smart Infrastructure through its support from the Smart Utility Information System. The scope of work provided by MAA including:

- Utilities Data Collection Seminar
- Collection, Coordination, and Management of Utilities Data
- RIM Utilities Data Integration and Auditing.
- Establish RIM Utilities model and data standards
- RIM and 3D model integration and applications
- 3D Smart Utility Information and Management System planning and design
- R&D for VR & AR applications for 3D Smart Utility Information and Management Systems





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## PROFESSIONAL ACTIVITIES

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- *Professional Activities*
- *Professional Awards / Honors*
- *International Meetings*
- *Technical Publications*

### ► Professional Activities

#### 20<sup>TH</sup> SEAGC & 3<sup>RD</sup> AGSSEAC

The 20<sup>th</sup> SEAGC and 3<sup>rd</sup> AGSSEAC was held on 05~08 November 2018 in Jakarta, Indonesia with more than 700 attendees. The conference was organized by the Indonesian Society for Geotechnical Engineering (HATTI), under the auspices of International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), and Ministry of Public Works and Housing, Government of Indonesia.

There were 12 keynote lectures and 12 themes in 4 parallel sessions. The Taiwan delegation included more than 12 delegates. Besides attending the conference, Dr. Za-Chieh Moh also attended the General Committee Meeting of the SEAGS and Council Meeting of the AGSSEA. From MAA, Dr. J.F. Chang represented his colleagues and client to attend the conference and presented a paper entitled “Protection of the Existing Railway Tunnels from an Adjacent Deep Excavation” (co-authored with I.C. Hu, H.C. Chao, C.S. Hsu and H.T. Chang).



Second Row, from right, 7<sup>th</sup> Dr. Za-Chieh Moh, 10<sup>th</sup> Dr. J.F. Chang at SEAGC 2018





## TRIAL OPERATION OF DANHAI LIGHT RAIL TRANSIT (LRT) SYSTEM IN DAMSUI, NEW TAIPEI CITY



*Former New Taipei City Mayor Eric Chu (5<sup>th</sup> from right) and MAA's SVP Chen-Hui Hsieh (4<sup>th</sup> from left) at the Opening of Danhai Light Rail Trial Operation*

The Danhai LRT is built to provide public transportation to Danhai New Township, whose population is expected to reach 340,000 by 2041. The main goal of the project is to provide Danhai New Town and Danshui Township with a convenient means of public transportation, which will stimulate development in the area and ease traffic congestion on local roads.

The first phase of the Danhai LRT system opened on 23<sup>rd</sup> December 2018, with people being offered free rides for a month. A ceremony was held at the Tamsui District Office, with former New Taipei City Mayor Eric Chu (朱立倫) taking

guests on an inaugural ride. As the construction supervision consultant, MAA's SVP Mr. Chen-Hui Hsieh was invited to attend the ceremony.

The 7.3km-long Green Mountain Line, connects the Hongshulin MRT Station and Kanding Station to the north, and has a total of 11 stations with seven elevated stations and four ground-level stations. The trams travel on rail tracks at ground level, but share the road with other vehicles and follow the traffic rules, such as stopping at red traffic lights. It is the first light-rail system in northern Taiwan.

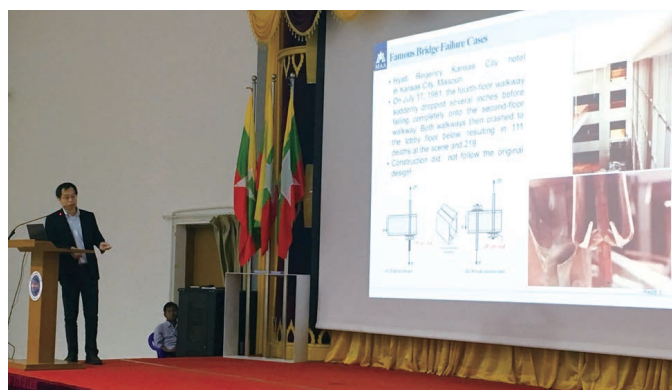




First Row, from left, 5<sup>th</sup> Mr. Shwe Lay (Director General of Dept. of Roads & Bridges, Ministry of Construction), 6<sup>th</sup> Mr. Ben Lin, 7<sup>th</sup> Dr. Jiunn-Ming Lin, 8<sup>th</sup> Dr. Charlie Tan (President of MEC), 9<sup>th</sup> Mr. Aung Myint (President of Myanmar Engineering Society), 10<sup>th</sup> Mr. Khin Maung Tin (Chairman of CQHP)

