

## MAA Bulletin

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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  
client's **S**atisfaction  
**E**conomical Solution  
**T**imely Completion

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## ISO 9001 and LAB CERTIFICATIONS



# 104年

公共工程

推行職業安全衛生優良單位

## 金安獎暨五星獎

### 頒獎典禮

主辦單位：



勞動部  
Ministry of Labor



勞動部職業安全衛生署  
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, MINISTRY OF LABOR

## The (2015) PUBLIC CONSTRUCTION SAFETY GOLDEN AWARDS

On 18<sup>th</sup> November 2015, Ministry of Labor held The (2015) Public Construction Safety Golden Awards ceremony during which two awards were presented to MAA Taiwan. The awarded projects are “Linkou Public Housing and the 2017 Summer University Games Athletes Village, Taiwan” and “The First Phase Construction of Sewer System in Yangmei, Taoyuan County”.

### LINKOU PUBLIC HOUSING AND THE 2017 SUMMER UNIVERSITY GAMES ATHLETES VILLAGE

The Public Construction Safety Golden Awards were founded by the Council of Labor Affairs (renamed as Ministry of Labor in February 2014) in 2007 with the mission of encouraging and ensuring the proper execution of health and safety standard for workers in public works construction sites.

Linkou public housing provides new public housing for low-income families and increases the amount of affordable housing available in the Taipei metropolitan area. It will also provide short-term housing accommodations for the 2017 Summer University Games.

The Linkou public housing complex features 34 buildings with 18-23 floors and 2 underground floors. The project is divided into 4 sites, with a total area of 10 ha, and floor area of 514,285 m<sup>2</sup>. The housing complex will serve as the Athletes Village for the 2017 Summer University Games, providing 11,000 beds for the event, while 11 public housing complexes will serve 1195 households. MAA was commissioned by the New Taipei City Government in August 2013 to provide services including project construction management and construction supervision. The average building heights are above 50m, which is determined as “Category D” of Hazardous Work Place according to Hazardous Work Place Review and Inspection Rules. The project was certified as “self-management” of security of construction site by Taipei City Labor Inspection



MAA's Vice President Mr. Ta-Hsing Lee (left) and Associate Senior Vice President Mr. Shih-Chang Huang (right). Receives Award During The (2015) Public Construction Safety Golden Awards Ceremony.





*The Linkou Public Housing Complex*

Office in August 2014. In May 2015, it also received the New Taipei City Industrial Safety Award organized by the Department of Labor Inspection, New Taipei City Government. The total construction cost is NTD 13,975,000,000. The contractor of the project is REIJU Construction Co Ltd. (瑞助營造股份有限公司)

Apart from the construction safety provisions stated by the contract, MAA construction supervision implemented additional management controls to prevent high risk hazards (including falls, electrical shocks, collapses). The project has carried out 310 intensive inspections, identifying and correcting 66 construction safety issues.

MAA has also supervised the general contractor in conducting emergency and disaster drills, including earthquake evacuation, typhoon sandbag wall stacking, fire drills, and electrical shock prevention.

Rigorous safety inspections were carried out to address the need for shortened construction schedules. Safety measures taken include the following:

1. Schedules for grouting, column formwork dismantling and slab formwork dismantling were marked for every floor.
2. Strut spacing check
3. Strut fastening check
4. Hazardous machinery & equipment required three certificates; machinery certificate, heavy equipment operator certification and crane operator certification.
5. Existing trees were protected with proper fences, and irrigated regularly to maintain a green construction environment.
6. In consideration for construction above the 3.6m elevator shaft, additional safety supports were implemented.



Wastewater Treatment Plant in Yangmei

## THE FIRST PHASE CONSTRUCTION OF SEWER SYSTEM IN YANGMEI, TAOYUAN COUNTY

The project is located in Yangmei City, Taoyuan County with the total area of 1,415 ha. The first construction phase includes main sewers, sub-main sewers, branch sewers and a specialized pipe to the wastewater treatment plant (total length 11,260m,  $\phi 200\text{mm} \sim 1000\text{mm}$ ). Additionally, the area of wastewater treatment plant is 5.73ha, and the first phase can process up to 12,000m<sup>3</sup> amount of sewage per day.

The construction of main sewers, sub-main sewers, and branch sewers mainly used pipe-jacking method ( $\phi \geq 300\text{mm}$ ) and open-cut method ( $\phi \leq 200\text{mm}$ ). The wastewater treatment plant adopts an activated sludge process, which includes pre-treatment, primary treatment, 3 rounds of AO biological treatment process, disinfection, and sludge treatment and disposal. MAA was engaged to provide following services:

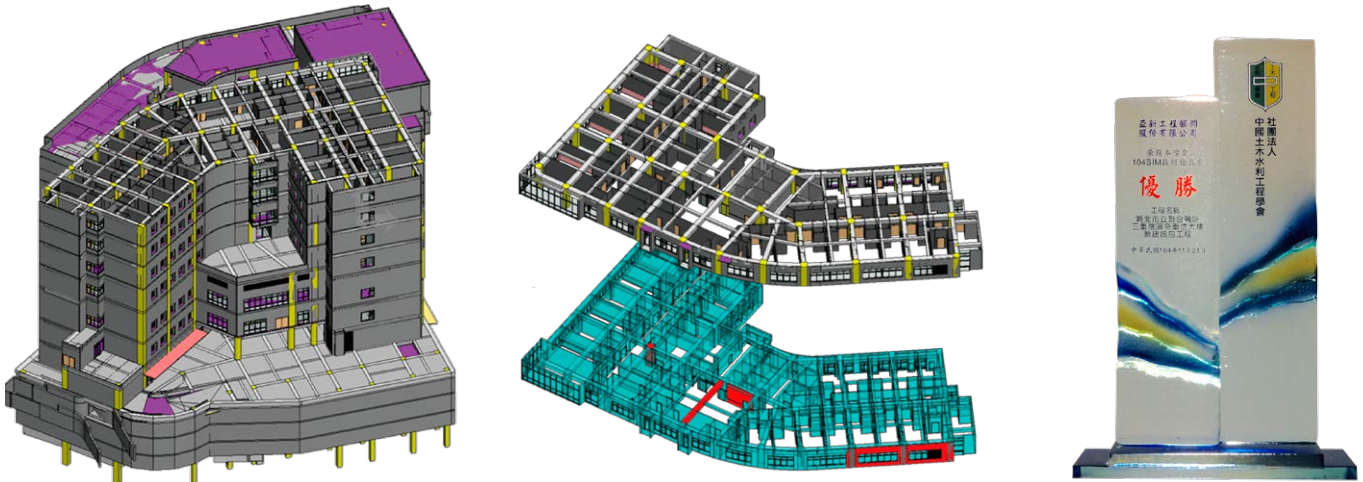
- Exploration drilling and geotechnical investigation
- Preliminary design
- Detail design
- Tender management
- Traffic maintenance plan
- Construction supervision
- Review and supervision of the wastewater treatment plant during commissioning period (3 years)



Yangmei Area Sewer System Plan

# BIM AWARD

## THE 2015 BIM AWARD BY THE CHINESE INSTITUTE OF CIVIL AND HYDRAULIC ENGINEERING



*New Taipei City Hospital Sanchung Branch BIM Models.*

The biennial BIM Award was founded by the Chinese Institute of Civil and Hydraulic Engineering since 2011 to recognize outstanding teams that apply BIM technology to engineering design, construction and operation & management. It has also become one of the most important and authoritative BIM competitions in Taiwan. On 21<sup>st</sup> November 2015, MAA was awarded the BIM Award for the Emergency and Critical Care Building of New Taipei City Hospital Sanchung Branch. The new building consists of 9 floors with 3 basement levels, covering a total floor area of 24,000 m<sup>2</sup> and accommodating 145 critical care sickbeds and 30 emergency sickbeds. MAA provided project construction management, while San Sin Construction Ltd. were the turnkey contractors for the project.

