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TAIPEI KAOHSIUNG TAICHUNG BANGKOK YANGON
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Founded in 1975, **MAA** 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.

Today, **MAA** has over 1,200 employees with companies in Beijing, Shanghai, Hong Kong, Macau, Taipei, Bangkok, Singapore and Yangon, creating a close 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:

Advanced Technology
Safety
Satisfaction
Economical Solution
Timely Completion

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ISO 9001 AND LAB CERTIFICATIONS

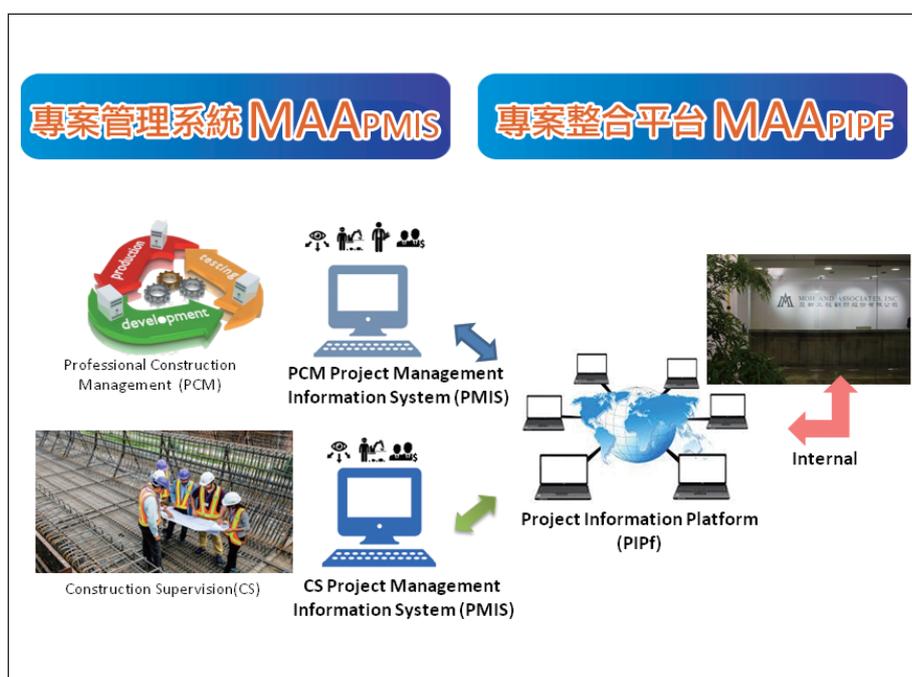


DIGITALIZATION

Digitalization in engineering is the integration of digital technology into engineering planning, design, project management, facility management, and hazard management. The introduction of digital technologies streamlines the overall operational processes and efficiency, reducing the risk of construction delays, and improving on-site safety. MAA began embracing digitization technologies in the early 1990's, as to focus on novel digital technologies as well as internal research and development to improve data management for projects. This digital transformation includes automated geotechnical monitoring technology, remote sensing (RS), GIS, various 3D analysis and design solutions, and has resulted in the development of several management information systems for government's public work project management and nature slope land hazard prevention. Furthermore, by promoting the development and implementation of project management in alignment with BIM technology, MAA actively develops its internal digital platforms, collecting various engineering and technical information, as well as using mobile devices to store important data and records regarding quality management, construction management, progress management and other related documents in the cloud. In the past decade, MAA's efforts in digitalization have been in the form of 3D digital twins, design integration & communications, facility operation and management in smart buildings & smart cities, and natural hazard monitoring & prevention.