## BRIDGE FAILURE SEMINAR

The Seminar on Bridge Failure Causes and Bridge Inspection & Maintenance was co-organized by Myanmar Engineering Council (MEC) and MAA at MEC Function Hall in Yangon on 15th June 2018. In the Seminar, MAA's Overseas Business Manager, Dr. Jiunn-Ming Lin presented the causes of bridge failure and the applications of a Bridge Management System (BMS). MAA's former Myanmar representative Mr. Ben Lin presented and explained the topic about "The Lesson Learned from Highway Construction on Soft Clay with Ground Improvement of PVDs and Preloading – A Case Study of Bangkok – Chonburi New Highway Project". MEC's President, Dr. Charlie Than remarked at his closing speech that he greatly appreciated for MAA's help to accomplish the seminar and looked forward further cooperation and technical transfer between MEC and MAA. In addition, the Bridge Management System (BMS) introduced by MAA will be greatly helpful for bridge inspection. It was proposed to conduct a pilot bridge inspection by using BMS.



Dr. Jiunn-Ming Lin Presented at the Seminar



Mr. Ben Lin was Given the Gift of Gratitude by Mr. Shwe Lay



Mr. Shwe Lay (Director General of Dept. of Roads & Bridges, Ministry of Construction) Made the Opening Speech at the Seminar



## THE IEM-CIE-HKIE TRIPARTITE SEMINAR 2018



*Delegates from IEM, CIE & HKIE*



*The Hong Kong Delegate (left) Showed Appreciation to Dr. J.F. Chang*

The IEM-CIE-HKIE Tripartite Seminar 2018 was held by Geotechnical Engineering Technical Division (GETD) of the Institution of Engineer, Malaysia (IEM) on 04-05 September 2018 in Putrajaya, Malaysia. This annual geotechnical engineering seminar is hosted alternatively by the Chinese Institute of Engineers (Taiwan), the Hong Kong Institution of Engineers (Hong Kong) and IEM (Malaysia). The 2019 seminar will be hosted by CIE.

The theme of the 2018 seminar was “Geotechnical Challenges in Infrastructures and Transportation Projects”. A total of 11 technical papers was collected and 3 of them were provided by CIE. The Taiwan delegation was led by Dr. C.T. Chin, the deputy chairman of Chinese Taipei APEC Engineer/IEPA Monitoring Committee along with 3 delegates. Dr. J.F. Chang from MAA was one of them who presented a paper entitled “Geotechnical Challenges and Countermeasures in Mixed Ground - an Example in Taipei MRT Project” (co-authored with C.R. Chou and H.K. Chang). There were over 100 engineers, students, and scholars attending the seminar.

## THE COLLEGE INNOVATIVE ENGINEERING IDEA COMPETITION

Originating in 2014, the College Innovative Engineering Idea Competition has been jointly organized by the Chinese Association of Engineering Consultants (CAEC), Chinese Institute of Civil and Hydraulic Engineering (CICHE) and Institute of Engineering Education Taiwan (IEET) to promote exchange between students and the engineering industry. Students are encouraged to present innovate ideas and practices with guidance from engineering industry to expand their horizons while developing practical skills. The event was originated by Mr. Richard Moh and Mr. Yu Chi Lin, former and current Chairman of Young Engineers Committee of CAEC.

Three main objectives of this competition include:

1. Foster ideas via engineer and non-engineer collaboration
2. Foster industry interaction with students to engage mutual understanding of current status in the academia and industry environment
3. Exposure for students through presentation to industry senior professionals.



*The Award Ceremony of College Innovative Engineering Idea Competition*

Since 2014, the competition has been held five times, with more than 21 schools, 61 teams, and 250 students participating in the event. The themes of the competition in recent three years were Cable Car Construction in 2015, Bridge Reconstruction in 2016, and MRT Construction in 2017. Teams presented many innovative ideas through collaborative efforts from students of different disciplines, achieving the goals to prepare students for future projects.