Typical challenges encountered by PCM consultants include:

1. Difficulty conveying real-time site progress and construction schedules through Gantt Charts.
2. Unable to associate position location and status through 2-D inspection reports.
3. Difficult to compile and analyze results directly through inspection reports
4. Inefficient access to inspection records.



*MAA's Representatives at the BIM Award Ceremony*

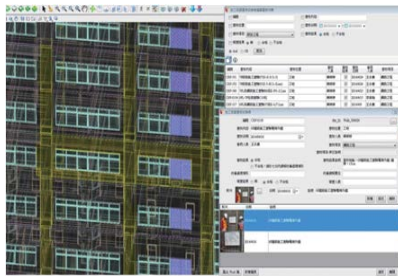
To minimize the aforementioned problems, MAA implemented the BIM model into the project management workflow. As an integrated database, BIM assisted PCM in quality management and approval processes by integrating quality control records and scheduling into BIM models. MAA has developed a quality management and supervision system enabled by BIM technology.

## Two-way Real-time Quality Management and Supervision System

On-site staffs are able to scan signs using mobile devices to receive updated construction site and design information



Site inspection information can be wirelessly updated into cloud database.



Supervision staffs are able to efficiently manage construction material flow and construction schedule by inspecting the BIM model

## Minimizing Potential Construction Issues

By integrating BIM with project management database, the BIM model is able to accurately demonstrate updated site information.

Construction scheduling simulations (4D modeling) were implemented to simulate construction progress 3 months in advance to identify potential hazards and risks. After identifying potential construction issues, MAA's expert engineers are able to work with clients to provide complete solutions.

The competition is currently the most authoritative credible BIM award in Taiwan which has been held 3 times since 2011. MAA is the only contestant that has won awards for three consecutive competitions.

## BIM AUTODESK AWARD



On June 30<sup>th</sup>, 2015, MAA was awarded at the 9<sup>th</sup> Annual Building Information Modeling Awards (BIM Awards) organized by Autodesk in Hong Kong. The Awards celebrates the creative ability of talented professionals in using BIM to overcome challenges that might have been difficult or impossible to tackle using traditional 2D design. This was the first year that Taiwan was invited to participate in the competition for projects delivered by Architects and

Engineers from the Hong Kong, Macau and Taiwan region. "Life-cycle Management for Taiwan High Speed Rail Changhua Station" was one of the ten award-winning entries. The MAA BIM team took five months to assist the THSR Corporation with assessing the design results of the design team. MAA implemented BIM technology, utilizing Autodesk Revit to create BIM models for detailed design (including MEP and structural designs) from the original 2D designs. The use of BIM allowed the MAA team to manage each phase of this project more efficiently across design, construction and facility management. In the THSR Changhua Station Project: BIM technology not only reduced costs by 20% and reduced design errors by 80%, but also shortened construction schedule by 4%, indicated by senior managers from Taiwan High Speed Railway Corporation.

# PROJECTS 1<sup>ST</sup> JANUARY 2015 TO 30<sup>TH</sup> JUNE 2016

## MRT SANYING (SANXIA-YINGGE) LINE PROJECT, TAIWAN



*Sanying Line MRT Route Map*

MRT Sanying route connects to the Tucheng line by extending from Dingpu Station, with a total route length of 14.29 kilometers. This MRT line will include 12 elevated stations and 1 depot, with an estimated total project cost of NTD \$50.5 billion. The turnkey project was awarded in May 2016, and expected to be completed by December 2023.

By adopting a minimalist box design approach, Sanying MRT Line stations will invite a sense of relief amongst a busy urban landscape. Apart from providing public transport, Sanying stations will provide passengers with a leisure tourism experience. Stations will be equipped with local cultural and industrial development stories to demonstrate the cities' history and future.

The stations will be used to represent three major themes within the districts: Water + Earth = Agriculture, Natural Science and Technology = Green Future, to create an environmentally aware district. MAA was engaged by RSEA Engineering Corporation to provide following services :

- Topographic survey & soil investigation
- Detailed design of civil works.
- Detailed design of land development building.



*Sanying Line MRT Station*

- Review and detailed design of track work
- Detailed design of E&M systems (excluding core system)
- BIM services including modeling & design coordination of 12 stations and a depot

The project service started in June 2016 and is expected to be completed by February 2023.

The main goal of the project is to provide Ankeng Township, New Taipei City with a convenient means of public transportation that would stimulate local development and relieve traffic pressure on local roads. The route starts from Antai Road to Shisizhang Station of Taipei MRT at Xidan District. The total length of the route is about 7.5 km including 5 elevated stations, 4 at-grade stations and one depot near the Erbazhi Botanical Garden (二叭子植物園). The total construction cost is about NT\$9.6 billion. MAA Taiwan was engaged by the Department of Rapid Transit Systems to provide construction supervision services for the project, including:

- The project is scheduled to be completed in February 2023.

[illegible]

The project's objective is to complete the construction of the main facilities of Changhua fishing port. The brand new berthing facility would allow fishing boats to enter and exit the port regardless of the tide. The site is located on a reserved land within the Changhua Coastal Industrial Park. This land was initially created by land reclamation during the development of the Changhua Coastal Industrial Park, thus the region has liquefaction potential due to its sandy base.

7

## **MITSUI OUTLET PARK, LINKOU, TAIWAN**

Mitsui Outlet Park Linkou, northern Taiwan's largest outlet mall, is developed by Sanxin Outlets Co., Ltd., a joint venture formed between Mitsui Fudosan and Farglory Land Development Co., Ltd, a core enterprise in the Farglory Group. With a land area of 67,376 m<sup>2</sup> and floor area of 140,793m<sup>2</sup>, the full-scale outlet mall comprises of over 200 stores including outlet shops, restaurants, food courts, a cinema complex, a luxury supermarket and a parking lot with 2,000 parking spaces. The mall is situated about 30 minutes' drive from central Taipei, about 20 minutes' drive from Taoyuan International Airport and about 5 minutes' walk from Linkou Station, a station on the MRT scheduled to start operating from December 2016. MAA was engaged to provide Operations plan services. The service period was from April 2015 to January 2016.