PROJECT MANAGEMENT INFORMATION SYSTEM (PMIS)

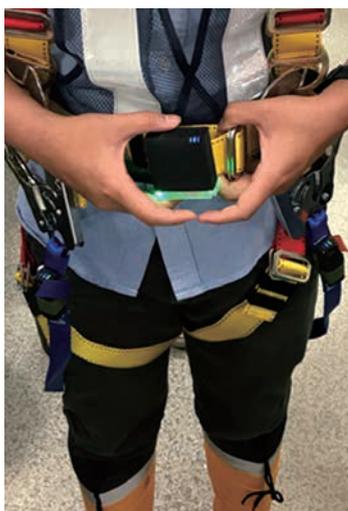
Project Management Information System (PMIS) is an integral application used to facilitate communication and management in various key tasks of projects for key stakeholders, including clients, project & construction management personnel, contractors, and others. By developing a shared platform, a PMIS plays a critical role in providing users with dynamic information as well as streamlining communication and collaboration tasks. The PMIS also enables project members to track project status and information, allowing stakeholders to manage approval processes & key reports, and to integrate decision-making information in a timely manner. The system is hosted in a cloud-based platform to allow ease of access to its users and to assist users to achieve a quality project environment.



MAAPMIS Framework

iLERT: SMART SAFETY BELT MONITORING SYSTEM

Construction safety is always the top priority of any sites. To ensure the safety of employees on the construction site, MAA developed a Smart Safety Belt Monitoring System, iLERT; a management and control tool system that enables real-time monitoring of safety at the site to facilitate support management. System functions include recording the real-time status, abnormal occurrences and usage rates of the belts on each construction site, as well as managing the alert report and repair status of belts. By integrating the system with construction safety protocols, site staff and administrators can easily monitor the status of workers' safety with regard to safety status, and also quickly respond to any event.



iLERT
Core Functions of Staff Safety Maintenance

	Danger Zone Warning		Fall Detection	
Hook Engagement Verification		Faint Detection		Distress Signals



SUSTAINABILITY

MAA & WATER

In recent years, climate change has intensified, and the risk of water shortages has increased due to low rainfall in dry seasons. It is necessary to promote water technology such as reclaimed water, seawater desalination, and brackish water along the tidal estuaries which are not affected by rainfall, to strengthen the stability of the water supply in dry seasons.

In the field of reclaimed water, Taiwan's Water Resources Agency, MOEA has requested developers prioritize the use of reclaimed water when reviewing water use plans. By the end of 2020, Taiwan's reclaimed water reached 216,000 tons per day. Water Resources Agency will constantly encourage developers' use of reclaimed water when reviewing water use plans in the future. According to the "Public Wastewater Treatment Plant Reuse Water Utilization Plan (2021-2026)" announced in 2020 by the Construction and Planning Agency, Ministry of the Interior, in addition to the continued use and development of the 8 plants, a total of 11 reclaimed water plants have been newly authorized, including North District Plant in Taoyuan, Zhubei Plant in Hsinchu, Nanzi Plant in Kaohsiung, etc. Among them, Fengshan Plant in Kaohsiung was completed in 2019 and can produce 45,000 tons of water per day. Linhai Plant and Yongkang Plant will be completed in 2022 and can provide 33,000 tons and 8,000 tons of reuse water per day, respectively. Anping Plant is expected complete in 2023, and supply 10,000 tons of reused water per day in 2023. The remaining plants are still in the planning and are expected to supply up to 195,000 tons of reclaimed water per day by 2027.

As of 2022, MAA has participated in the following reclaimed water projects:

No.	Project	Scope of Services	Service Period
1	BTO Project for Fengshan River Wastewater Treatment Plant Wastewater Reclamation	reclaimed water plant and water pipeline design	2016~present
2	Design for Tainan Yongkang Water Recycling Center Turnkey Project	water recycling center, reclaimed water plant, water pipeline and distribution reservoir design	2018~present
3	Turnkey Project for Anping Reclaimed Water Plant Construction in Tainan	water pipeline and distribution reservoir design	2020~present
4	Turnkey Project for Futian Wastewater Reuse Plant in Taichung	water pipeline design	2021~present
5	Feasibility Assessment for Fengyuan Wastewater Reuse Plant in Taichung City	feasibility study, planning and procurement consultancy	2018~present
6	Feasibility Assessment for Wastewater Reuse Plant in North District, Taoyuan City	feasibility study, planning and procurement consultancy	2018~present
7	Feasibility Assessment of Reclaimed Water Supply of Taichung City Public Sewage Treatment Plant	feasibility study, olanning	2022~present
8	BTO Project for Qiaotou Reclaimed Water in Kaohsiung City	wastewater treatment plant, reclaimed water plant and water pipeline design	2022~present