*Young Engineers Exchange Forum at National Taiwan University of Science and Technology*

## **MALAYSIA-TAIWAN YOUNG ENGINEER EXCHANGE PROGRAM**

The Association of Southeast Asian Nations, or ASEAN, was established on 8 August 1967 in Bangkok, Thailand, with the signing of the ASEAN Declaration (Bangkok Declaration) by the Founding Fathers of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei Darussalam then joined on 7 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999, making up what is today the ten Member States of ASEAN. The ASEAN Federation of Engineering Organizations (AFEO) hosts an annual conference, the 35<sup>th</sup> Conference in 2017 in Bangkok, Thailand.

As Chairman of Young Engineer Committee of CIE, MAA's ESVP Mr. Richard Moh represented Taiwan to attend the YEAFFEO and introduced Taiwan's Young Engineer activities during the Country Report session. For more and deeper interaction between Young Engineers of Malaysia and Taiwan, the Institution of Engineers Malaysia (IEM) expressed their interests to visit Taiwan and to meet Taiwan's young engineers. This finding is positive not only for Taiwan's young engineers to broaden their view on international affairs, but also increase the international visibility of Taiwan's academic communities and industries.

From 15<sup>th</sup> to 18<sup>th</sup> March 2018, the Malaysia-Taiwan Young Engineer Exchange Program was co-organized by Chinese Institute of Engineers, Chinese Association of Engineering Consultants and Taiwan Construction Research Institute in Taipei. The Young Engineer Section or Committee of the Institution of Engineers, Malaysia (IEM), The Hong Kong Institution of Engineers (HKIE), The Institution of Engineers, Singapore (IES) and Pertubuhan Ukur Jurutera & Arkitek, a total of 14 delegates were invited to join the three-day activity including a forum, a site visit and a young engineers workshop.



*Young Engineers Workshop at CIE*





Site Visit at Danhai LRT

## Forum

A forum on entry from academia to industry was jointly hosted by Taiwan and Malaysia's young engineer societies to provide students an opportunity to interact with practicing engineers.

## Site Visit

A site visit to Taiwan's distinguished engineering project- Danhai LRT System was arranged to enable Malaysia's young engineers to learn about Taiwan's technical feats, and to promote technical exchange between Taiwan and overseas young engineers.

## Young Engineers Workshop

A two-hour exchange session was held to identify challenges and issues encountered by the Young Engineers as well as the national engineering societies. Delegates from these societies discussed methods of long-term international cooperation to encourage innovative solutions from young engineers.

Apart from the above activities, social networking with students and senior members in the academic, government and industry were conducted throughout the three day exchange. During the exchange, all of the participants gave positive comments and inspired the delegates of all countries in the continuous sponsorship. It is scheduled to be hosted by the Hong Kong Institution of Engineers (HKIE) next year.



Site Visit at Danhai LRT





CAFEO 36

## CAFEO 36 & ESTABLISHMENT OF YOUTH TALENT DEVELOPMENT WORKING COMMITTEE UNDER FEIAP

The 36<sup>th</sup> CAFEO (Conference of the ASEAN Federation of Engineering Organizations) was held from 12<sup>th</sup> -14<sup>th</sup> November 2018 in Singapore. MAA's ESVP Mr. Richard Moh was commissioned by Chinese Institute of Engineers (CIE) to join the working discussion for the kick off of the Youth Talent Development Working Group to be established under FEIAP, which is held in parallel with the annual ASEAN CAFEO.

Following the years of interaction at ASEAN CAFEO 's YEAFEO, Richard Moh has establish a relation with the young engineers in the Southeast Asia region. Following the 35<sup>th</sup> CAFEO meeting in 2017, an exchange program for young engineer interaction was established between CIE and IEM.

During the exchange program, a discussion was made on making exchanges more objective oriented, including identifying the worldwide issues revolving around young engineers' capacity. As ASEAN YEAFEO only includes those from Southeast Asia, an international platform that can include Taiwan would be more ideal.

To distinguish from the existing activities in YEAFEO, Malaysia Ir. Yeoh Su Hong proposed the setup of a Young Engineer committee under FEIAP. In order to officially establish the formal committee, a working group needs to be formulated with a proposal of the objectives and potential activities. A proposal report was submitted beginning of Nov 2018 prior to the FEIAP ExCom Meeting in Singapore. The proposal is to be presented and approved at the FEIAP ExCom meeting.



MAA's ESVP Richard Mah (left 1) at CAFEO 36

The working group members were formulated upon official request to member countries on 3<sup>rd</sup> October 2018. Currently the working committee groups comprises of representatives from IEM CIE, Philippines, and Japan. The report and presentation was discussed in the past months via online mechanisms among the delegates. A working discussion was made in Singapore before the presentation.