*Linkou Mitsui Outlet Park*

## **THE MRT GREEN LINE (NORTH) PROJECT: MO CHIT – SAPHAN MAI – KHU KHOT SECTION, BANGKOK, THAILAND**



*Bangkok MRT Green Line Project*

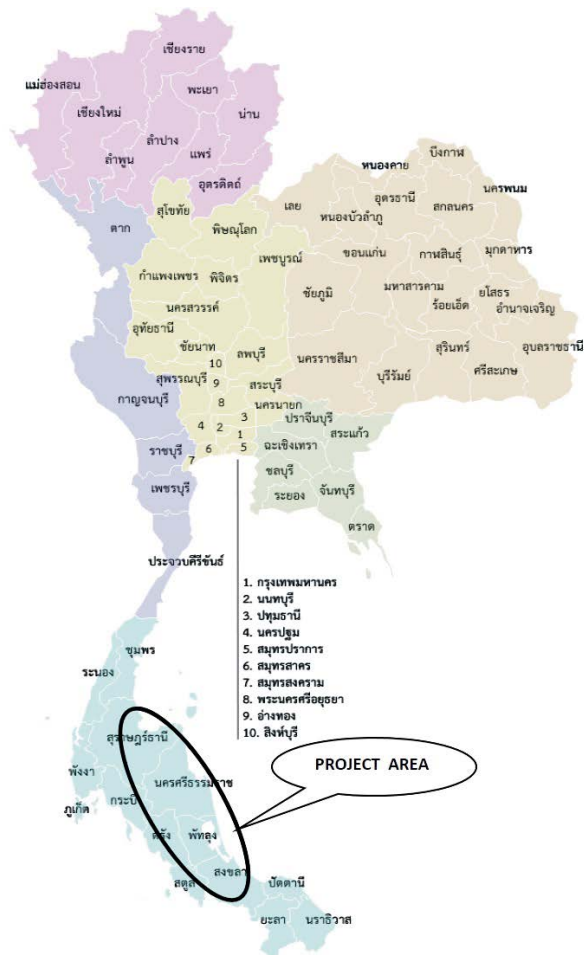


MAA Thailand is the leading consultant providing construction supervision work for the North Section of the MRT Green Line in Bangkok. A total of 16 stations have been identified for the Mo Chit - Khu Khot section of the MRT Green Line extension. The depot housing 36 trains and the Operations Control Center (OCC) will be located near the Khu Khot station.

This section has an approximate distance of 19 km with 16 elevated stations. The project begins at the BTS route at Mo Chit Station. Then it goes along the Phahon Yothin Road, crossing Don Muang Toll Way at Lat Phrao intersection, passes Ratcha Yothin intersection and Kasetsart University intersection. At Soi Phahon Yothin 55, the alignment diverts to the left side of the road until reaches the Phithak Rattathatmanun Monument or Lak Si roundabout. After that the alignment diverts to the centerline of the Phahon Yothin Road, passes Ying Charoen Market and when it reaches to the 25<sup>th</sup> kilometer of Phahon Yothin Road. The alignment diverts eastward (north of Bangkok Door area), passes the side of Khu Khot Provincial Police station. Then it goes along median of Lam Luk Ka road and ends at Klong Song where the depot and the OCC are located.

Other project work includes replacing the Ratchayotin flyover bridge with an underpass, demolishing existing flyover bridge across Kaset Intersection and constructing a new flyover bridge next to MRT elevated track structure. The project service started in June 2015 and is expected to be completed by June 2019.

## DOUBLE TRACKING RAILWAY LINE PROJECT; SURAT THANI - HAD YAI JUNCTION – SONGKHLA SECTION, THAILAND



*The Double Tracking Railway in Southern Thailand*

The 324 kilometers long double tracking railway line project is aimed at improvements of strategic links on the main corridors to facilitate sub regional trade and to promote travelling by railway to be safer, faster and more convenient for all passengers.

A total of 295 kilometers of meter gauge track on concrete mono block and UIC54 ballast will be constructed next to the existing railway line from Poonpin station in Surat Thani province to Had Yai junction. The double tracking line runs on both at-grade and on bridges where it runs across the river and over a terrain. There is a 236 meters long railway tunnel to be constructed at Thung Song district. MAA Thailand was engaged by the State Railway of Thailand to provide feasibility study and detailed

design services. Other features of the project include:

- To study and conduct railway line alignment from Had Yai junction up to Song Khla, where this railway line has been abandoned since 1978, total 29 kilometers.
- To install modern signaling equipment and telecommunication system along the project route.
- Elevated interchanges will be designed and constructed where the railway line interchanges with existing roadway for safety of road users.

The service period was from August 2015 to July 2016.

## BEIJING TIAN TAN HOSPITAL, CHINA



*Tian Tan Hospital Plan and BIM Models*

Founded in 1956, Beijing Tian Tan Hospital, which belongs to Capital Medical University, is a large first-class general hospital combining medical treatment, scientific research, medical education and disease prevention, with a special focus on neurosciences and neurosurgery. However, because the hospital is located just outside of Tian Tan Park and its wildlife conservation area, its building height and size have been strictly limited and the local government planned to transform the current site into a park. The hospital will relocate and expands its capacity from 950 to 1650 beds. The new facilities will have a GFA of 352,294 m<sup>2</sup> with a building coverage of 232,643 m<sup>2</sup> and a building structure made from concrete panels. MAA was engaged to provide BIM project management technology for following:

- BIM building planning and BIM construction phase execution plan
- BIM basement and standard level
- BIM model review and inspection reports
- BIM model consulting

The service period was from December 2014 to June 2016.

## CONSTRUCTION MANAGEMENT SERVICES OF NEW TAIPEI CITY RUEIFANG B7 LOGISTICS PARK CONSTRUCTION

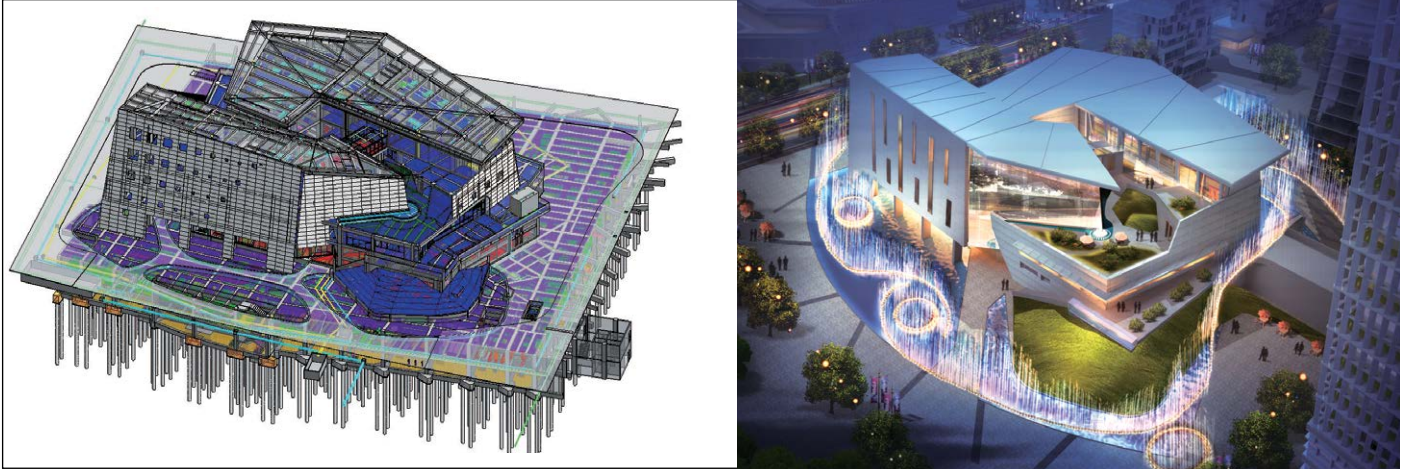


*Cathay Life Insurance - Rueifang Logistics Building*

The industry development of e-commerce in Taiwan is the world's few thriving industries, and the supply and logistics warehouse use strategy is regarded as the core of e-commerce operations, therefore to provide modern storage facilities and large-scale logistics park space has become a new mainstream industrial real estate.