One of MAA's acclaimed projects includes Fengshan River Reclaimed Water Plant, which was the first systemic reclaimed water plant in Taiwan. This plant adopted treatment procedures including rapid filtration, UF, and RO. It began to supply 25,000 CMD of water in the first phase in 2018, and reached 45,000 CMD of water supply in 2019.

Another major project was the Yongkang Reclaimed Water Plant, which was the first reclaimed water plant for high-tech industries in Taiwan, providing 15,500 CMD for high-tech industries and adopting treatment procedures consisting of three-stage RO, MBR, and RO. The plant is equipped with high-level treatment facilities and adopts the bromide chemical dosing method to remove it to meet the stringent water quality requirements of TSMC (urea is less than 0.005mg/L).



MAA & GREEN ENERGY

ØRSTED O&M FACILITIES IN TAICHUNG

In order to achieve the goal of sustainable development, specifically SDGs-7: Affordable and Clean Energy to ensure all people have access to affordable, reliable, and sustainable energy, wind power plays an important role in boosting green energy, clean energy, renewable energy and energy transformation in Taiwan. Starting in 2018, MAA has provided the feasibility study, site investigation, design, project management, and construction supervision for Ørsted Offshore Wind Farm Facilities in Taichung. In the future, this O&M Facility will be responsible for all operation and maintenance of Ørsted's four offshore wind farms with a total capacity of 2.4 GW to ensure the best performance, operation quality and stability of the wind farms. This base will also perform as the operation and maintenance facility with the largest capacity and the most extensive area in the Asia-Pacific region. It is also the first offshore wind farm operation and maintenance facility in the Asia-Pacific region that adopts sustainable design and multiple green solutions.

The O&M Facilities cover a total area of 7,868 m². The main buildings consist of offices, warehouses, mechanical and electrical facilities buildings, antenna towers, etc. The constructions adopt green energy-saving materials to reduce carbon footprints, integrated rooms with green building regulations such as sustainability, water and energy efficiency, material and resource recycling, and indoor environmental quality, to achieve the LEED (Leadership in Energy and Environmental Design) gold certificate.

The project adopts sustainable green solutions as follows:

1. Utilize recyclable and renewable materials for 60% of facilities
2. Place 370 solar panels
3. Rainwater recycling system
4. Electric vehicle charging stations

The groundbreaking ceremony was held on 22nd September 2020. The O&M Facilities were completed on 27th June 2022 and officially began operation on 2nd August 2022. In addition to the efforts of sustainable design for green buildings, this project contributes to Taiwan's wind power and energy transformation.



CHANGBIN LUNWEI EAST ZONE 03 & 04 FLOATING SOLAR PHOTOVOLTAIC POWER PLANT PROJECT

Industrial innovation, environmental protection, and local participation have been at the core of Executive Yuan's "Promotion of Industrial Innovation" policy. As a response, the project, located at No. 50 and 51 of the Lunhai section on the southwest side of Lunwei East in Changbin Industrial Zone, which was originally land used for factories, has been transformed into land dedicated to renewable energy industries. MAA provided engineering services for the floating solar photovoltaic power plant in Changbin Lunwei east zone 03 & 04, which is estimated to provide up to 180MWp when fully completed. The project consists of 430,000 pieces of 445Wp and 450Wp solar modules and challenges traditional solar plants to be built on the sea surface fixed with anchor piles. MAA assisted the client with services including the design of platform construction, anchor piles, marine engineering, medium- and low-voltage electrical engineering, medium-voltage pipeline trenching, solar panel module assembly, etc.