The aim of the Youth Talent Development Committee is to identify key issues in the engineering industries around the Asian region, propose possible solutions, and implement them. The details of formalizing the setup and participation from other member countries will take a few years and hence the continuity of the participants are important factors to be considered.





*The 2018 Fellow and Other Award Winners at the Office of President*

## ► Professional Awards / Honors

### FELLOW OF CHINESE INSTITUTE OF ENGINEERS (CIE)

Dr. Za-Chieh Moh, Chairman of MAA Group, was elected as a Fellow of the CIE in 2018 in recognition of his devotion to academic and industrial development of engineering. Dr. Moh is committed to the sustainable development of the engineering community, the establishment of systems, the emphasis on engineering ethics and also the promotion of international affairs. Dr. Moh was professor, Vice President and Provost at Asian Institute of Technology, many of his students hold prominent positions in academic institutions, governmental agencies and industries in Taiwan and other Southeast Asian countries. Other than leading MAA Group to participate in international and domestic major constructions, Dr. Moh actively lead Taiwan's engineering community to join international organizations and strive for international status for domestics engineers. Under the lead of Dr. Moh, Taiwan has successfully participated in APEC Engineer in 2005 and Dr. Moh was selected as the first Chairman of Chinese Taipei APEC Engineer/IPEA Monitoring Committee. In 2008, Dr. Moh led CIE join the Federation of Engineering Institutions of Asia and Pacific.

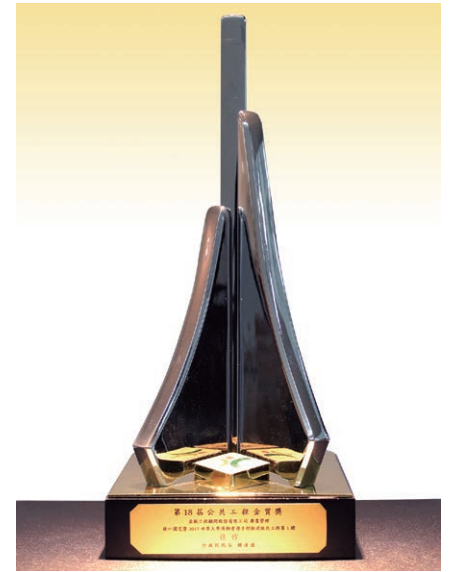


*Mr. Jung-Tai Cho, former Secretary-General of the Executive Yuan (left) and Dr. Za-Chieh Moh at the Fellow Award Ceremony*

Beside the above achievement, Dr. Moh has been listed in International Who's Who, American Science Who's Who, Southeast Asian Who's Who and Hong Kong Who's Who etc. The 2018 Fellow and other award winners for CIE were accompanied by former President of CIE, Mr. Lin-Bin Chiu and Deputy Minister of Public Construction Commission, Mr. Jeou-Rong Yan to visit President Ing-Wen Tsai at The Office of President on 1<sup>st</sup> June 2018. President Tsai expressed her recognition and appreciation to these engineering professions for their devotion to Taiwan's construction.



## THE 18<sup>TH</sup> PUBLIC CONSTRUCTION GOLDEN QUALITY AWARD



MAA's President Mr. Chien-I Hsu (1<sup>st</sup> from right) at the Ceremony of the 18<sup>th</sup> Public Construction Golden Quality Award

Linkou Public Housing and Athlete's Village for 2017 Summer Universiad received the 18<sup>th</sup> Public Construction Golden Quality Award in December 2018. MAA was engaged by Taipei City Government to provide PCM services for this project. This is the fifth award for the project including "The 2015 Public Construction Safety Golden Awards", "The 2016 Outstanding Award for Concrete Project" and "The 2016 Taipei City Distinguished Public Construction Award" and the 2017 PMI (Project Management Institute) Taiwan Best Practice on Project Management Award.

## THE 2018 PUBLIC CONSTRUCTION SAFETY GOLDEN AWARD



The Trophy of the 2018 Public Construction Safety Golden Award

The 2018 Public Construction Safety Golden Award ceremony was held by the Ministry of Labor on 5<sup>th</sup> September 2018. MAA received the Public Construction Safety Golden Award for PCM Services of the Chungli Land Office and Kuolin Social Welfare Center. The Chungli Land Office and Kuolin Social Welfare Center is a 7-level and 2-basement building including a administrative office, a daycare center, a place for citizens' assembly and a parent-child center etc. The project emphasizes energy saving and green features, to provide a comfortable center for both the employees and visitors. Female-exclusive leisure rooms, medical stations, and other facilities are also implemented to improve professional safety and health management for its personnel.