The current logistics settlements in New Taipei City are mainly in Taipei Port Free Trade Zone and Taipei Rueifang Logistics Park where the project is located. This is a rare large-scale use of land for logistics and warehousing in line with international standards of large-scale development of logistics parks. The Rueifang Logistics Park near Keelung Harbor has superior traffic conditions, built expressway connected to highways and each port. The logistics park from the northern part of the consumer market is only 30 minutes by car, and having the advantage of location. With the total floor area of about 24,793m<sup>2</sup>, the 4 stories steel structure building was constructed with cast-in-place concrete pile. It is expected that the project will be developed into the most convenient and the largest logistics park in northern Taiwan to provide safe and legal efficiency of storage space. The project service commissioned by Cathay Life Insurance Co. started in January 2016 with an anticipated completion date in January 2017.

## KWUN TONG TAIJIANG SOFTWARE PARK PHASE 1 TECHNOLOGY, JIANGSU PROVINCE, CHINA



*Taijiang Software Park Plan & BIM Model*

The Taijiang Software Park covers an area of about 368 acres (149 ha) and will have a built area of 380,000 m<sup>2</sup>, with 150,000 m<sup>2</sup> used for software industry offices and service facilities. It is expected to open in 3 years and will target software development and service outsourcing businesses. Phase 1 of the project consists of a technology exhibition hall located in the Northwest corner of the park. MAA was engaged to implement BIM management consulting services for architecture, structure and MEP which were integrated for clash detection and program studies. BIM was used as a multi-disciplinary communication platform to identify the discrepancy between design and construction. BIM-based information management platform was established for better information delivery and exchange. The service period was from February 2015 to December 2015.

## IMPLEMENTATION OF UNDERGROUND UTILITIES DATABASE AND GIS MANAGEMENT SYSTEM FOR NEW TAIPEI CITY (PHASE VIII)

This project consists of conducting a site survey of public utilities and building a GIS utility database based on the survey results, offering a complete solution for road excavation and public construction management. The New Taipei City has completed 7 phases of the project in 2014, including the implementation of an underground utilities database and of road management systems.

This project is the 8<sup>th</sup> phase of the project. The scope of services includes the utilities site survey, the implementation of a GIS database as well as system upgrades and maintenance. By continually expanding the utilities database, the New Taipei City Government aims to provide people with accurate utilities information.



*Public Utilities and GIS Database for Road Excavation and Public Construction Management*

## GROUND IMPROVEMENT OF 44 HECTARES RECLAIMED LAND AT THE TAIPEI HARBOR



*The 44 ha. Reclaimed land at Taipei Harbor South Port Area.*

The project is located at the South Port Area of Taipei Harbor, for which 44 hectares of reclaimed land is at risk for soil liquefaction. MAA was tasked with Phase I design services for ground improvement of the reclaimed land.

The ground improvement in long-term planning will be handled by district operations, as a future development of multifunctional multipurpose development of non-governmental investment. MAA was engaged by the Port of Keelung, Taiwan International Ports Corporation, Ltd. to provide the design and supervision services of ground improvement. Major works include soil investigation and laboratory tests, detailed design of ground improvement and supervision of ground improvement construction works. The project service started in August 2015 and expected to be completed in July 2017.

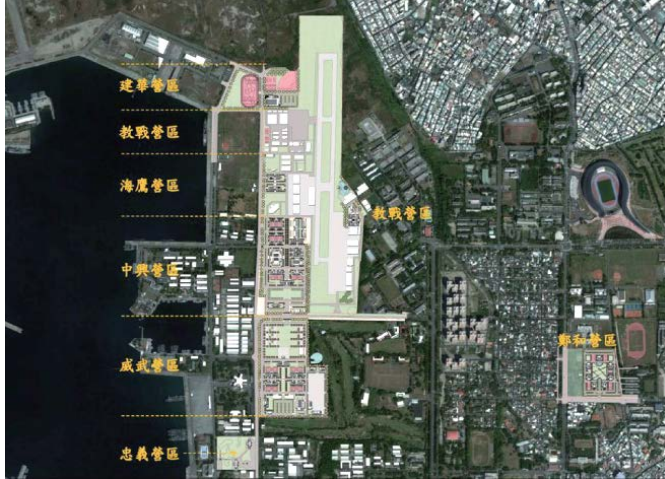
## PLANNING, DESIGN AND CONSTRUCTION SUPERVISION FOR EXTENSION OF HIGHWAY NO. TAI 31, TAOYUAN, TAIWAN



*The Construction of Highway No. Tai 31 Project.*

This project is to improve traffic conditions for the Taoyuan Aerotropolis Plan. Due to the increasing traffic flow, the Taoyuan City Government plans to construct a 42m wide road with a total length of 1,350m along both sides of the Taiwan High Speed Rail Bridge. MAA was engaged to design the 1,350 m long road and two 550m long bridges. With bridges planned adjacent to operating THSR, the safety of the THSR line presented challenges to design and construction of the bridges. Other works included subsoil investigation, traffic volume investigation and construction supervision. The project service started in July 2015 with an anticipated completion date in December 2018.

## TAOYUAN NAVAL BASE DEMOLITION AND REBUILD PROJECT



*Taoyuan Naval Base Project*

In order to provide land for the expansion of Taoyuan Aerotropolis, the Ministry of Defense will relocate the Taoyuan base to Cijin Naval Yard.

The project included:

1. New construction: 41 buildings with total floor area of 122,338 square meters.
2. Renovation: 2 buildings.
3. Miscellaneous: Outdoor combat skills and physical training field, vehicle Training Course, roads and parking yards, entrance door, fence, electricity and water supply, airport runway pavement, drainage, sewage etc.
4. Demolition: 26 buildings.

The overall planning concept is to avoid mutual interference between facilities. Not only does the architectural design embody the tradition and spirit of the military forces, but also combines local landscape and modern architectural styles.

Design concept and features are as follows:

1. Plan design: Adopting a linear configuration to maximize daylighting, allow convenient access to facilities and services, ability to use modular structures, and implement military security controls.
2. Ecologically design: Incorporate eco-trails, increase surface water infiltration, and establish ecological conservation areas to create a friendly environment.
3. Intelligent Green Building: to achieve the Bronze certification by creating a safe, healthy, convenient, comfortable building, while minimizing environmental impact through green practices and energy-saving.
4. The environment-friendly idea design: To promote public art in conjunction with the local culture and public art into the base.