MAJOR AWARDS

THE 22ND PUBLIC CONSTRUCTION GOLDEN QUALITY AWARDS



Public Construction Golden Quality Awards recognize the award-winning engineering teams' outstanding professional performance in planning, design, supervision and construction. On 22nd December 2022, MAA received the 22nd Public Construction Golden Quality Awards for its PCM service of the "Social Housing Construction at Yunghe Section, Tucheng District" and Special Contribution Award.

SOCIAL HOUSING CONSTRUCTION AT YUNGHE SECTION, TUCHENG DISTRICT

New Taipei City Government aims to build social rental housing for lower-income residents in Tucheng District. With a site area of about 8,213 m², the project consists of two 13-story and 15-story apartments, both with 2 basement levels. A total of 540 units will be available upon completion. The buildings aim to achieve silver certification for Green Building Label and Intelligent Building Label.



MAA's President Chen-Hui Hsieh (right 2) and SVP of Building & Facilities Group Ta-Hsing Lee (right 3) attended the 22nd Public Construction Golden Quality Awards ceremony

THE 16TH PUBLIC CONSTRUCTION GOLDEN SAFETY AWARDS

Public Construction Golden Safety Awards recognized institutions that maintain healthy and safe environments during construction processes. It aims to perpetuate enterprise safety culture. On 17th November 2022, MAA received The 16th Public Construction Golden Safety Awards for Design and Construction Supervision for Urban Replanning in Guo Lin Taoyuan City.



DESIGN AND CONSTRUCTION SUPERVISION FOR URBAN REPLANNING IN GUO LIN TAOYUAN CITY



Public Construction Golden Safety Awards

The project is located on the east side of Taoyuan International Airport and connects to Downtown Taoyuan. It will become a busy hub where it connects Taoyuan International Airport, MRT Taoyuan Airport Line, and Taoyuan MRT Green Line. The project covers replanning for 45.09 hectares of Dayuan Gou Lin City, 3.49 hectares of Wufu City, Luzhou, and the construction of a 24 m bridge. The redevelopment seeks to improve the local transportation network and infrastructure, improving the overall city outlook and encouraging population growth.



MAA's President Chen-Hui Hsieh (right 2) and SVP of Building & Facilities Group Ta-Hsing Lee (right 3) attended the 22nd Public Construction Golden Quality Awards ceremony

TAIPEI CITY PUBLIC CONSTRUCTION WORKS DISTINGUISHED AWARDS

Taipei City Public Construction Works Distinguished Awards acknowledge institutions with high-quality construction projects. On 18th October 2022, MAA received Taipei City Public Construction Works Distinguished Awards for the PCM and construction supervision for the Riverside Public Housing in Neihu District Taipei City.



RIVERSIDE PUBLIC HOUSING IN NEIHU DISTRICT TAIPEI CITY

Taipei City Government selected this project for its innovations in urban renewal integration towards an “intelligent community”. By blending the concepts of “green” and “intelligent” buildings (e.g. energy savings, disaster preparedness, health & comfort-focused designs) from a building perspective to an overall community planning, this Project will be able to provide its inhabitants with enhanced living and service standards. This Project is planned to establish 488 housing units and will be tendered as a turnkey project. The Project also aims to achieve the silver standard for Green Buildings and Intelligent Buildings.



NEW TAIPEI CITY PUBLIC CONSTRUCTION QUALITY AWARDS

New Taipei City Public Construction Quality Awards acknowledge institutions with high-quality construction projects. On 26th September 2022, MAA received New Taipei City Public Construction Prime Quality Award for the PCM for the Social Housing Construction at Tucheng and Construction Supervision Consultant for the Ankeng Line LRT System.

SOCIAL HOUSING CONSTRUCTION AT TUCHENG

With a site area of about 8,213 m², the project consists of two buildings (13 stories and a 15 stories apartment), both with 2 basement levels. A total of 540 units will be available upon completion. These projects, at a minimum, aim to qualify for silver certification for Green Building Label as well as for Intelligent Building Label.



MAA's President Chen-Hui Hsieh (left 3) attended the New Taipei City Public Construction Quality Award ceremony

ANKENG LINE LRT SYSTEM

The main goal of the project is to provide Ankeng Township 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 Erbazi Botanical Garden. 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.