The Taoyuan City Government established a "Engineering Data and Occupational Safety and Health Center" to collect and analyze construction site video information and conduct video conferences. Through development of electronic occupational safety and health management, the public employees are able to perform tasks more effectively, including obtaining site information, patrolling and auditing, as well as to draft relevant measures. BIM technology was applied to improve construction safety. The site also has been certified CPR & AED (Automated External Defibrillator) certification by Taoyuan City Government. As the PCM consultant, MAA performed a wide scope of services, including review of engineering planning, engineering design, selection work and contract management.

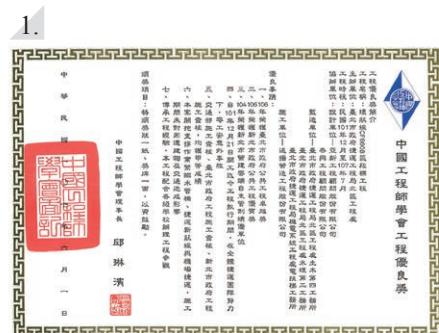


## BUSINESS EXCELLENCE AWARD 2019: PROJECT AND CONSTRUCTION FIRM OF THE YEAR – ASIA

MAA was selected to win the Business Excellence Award 2019: Project and Construction Firm of the Year – Asia by Corporate Insider which is the most influential corporate news site with a deep focus on the Mergers & Acquisitions, financial, law and accountancy industry verticals in UK.

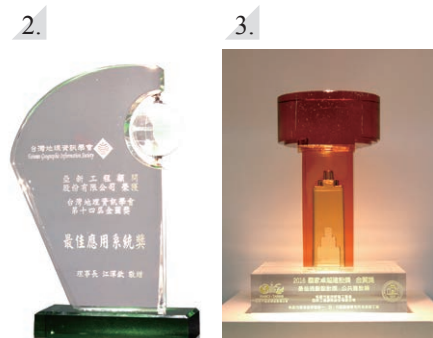


The Certificate (left) and Trophy (right) for Business Excellence Award 2019

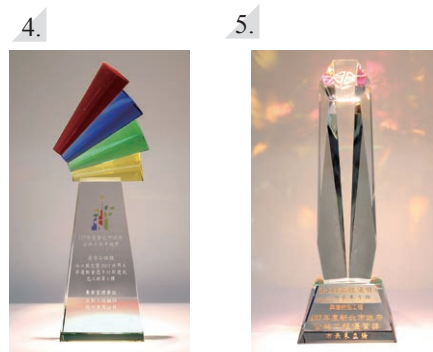


Taipei MRT Circular Line Contract CF660B project received a Distinguished Engineering Award from the Chinese Institute of Engineers in June 2018. (See 1)

On 4<sup>th</sup> July 2018, MAA received Golden Map Award 2018 by Taiwan Geographic Information Society for project: “Implement on Underground Utilities Database and GIS Management System for New Taipei City”. (See 2)



In August 2018, Turnkey Project for Redevelopment of Caota Area Sections 1, 3, and 6 in Taoyuan City won the 2018 Gold Medal Prize for the Public Engineering Outstanding Civil Quality Construction of the National Construction Excellence Awards. The award, launched in 2004 by the Real Estate Association of ROC, focus on selecting each year’s best projects to promote good architectural and engineering design in Taiwan. (See 3)



On 17<sup>th</sup> August 2018, MAA received Taipei City Distinguished Public Construction Award by Taipei City Government for project: Linkou Public Housing and Athlete’s Village for 2017 Summer Universiade in Taipei. (See 4)

On 17<sup>th</sup> September 2018, MAA received New Taipei City Distinguished Public Construction Award by New Taipei City Government for project: Turnkey project of Sanyin Community Sports Center. (See 5)



## ► Technical Publications

Chang, J.F., Chou, C.R., Lai, Y.F., Hsieh, Y.H. (2017), "Shield Tunneling in Gravels - Difficulties and Resolutions", The 2<sup>nd</sup> International Symposium on Asia Urban GeoEngineering (ISAUG2017), pp.346-357, Nov.25-26, Changsha, China.