MAA was engaged to implement detailed design and construction supervision for the project. The service started in September 2015 and is expected to be completed in August 2020.

# PROFESSIONAL ACTIVITIES

- Professional Honors
- Professional Activities
- Professional Awards
- International Meetings
- Seminars and Conferences
- Technical Publications

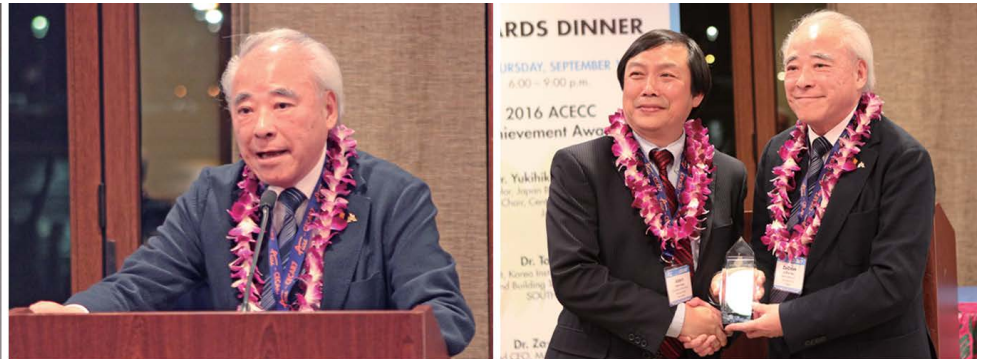
## ► Professional Honors

### ACECC CIVIL ENGINEERING ACHIEVEMENT AWARD, CECAR 7, HONOLULU, HAWAII

MAA's Chairman, Dr. Za-Chieh Moh received the ACECC Civil Engineering Achievement Award at CECAR 7 in August 2016 in Honolulu, Hawaii. Dr. Moh was recognized

with his significant contributions to the advancement of civil engineering in education, research, professional practice & development, training and international activities for over 50 years professional life.

ACECC was established in 1999 with the aim of promoting the acquisition and transfer of civil engineering knowledge for advancing the design and construction practices that ultimately improve the quality of life of all citizens from ACECC member countries. ACECC is currently comprised of member societies from 13 countries (Australia, Bangladesh, India, Nepal, Indonesia, Japan, S. Korea, Mongolia, Pakistan, Philippines, Taiwan, USA, and Vietnam). CECAR (Civil Engineering Conference in the Asian Region) is a major activity of ACECC (The Asian Civil Engineering Coordinating Council) held on a triennial basis, and started in 1998.



## ► Professional Activities

### MOU AND BIM COMPETITION



*Dr. Za-Chieh Moh at the Seminar of Hazard Prevention and Mitigation on Civil Engineering*



MAA Group recently signed MOU's with each of the following: Southwest Jiaotong University (SWJTU), CECEP Construction Engineering Design Institute LC, and Chengdu Xintu Technology.

Founded in 1896, Southwest Jiaotong University (SWJTU) is one of China's oldest and most prestigious higher education institutions. Often referred to as "the Cornell of the East", SWJTU is best known for its railway engineering program, as well as its modern education in transportation, mining & metallurgy, and civil engineering.

This year, a series of activities were held to celebrate the 120<sup>th</sup> anniversary of the Jiaotong University Group, including the Seminar of Hazard Prevention and Mitigation on Civil Engineering (茅以升土木工程防灾减灾论坛) on 14<sup>th</sup> May 2016 where MAA's Chairman Dr. Za-Chieh Moh gave an opening speech, and also its first BIM Competition on the same day, held by its School of Civil Engineering at Jiuli Campus. With over 500 competitors separated into teams of five, activities for this competition included modeling, poster design, animated film and oral presentations. MAA's Chairman Dr. Za-Chieh Moh, Executive Senior Vice President Mr. Richard



*BIM Competition at School of Civil Engineering, SWJTU*

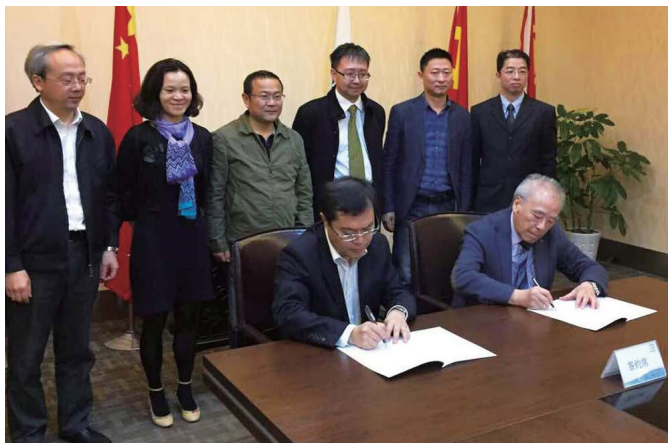
Moh were invited as jurors. Mr. Richard Moh gave an opening speech emphasizing two key BIM concepts; the fundamental relationship between BIM and civil engineering, and the interdisciplinary nature of BIM. Apart from the judging the BIM competition, on April 21<sup>st</sup>, MAA signed a MOU with the School of Engineering to cultivate and enhance the capabilities for BIM technology through cooperation and information exchange.



*MAA & SWJTU MOU Signing Ceremony*

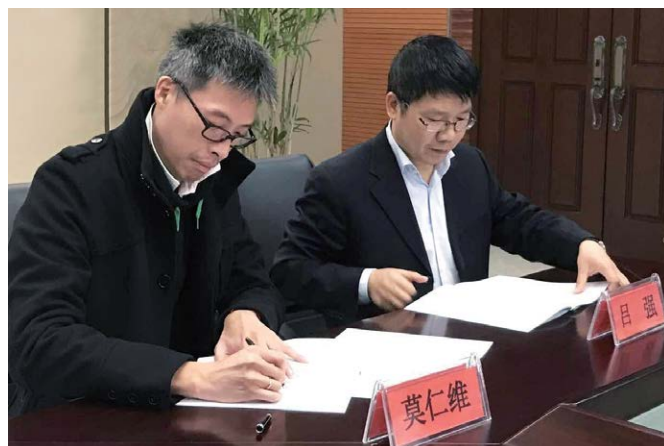
On April 22<sup>nd</sup> 2016, MAA signed a MOU with CECEP Construction Engineering Design Institute Limited Company (中節能建設工程院有限公司) in Chengdu, China for technology cooperation and sharing on the following:

- Development and applications of sustainable energy and environmental protection technologies
- Project & construction management for sustainable energy and environmental protection related projects
- BIM technology



*MAA & CECEP MOU Signing Ceremony*

On November 3<sup>rd</sup> 2016, MAA signed a MOU with Chengdu Xinzhu Corporation (新筑路橋機械股份有限公司) for technology cooperation and sharing on: railway transportation, bridge structure, slope protection and BIM.



*MAA & Xinzhu Corp. MOU Signing Ceremony*

## BEAM-RAISING CEREMONY FOR NATIONAL BIOTECHNOLOGY RESEARCH PARK, TAIPEI, TAIWAN

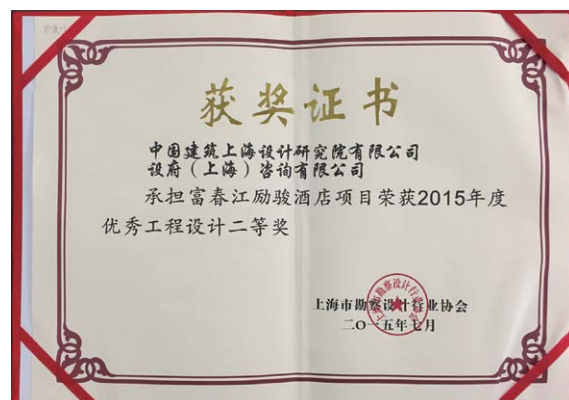
The National Biotech Research Park, Taiwan's first government-invested integrated biotech park incorporating research, development and startup incubation capacity, will open in May 2017. The park, calling for over NT\$22 billion (US\$709.67 million) in investment, has been under construction for four years and occupies 25.31 hectares of land in Nangang District, northern Taiwan, an area with lots of wetland. The park is fully equipped to handle almost every step in technological development of a biomedical product before clinical trials, backed by the basic capabilities to develop several new medicines. The park will select tenants with in-house capabilities to develop innovative, high value-added products to benefit Taiwan's biotechnology industry and build self-reliance. MAA is providing consulting service for project construction management for the project. MAA's Chairman Dr. Za-Chieh

Moh, President Mr. Chien-I Hsu and Vice President Ta-Hsing Lee were invited to attend the Beam-raising ceremony for one of the main buildings on 28<sup>th</sup> April 2016.



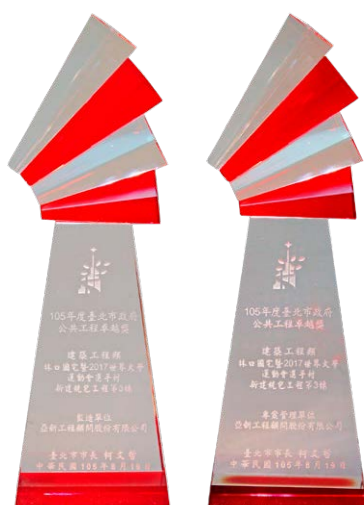
## ► Professional Awards

### 2015 SHANGHAI EXCELLENT DESIGN AWARD: SECOND PRIZE



In July 2015, the Legend Hotel Fuchun River Tonglu won the 2015 Shanghai Excellent Design Award: Second Prize by Shanghai Exploration & Design Trade Association(上海市勘察設計行業協會). The Fuchun Legend Hotel is a 5 star hotel complex with a total of 300 rooms and 86,000 sqm. The hotel is located on the bank of the historic and scenic Fuchun River in Tonglu, Zhejiang Province, near Hangzhou. SURV, Shanghai-based MAA associated architecture and planning firm, was in charge of the masterplan, programming and architectural design for the project, with a design in which the building emerges from the landscape to form the building podium and in a single gesture wraps vertically to form the signature tower form. Designed in alliance with feng-shui principles, the building form represents the legendary 7-li dragon once sleeping within the bed of the Fuchun river, now rising towards the sky in a spiraling motion. On the interior, a spiraling and twisting central atrium connects the visitors from the lobby through the main public functions, guest rooms, to the glass roofed sky beyond.

On 19 August 2016, project Linkou Public Housing and the 2017 Summer University Games Athletes Village received **The Fifth Taipei City Distinguished Public Construction Award**.

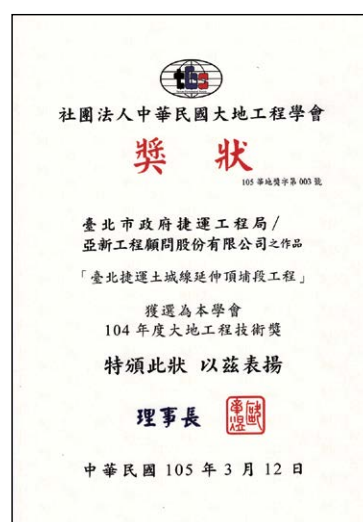


In May 2015, New Taipei City was selected as the **Best of Municipalities for the establishment for public facilities supply pipeline database management system**, implemented by MAA in 2014, by Construction and Planning Agency, Ministry of Interior

In April 2015, Chiayi City was selected as the **Best of Counties for the establishment for public facilities supply pipeline database management system**, implemented by MAA in 2014, by Construction and Planning Agency, Ministry of Interior

In March 2015, Taipei MRT Tucheng Line Extension to Dingpu, Design Lot DD170 received the **2015 Geotechnical Engineering Award** by the Taiwan Geotechnical Society. MAA was the designer of the project.

In November 2015, project “Kaohsiung Exhibition & Convention Center Turnkey Project” received the **2015 Construction Landscape Beautification Award** by the Chinese Institute of Civil and Hydraulic Engineering



In September 2015, Taiwan Area National Freeway received the **2015 Toll Excellence Awards** for Customer Service & Administration by the International Bridge, Tunnel and Turnpike Association (IBTTA). As the general consultant, MAA was in charge of the supervision of the ETC system establishment, testing, and carrying on transport business test.

## ► Seminars and Conferences

### AIT LECTURES SERIES

MAA was invited to deliver a series of lectures on Project Management by Asian Institute of Technology (AIT)'s School of Engineering and Technology in Klong Luang, Thailand from March 9th to 11th, 2016. Established in Bangkok in 1959, AIT has become a leading regional postgraduate institution and is actively working with public and private sector partners throughout the region and with some of the top universities in the world. Keynote lectures delivered by MAA's senior engineers Dr. Hsiao-Chou, Chao, Mr. Wen-Shan Liu, Mr. Pen-Chi Lin and Mr. Shyan-Ching Jang included "Project Management of High-Rise Buildings", "High-Rise Building Construction", "Risk Management", "BIM Applications", and "Case Studies – New Taipei City Government Hall & World University Games – Games Village". Over 50 students attended the intense 3 day lecture series, including AIT graduate students, as well as public officials and private executives from Vietnam and Myanmar.



## ► Technical Publications

Chang, J.F. Chou, C.R., Lai, Y.F., Hwang N.H., & Hsieh, Y.H. (2015), "Shield Tunnels Connected to an Operating Station – A Case Study in Taipei MRT Projects", *Proceedings*, The 15<sup>th</sup> Asian Regional Conference on Soil Mechanics and Geotechnical Engineering, November 9-13, Fukuoka, Japan, pp. 186-191.

Chang, H.K., Chou, C.R., Chang, J.F., & Hsieh, Y.H. (2016), "Geotechnical Issues and Strategies of MRT Projects in Mixed Grounds – An Example from the Tucheng Line Extension Project of Taipei Rapid Transit Systems", *The Magazine of the Chinese Institute of Civil and Hydraulic Engineering*, Vol.43, No.2, pp. 34-41. (in Chinese)

Chen, C.H., You, C.F., Chou, C.R., Liu, Y.Y., & Chen, M.S. (2015), "Design and Construction Management of Shield Tunnels Crossing Operating TRA/THSR Tunnels", *Proceedings*, The 14<sup>th</sup> Cross Strait Seminar on Tunnel and Underground Engineering, November 5-6, Ilan, Taiwan, pp. T-29-1~T-29-10. (in Chinese)

Chao, H.C., Chang, J.F., Chen, S.K., Huang, C.Y., Ma, L.C., & Chang, W.S. (2016), "Retrospective Study of the Safety Risk Management for a Deep Excavation Between Two Running MRT Bored Tunnels", *Proceedings*, The 19<sup>th</sup> Southeast Asian Geotechnical Conference & 2<sup>nd</sup> AGSSEA Conference, May 31 - June 3, Subang Jaya, Malaysia, pp. 739-748.