Chang, J.F., Peng, S.K., Chou, C.R., Yu, C.Y. (2017), "球狀石墨鑄鐵環片在臺北捷運潛盾隧道之應用", Rapid Transit System & Technology, No.52, pp.25-40. (in Chinese)

Chang, H.K., Chou, C.R., Chang, J.F., Yu, C.J. (2017), "Landslide-Debris Flow- Dip Slope Investigation and Database Construction and Landslide Terrain Characteristic Analysis In Taiwan", The IEM-CIE-HKIE Tripartite Seminar 2017.

Chang, J.F., Chou, C.R., Su, T.C. (2018), "臺北捷運松山線潛盾隧道近接施工議題探討", 2018 Cross Strait Seminar on Ground Engineering, Nov.12-13, Nantou, Taiwan. (in Chinese)

Chang, J.F., Chou, C. R. & Moh, Z. C. (2017), "Proximity Effect on Closely Spaced Shield Tunnels", Proc. 19<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering, Seoul, Korea, Vol 3, pp.1659-1662.

Chen, C.T., Chou, P.H., Tseng, T.W., Lin, H.P. (2017), "建築資訊模型(BIM)在設計階段之應用-以花蓮洄瀾灣日出山莊為例", Professional Engineer Journal, No.79, pp.52 .(in Chinese)

Chou, C.R., Chang, J.F., Chang, H.K. (2018), "Geotechnical Challenges and Countermeasures in Mixed Ground—An Example in Taipei MRT Project", The IEM-CIE-HKIE Tripartite Seminar 2018, Sep.04, Putrajaya, Malaysia.

Huang, C.F., Huang, W.J., Wu, W.J., Lin, C.W., Chen, Y.N. (2017), "建築資訊模型(BIM)於統包工程導入應用-以平鎮國民運動中心統包工程為例", Professional Engineer Journal, No.79, pp.57. (in Chinese)

Hwang, R.N., Wong, L.W. (2017), "Evaluation of Performance of Walls in Deep Excavations using Wall Deflection Paths", 2<sup>nd</sup> International Symposium on Asia Urban GeoEngineering, also International Society for Soil Mechanics and Geotechnical Engineering ATC6, pp.204-222, Nov.24-27, Changsha, China.

Hwang, R.N., Wong, L.W. (2018), "Effects of Preloading of Struts on Retaining Structures in Deep Excavations", Geotechnical Engineering Journal of the SEAGS & AGSSEA, Vol.49, No.2, pp.104-114.

Liu, Y.Y., Chang, J.F., Chou, C.R., Weng, S.C., Hsu, J.L. (2018), "深開挖工程與BIM之應用", Journal of Professional Geotechnical Engineers, No.16, pp.42-51. (in Chinese)

Moh, Z.C., Hwang, R.N. (2017), "Geotechnical Infrastructure in Taipei Metropolis", Proceedings of the 19<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering, Seoul, Korea, TC 305.

Wu, T.E., Hsueh, C.M., Chu, H.A., She, C.M. (2018), "The Case Study Of Prefabricated swimming pool, the First recommending in Taiwan Of 29<sup>th</sup> Summer Universiade, 2017 Taipei.", Construction Management Association of the Republic of China, No.110, pp.25. (in Chinese)

Yu, C.J., Cheng, K.Y. (2018), "建築資訊模型(BIM)在軌道運輸工程設計之應用", Journal of Professional Geotechnical Engineers, No.16, pp.52. (in Chinese)



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## PROFESSIONAL PROFILES

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**Shih-Chang Huang**  
黃士彰

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Mr. Shih Chang Huang was promoted to Senior Vice President leading the Construction Supervision & Management Group in December 2017. Mr. Huang received both his bachelor's and master's degree in Hydraulic and Ocean Engineering from National Cheng Kung University in 1988 and 1990. Prior to joining MAA, Mr. Huang was employed as Civil Engineer by Pacific Engineers & Constructors, Ltd and was involved in works including feasibility study of Northern Taiwan LNG Terminal & Construction of Power Plant, Safety Evaluation of Wu-Zai Dam, Hydraulic Analysis of Nan-Pu Power Plant. He joined MAA in 1994, and has undertaken several major projects including the Taipei and Kaohsiung City Common Duct Master Plan, Kaohsiung MRT Orange Line detailed design and Taipei MRT Hsinyi Line detailed design. Mr. Huang is a Registered Professional Engineer (Hydraulics), Registered Quality Control Engineer and Registered Reinforced Bar Radial Investigation Engineer. He is also an APEC Engineer and IPEA Engineer.