Chou, C.R., Lai, Y.F., & Chang, J.F. (2015), "Engineering Study of Connection Between Shield Tunnels and an Operating MRT Station", *Proceedings*, The 16<sup>th</sup> Conference of Current Researches in Geotechnical Engineering in Taiwan, September 2-4, Kaohsiung, Taiwan, Paper No.14. (in Chinese)

Chou, C.R., Chang, J.F., Su, T.C., Chen, M.S., & Yu, N.Z. (2015), "Design Considerations and Removal Strategies Against Obstructions in Shield Tunneling", *Sino-Geotechnics*, Taipei, Taiwan, No.145, pp.57-68. (in Chinese)

Chou, C.R., Chang, H.K., Wu, T.E., & Chou, W.B. (2016), "Challenges and Construction Considerations of Xinyi Line for Taipei MRT System", *Proceedings*, The 19<sup>th</sup> Southeast Asian Geotechnical Conference & 2<sup>nd</sup> AGSSEA Conference, May 31 - June 3, Subang Jaya, Malaysia, pp. 1107-1112.

Hu, I.C., Hsu, C.S., Chao, H.C., Chen, H.T., & Chang, H.T. (2016), "Protection of the Existing Railway Tunnels During a Deep Excavation", *Proceedings*, 2016 Cross-Strait Symposium on Geotechnics, March 20-22, Chengdu, Sichua, China, Taiwan Volume, pp..101-106 (in Chinese)

Hwang, R.N., Wang, C.H., Chou, C.R., & Wong, L.W. (2016), "Deep Excavations in Taipei Basin and Performance of Diaphragm Walls", *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, Vol.47, No.2, pp. 32-40.

Lee, W.F., Wang, C.C., Ishihara, K., & Hwang, R.N. (2016), "Forensic Investigation of A Subway Tunnel Construction Failure", *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, Vol.47, No.2, pp. 50-59.

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Liau, B.Y., Lee, C.M., Mao S.S., & Lin, C.D. (2015), "Study on Curved Pipe-Jacking Method of Yangmei Sewage System", *Trenchless Technology*, Taipei, Taiwan, No.32, pp. 20-32. (in Chinese)

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Lo, H.T., Chang, Y.C., Yu, C.J., Huang, W.J., & Chou, C.R. (2015), "BIM Technology Used in Shield Tunnel Projects", *Proceedings*, The 14<sup>th</sup> Cross Strait Seminar on Tunnel and Underground Engineering, November 5-6, Ilan, Taiwan, pp. T-7-1~T-7-6. (in Chinese)

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Moh, Z.C. (2016), "Professionalism and Ethics of Engineering", Opening Keynote Address, *Proceedings*, 19<sup>th</sup> SEAGC & 2<sup>nd</sup> AGSSEA Conference, May 31-June 3, Subang Jaya, Malaysia, pp.5-7.

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Tseng, H.C. Liao, H.J., Lee, W.F., Cheng, S.H., & Chen, J.C. (2015), "Study on Ground Anchor Lift-Off Test Results", *Proceedings*, The 16<sup>th</sup> Conference of Current Researches in Geotechnical Engineering in Taiwan, September 2-4, Kaohsiung, Taiwan, Paper No.B35. (in Chinese)

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Wu, T.E., Chou, C.R., & Su, T.C. (2015), "Design Consideration of Civil Works for Detail Design Lot 148 of Xinyi Line and Extension Project Taipei MRT", *Proceedings*, The 14<sup>th</sup> Cross Strait Seminar on Tunnel and Underground Engineering, November 5-6, Ilan, Taiwan, pp. T-20-1~T-20-15. (in Chinese)

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Wu, T.E., Huang,Y.C., & Chou, C.R. (2016), "Design Consideration of Civil Works for Detail Design Lot 148 of Xinyi Line, Taipei MRT", *Rapid Transit System & Technology*, Taipei, Taiwan, No.51. (in Chinese) (Accepted).*Proceedings*, The 14<sup>th</sup> Cross Strait Seminar on Tunnel and Underground Engineering, November 5-6, Ilan, Taiwan, pp. T-20-1~T-20-15. (in Chinese)

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Wu, T.E., Huang,Y.C., & Chou, C.R. (2016), "Design Consideration of Civil Works for Detail Design Lot 148 of Xinyi Line, Taipei MRT", *Rapid Transit System & Technology*, Taipei, Taiwan, No.51. (in Chinese) (Accepted).

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Wu, T.E., Chiu, C.T., Hsien,Y.X., Huang,C.L., & Su, J.M. (2016), "The Architectural Aesthetics of Detail Design Lot 148 Of Xinyi Line, Taipei MRT", *Rapid Transit System & Technology*, Taipei, Taiwan, No.51. (in Chinese) (Accepted).

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Yang, G.R., Wong, L.W., & Hwang, R.N. (2016), "Hydraulic Characteristics of Jingmei Formation and Dewatering for Deep Excavations in Taipei Basin", *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, Vol.47, No.2, pp. 41-49.

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Yu, C.J., Huang, T.M., Weng, S.C., Chang, M.M., & Chang, C.S. (2015), "Landslide-Debris Flow-Dip Slope Investigation and Database Construction and Landslide Terrain Characteristic Analysis In Taiwan", *Proceedings*, The 16<sup>th</sup> Conference of Current Researches in Geotechnical Engineering in Taiwan, September 2-4, Kaohsiung, Taiwan, Paper No.B19. (in Chinese)

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# P PERSONNEL PROFILES

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**Chung-Cheng KAO**  
高宗正

Mr. Chung-Cheng Kao joined MAA in September 2016 as the Advanced Engineering Chief Technical Officer of MAA Group Consulting Engineers. Mr. Kao graduated from the Department of Civil Engineering, Chung-Yuan Christian University in 1977. In 1981, he received his Master's degree in computer engineering from Asian Institute of Technology in Bangkok, Thailand. He had worked in Taipower Company, RSEA, Department of Rapid Transit Systems of Taipei City Government and Deputy Mayor of New Taipei City. Before joining MAA after retirement, Mr. Kao was the Deputy Mayor of New Taipei City, during which he led the New Taipei City's urban planning and large-scale infrastructure projects. Prior to his 2010 appointment as the Commissioner in New Taipei City Government's Department of Public Works, Mr. Kao had provided his service for Taipei City's Department of Rapid Transit Systems for more than 24 years. He was hailed as the main driving force behind the successful project. During his service in the Taipei City's Department of Rapid Transit Systems, Mr. Kao promoted the use of CAD, setting up an engineering management system and overseeing the compiling and writing of a series of books on rapid-transit technology. He endeavored to effectively set up a knowledge and experience database of nation-wide public engineering projects. Drawing from his experiences in the national rapid transit project, he was able to elevate the quality of public engineering assignments for the municipal governments. Owing to his backgrounds in information technology and applied engineering, Mr. Kao has pushed forward the application of Building Information Modeling(BIM) onto several public engineering projects, marking a new epoch of technology for the Taiwan engineering industry.



**Ching-Nan CHANG**  
張慶南

Mr. Ching-Nan Chang joined MAA in May 2016 as Manager of Electrical & Mechanical System Engineering Department. He is responsible for electrical and mechanical system planning and supervision for Phase 1 of Tamhai Light Rail Line, Phase 1 of Kaohsiung Light Rail Circular Line and MRT Xinyi Line Eastern Extension Lot DR149. Mr. Chang received both his bachelor's and master degree in Electrical Engineering from National Taiwan University of Science and Technology in 1989 and 2005. From 1982 to 1987, Mr. Chang was employed by Tatung Co., Ltd. as an electrical engineer, mainly involved in TV factory quality control and industrial engineering work. In 1989, Mr. Chang joined Sinotech Engineering Consultants, Inc, participating in Ministry of Science and Technology (MOST) science park development and Industrial Development Bureau (IDB) industrial zone development, involved in water treatment, power generation and substation, Taipower 161/345kV cable project and 69/161/345kV UHV transmission construction design and supervision. In 2015, Mr.Chang joined Fong Yen International Co., Ltd. participating in planning and design of water treatment project.



**Chia-Feng LU**

呂嘉峰

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Mr. Chia-Feng LU was promoted to Manager of Structural Engineering Dept in August 2016. Mr. Lu received both his Bachelor's and master degree in civil engineering from National Cheng-Kung University in 1990 and 1992. Prior to joining MAA, Mr. Lu worked as an assistant engineer in structural and civil engineering for Pro-Tech, Inc. Since joining MAA in 1993, he has been involved in the detailed design of many projects including Taichung MRT Project - Wujih- Wenshin-Peitung Line, Second Freeway- Nantou Section Project, Second Freeway- Taichung Section Project, High Speed Rail Project Tainan-Kaohsiung Section, Chung-Tou Highway for contract CT011 & CT012, Taiwan High-Speed Rail Project for Contract C250 Wu-Jih depot Line, Second National Freeway (Dajia - Jhangbin section) and land acquisition consultancy service on new Xinzhuang City Government Center project etc.



**Kuang-Yu CHENG**

鄭光祐

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Mr. Kuang-Yu Cheng joined MAA in September 2015 as Manager of BIM Management and Engineering Integration Center. Mr. Cheng received his Bachelor's degree in Mechanical Engineering from National Taipei University of Technology in 1989 and master degree in Dentistry from Taipei Medical University in 2002. After graduation, Mr. Cheng had stayed in BioTech One Co., Ltd. and Hung Chun BIO-S CO., LTD. where he assisted in setting up six high-end GMP factories for medical devices and developed several of novel high-end biotechnology products. Mr. Cheng joined Leaddao Technology & Engineering Ltd. in 2009 as Assistant Manager and was responsible for 3D modeling and collision checking, building façade drawing, architecture, structure, and MEP collision checking and quantitative material analysis. Major projects involved by Mr. Cheng including IOI City mall(Malaysia), National Taichung Theater, National Kaohsiung Performing Arts Center, Taiwan Hakka Cultural Center and National Taichung Library.



**Gwo-Jenn LIU**

劉國鎮

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Mr. Gwo-Jenn Liu was promoted to Manager of the Project & Construction Management Dept. in June 2015. He received his master degree in Geotechnical Engineering from National Chung Kung University in 1987. Mr. Liu joined MAA in 1989 as a geotechnical engineer and was promoted to senior geotechnical engineer in 2003. Major works undertaken by Mr. Liu include project management and construction supervision for many renowned buildings in Taiwan such as the National Convention and Exhibition Center (Nangang Exhibition Hall Expansion), the Xinzhuang Sports Center, the National Dong Hwa University campus, the Teaching Research Building of the National Taiwan University of Science and Technology, the National Central Library relocation project and the Taipei County Government Administration Center. Besides from buildings, he has taken part in geotechnical consultancy for many infrastructure projects, including the Hsinyi Bypass project, the Taipei MRT Nangang Line Design Lot 173, the Chungho Line design lot CC560, the Taichung Fossil Fuel Power Plant and the Ilan Expressway (Nankang-Pingling Sec.). Mr. Liu is a Registered Professional Geotechnical Engineer, R.O.C. and received Basic Qualification Training Course for Professional Procurement Personnel and Labor Safety and Health Management (Class C).



**Yu-Chi LIN**

林育祺

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Mr. Yu-Chi Lin was promoted to Deputy Manager of Project & Construction Management Dept in June 2015. Mr. Lin received both his bachelor's and master's degrees in structural engineering from National Taiwan University of Science and Technology in 1995 and 1997. Mr. Lin has worked for Ta-Hsing Engineering Consultant Co. (1995-1996), the National Defense Medical Center (1997-1999) and MAA (1999-current). His experience ranges from structural analysis and design to project construction management. Structural analysis and design projects include the Wan-Son Building, the Wan-Gar-Fu Shopping Mall fire damage assessment and the Grand Hotel fire damage assessment. His major projects for project construction management include the Taiwan Hakka Cultural Center Miaoli Park, the National Taiwan Technology University school building construction (turnkey contract), the relocation of the National Taichung Library and the Kaohsiung Indoor Stadium (BOT project), etc. As for professional registration, Mr. Lin is a Registered Professional Structural Engineer, R.O.C., a Professional Building Interior Decoration Personnel, R.O.C., a Professional Public Construction Quality Management Personnel, ROC. and Professional Procurement Personnel, ROC. He was nominated as Chairman of the Young Engineers Committee of the Chinese Association of Engineering Consultants (2015-2018).



**Chien-Ming HUANG**

黃建明

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Mr. Chien-Ming Huang joined MAA in September 2015 as Architecture Manager of Project & Construction Management Dept. Mr. Huang received his Bachelors Degree in Architecture from Tamkang University in 1989. Prior to joining MAA, Mr. Huang had worked for Cosmos Inc. (1991-1994) and Ricky Liu & Associates (1994-2005). During this period, Mr. Huang was involved in master planning and urban design of projects of different scales. Mr. Huang was also involved in various types of building design including, regional to campuses, residential, commercial, educational, and cultural& sports facilities for architectural design. In 2006, Mr. Huang joined CH2M HILL, one of the largest EPCM Company in the U.S. During his 8 years stay in CH2M HILL, Mr. Huang mostly focused on industrial related projects in China, with an emphasis in advanced technology facilities and Hi-Tech Industrial Park planning. During Oct.2009 to Oct. 2014 Mr. Huang acted as the Architectural Discipline Manager of its Shanghai office, leading a 23-people team in supporting all building design projects in China. At the same time, he also acted as lead architect in building design projects and project manager for master planning projects. Mr. Huang also holds a LEED (Leadership in Energy and Environmental Design) AP from USGBC (U.S. Green Building Council).



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