**Tin-Chun Su**  
蘇鼎鈞

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Mr. Tin Chun Su was promoted to Vice President and Senior Manager of Transportation and Civil Engineering Department in December 2017. Mr. Su received both his bachelor's of science degree in Civil Engineering and master's degree in Geotechnical Engineering from the National Central University in 1984 and 1989, respectively. Since graduation, Mr. Su joined MAA and during the years he has participated in many major projects including site investigations and foundation analyses for high-rise buildings, assessment of building protection for deep excavation, geotechnical consultancy for foundation excavation, foundation design for bridges, ground improvement design for road embankments and new land developments and Taipei MRT designs. Some specific examples include planning and design of soil improvement for the reclamation of Keelung River, deep excavation and building protection assessment for Taipei Railway Underground Pan-Chiao Extension Project, site investigation and foundation analysis for Chiahui Power Plant, geotechnical engineering design for Taipei MRT DB144A, DB144B, DR148 and DG166 design lots. Mr. Su is a Registered Professional Geotechnical Engineer ROC and was selected as Outstanding Alumnus of Department of Civil Engineering of National Central University in 2006. To date, he has published/co-published 30 technical papers.





**Zun-Gwo Lee**  
李潤國

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Mr. Zun Gwo Lee was promoted to Project Manager of Ankeng LRT Construction Supervision in December 2017. Mr. Lee received his bachelor's degree in civil engineering from National Taiwan University in 1978. He joined MAA in 1981 and has experience ranged from Geotechnical Engineering, Construction Supervision to Project Construction Management. Mr. Lee's major works undertaken for geotechnical engineering including Taipei Railway Underground Project, Geotechnical Investigation Phase II for High Speed Rail Tainan-Fengshan Section, Geotechnical Engineering Specialty Consultancy for Taipei MRT. His major projects for construction supervision including: Nantou Section of the Second Freeway and Hsinyi Branch of the Second Freeway. He is also experienced in project construction management for many large public works including Reconstruction of Damaged Schools in Yulin-Chiayi-Tainan Area after Earthquake, Interface Management for Taiwan High Speed Rail Project C291 Civil Work Contract and Expansion Project of National Chengkung University Hospital. Mr. Lee is certified in Quality Management of Public Works and qualified for Labor Safety & Health Manager. He is also a member of Chinese Institute of Civil and Hydraulic Engineers and Chinese Institute of Engineers.



**Wen-Chien Yeh**  
葉文謙

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Mr. Wen-Chien Yeh was promoted to Deputy Manager of Project & Construction Management Dept. I in December 2018. Mr. Yeh received both his bachelor's and master's degrees in Civil & Construction Engineering from Taiwan Institute of Industrial Technology (currently named National Taiwan University of Science and Technology) in 1990 and 1992. Mr. Yeh had worked at CTCI Resources Engineering Inc. for 25 years, during which, Mr. Yeh had participated many planning, investigation and design works of Highway, MRT system and High Speed Railway in Taiwan. Under CTCI Group's Strategies, Resources Engineering Inc. had get involved the specialized construction works field and Mr. Yeh began to study to construction technical for ground frozen, shield tunnel and ground treatment works. Being keep study on specialized construction works field, Mr. Yeh had well performed the first ground frozen case in Taiwan for shield tunnel launch and arrival ground treatment in Feb., 2005, furthermore, the ground frozen technical had successfully apply to the ground treatment works for construction of cross passage of shield tunnel in September 2007. Mr. Yeh joined MAA in 2017 as Senior Engineer. His major work undertaken at MAA is 4 Season Residential Building New Construction Project in Phnom Penh, Cambodia. Mr. Yeh is a Registered Professional Civil Engineer, R.O.C. and also a member of Taiwan Geotechnical Society and Taiwan Professional Civil Engineers Association.





**Ping-Ching Tang**  
唐炳清

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Mr. Ping-Ching Tang was promoted to Senior Civil Engineer of Construction Supervision Department in May 2018. Mr. Tang received his bachelor's degree in Hydraulic and Ocean Engineering from National Cheng-Kung University in 1990. Mr. Tang joined MAA in 1992 as a civil engineer and was responsible for bridge and road constructing of Hsin Chu-Chiung Lin Section of National Highway No.3. Mr. Tang shifted to Tuntex construction Company as the chief of villa of white cloud (in Nang-Kang) which is a 28 storey R.C. Building project in 1995. In 1998 he was assigned to Tan-Hai New town project as the vice-director of Section 2, also captain of Section 2 and 3. He was responsible for all the civil pipes, community pipes, water supply system and road plumbing with all the measurement controlling of Section 2. In 2001, Mr. Tang joined MAA and was responsible of the second bid supervisor of Nang-Kang commercial Park. Currently, Mr. Tang is involved as the Site Office Chief in the design and construction supervision services of the first phase construction of sewage system in Yangmei, Taoyuan County.



**Chien-Jung Lee**  
李健榮

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Mr. Chien Jung Lee was promoted to Senior Civil Engineer of Construction Supervision Department in May 2018. Mr. Lee received his bachelor's degree of Civil Engineering from National Cheng-Kung University in 1987. Mr. Lee joined MAA in 1989 as a geotechnical engineer in the Instrumentation Section of Geotechnical Department. Since then he participated in the instrumentation and monitoring works of the Liquefied Natural Gas Terminal of Chinese Petroleum Corporation at Yung An, Kaohsiung, and a deep excavation located at Chang- Shan N. Rd., Taipei for the new highrise building of Hsin- Kuang Life Insurance Co. In 1990, Mr. Lee was involved in monitoring and analysis of a large scale earthfill and soil improvement works in Peitou Depot of Taipei Rapid Transit Systems (TRTS). He was also involved in the highrise building project of Hsin-Kuang Life Insurance Co. at Chien-Guo N. Rd., CT201G deep excavation, and long term monitoring of groundwater table along the MRT routes, and the monitoring of CN255 & CN256 of TRTS Nankang Line. Mr. Tang is currently involved in the Project "Lin Kou Power Plant Renewal Project Dredging In Lin-Kou Port Area And Reclamation In Taipei Port" as the Quality Control Manager. He is mainly responsible for coordinating and promoting the construction project management service work of this project. Mr. Lee is a Registered Professional Construction Site Chief R.O.C., Quality Control Engineer, R.O.C. and Class C qualified Labor Safety and Health Management.





**Chao-Sheng Hsu**  
徐朝聲

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Mr. Chao-Sheng Hsu was promoted to Senior Civil Engineer of Construction Supervision Department in May 2018. Mr. Hsu graduated from Ming-Shin Engineering Junior College of Hsin-Chu in 1987. Then he joined Tai-Yi Machinery Co., Ltd. as assistant mechanical engineer, working in design, drafting and site supervision of installation. In 1989, he enlisted in National Taiwan Institute of Technology to make further study in mechanical engineering. Two years later, he joined Chun-Yuan Steel Co., Ltd. as site engineer, working in quality and schedule control of steel work and equipment installation. In 1994, he was promoted to Site Office Manager responsible for schedule control, quality control, measurement and contract administration. Projects under his supervision include the Fu-Shin Mansion at Pa-Li, the Fu-Zhu Building, the Taiwan Cement Company Building and Wu-Gu Factory of Kuang-Chuen. In 1997, he transferred to San-Yueh Enterprise Co., Ltd. as engineer, responsible for steel structure construction, installation, incinerator installation and mobile-phone base station construction. Mr. Hsu joined MAA in 1998 as a CM engineer and was responsible for steel construction and equipment installation. Currently, Mr. Hsu is involved in Project management for the teaching & research complex building and the third student dormitory building as Site Chief. He is a Quality Control Engineer, R.O.C., Fire Protection Technician, R.O.C. and Class C qualified Labor Safety and Health Management.



**Chien-Chen Hsu**  
徐健鈞

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Mr. Chien-Chen Hsu was promoted to Senior Civil Engineer of Construction Supervision Department in May 2018. Mr. Hsu received his bachelor's degree in Civil Engineering from Chung Hua University in 2002. Mr. Hsu joined MAA in 2011 as a Civil Engineer and was involved in the PCM service for Project Xinzhuang Recreational & Sports Center. Mr. Hsu is currently involved in the project National Exhibition and Convention Center Expansion as a PCM engineer. He is a Registered Professional Construction Site Chief R.O.C. and Quality Control Engineer.







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