MAA's SVP of Construction Supervision & Management Group Shih-Chang Huang (right 3) attended the New Taipei City Public Construction Quality Award ceremony

TAOYUAN CITY PUBLIC CONSTRUCTION GOLDEN QUALITY AWARD

Taoyuan City Public Construction Golden Quality Award acknowledge institutions with high-quality construction projects. On 5th September 2022, MAA won the Distinguished Award for Chungli First Public Market Project.

CHUNGLI FIRST PUBLIC MARKET PROJECT

Chungli First Public Market Project, named “Big Clock” by Chungli residents, is an important landmark in the traditional downtown area of Chungli district. The project incorporates the memory of “Big Clock” through innovative design into this redevelopment project. The design work integrates the environment and cultural values to strengthen the original historical image of the “big clock”, bringing back the splendor of the historic market. The project is a new building with 4 floors underground and 6 floors above ground. The basement 1st to 4th floors are used for parking spaces. The 1st to 3rd floors are used by vendors. The 4th floor will be occupied by Department of Social Welfare, Taoyuan City Government, while the 5th to 6th floors are occupied by Department of Hakka Affairs, Taoyuan City Government.

In order to create a friendly and barrier-free environment and to strengthen the aesthetics and practicality of the construction, the interior and exterior are decorated with different materials.

The building meets the diamond level of smart buildings and green buildings label, through a variety of innovations including green walls, and extensive landscaping. The front and rear street squares adopt ironwood elevated floors and permeable pavements. In addition, the indoor areas adopt green building materials and utilize green energy, which can not only improve the environment but also beautify the cityscape.



MAA's SVP of Construction Supervision & Management Group Shih-Chang Huang (right 1) attended the Taoyuan City Public Construction Golden Quality Award ceremony



TAINAN CITY PUBLIC CONSTRUCTION EXCELLENCE AWARDS

Tainan City Public Construction Excellence Awards acknowledge institutions with high-quality construction projects. On 24th October 2022, MAA won the Excellence Award for designing and supervising the first phase of the sewage system construction in Yong Kang area, Tainan City (PA sewage collection area).

SEWAGE SYSTEM IN YONG KANG AREA, TAINAN CITY (PA SEWAGE COLLECTION AREA)

The project scope covers two sewage collection areas, which are PAa and PAb collection areas with a total area of about 770ha. One of the main goals of this project will be to improve household connections to more than 14,000 households. The project includes main sewers, sub-main sewers, branch sewers, lateral sewers, and household connection pipes with a total length of 32,238 meters, and will be carried out using the pipe-jacking method. The household connection pipes will use the open-cut method (pipes diameter $\leq \phi 200\text{mm}$).



MAA's Manager of Southern Taiwan Office Hou-Chi Chang (Left 2) attended Tainan City Public Construction Excellence Awards ceremony



Tainan City Public Construction Excellence Awards



THE 2022 URBAN CONSTRUCTION GOLDEN QUALITY AWARDS

The 2022 Urban Construction Golden Quality Awards acknowledge institutions with high-quality construction projects. On 26th October 2022, MAA received the 2022 Urban Construction Golden Quality Awards for Sewage System in Yong Kang area, Tainan City (PA sewage collection area) and Turnkey Project for Kaohsiung MRT Gangshan-Luzhu Extension (Phase 1).

SEWAGE SYSTEM IN YONG KANG AREA, TAINAN CITY (PA SEWAGE COLLECTION AREA)



The 2022 Urban Construction Golden Quality Awards



MAA's Manager of Southern Taiwan Office Hou-Chi Chang (Left) attended The 2022 Urban Construction Golden Quality Awards ceremony

The project scope covers two sewage collection areas, which are PAa and PAb collection areas with. And the total area is about 770ha. One of the main goals of this project will be to improve household connections to more than 14,000 households. The project includes supervision of includes

main sewers, sub-main sewers, branch sewers, lateral sewers, and household connection pipes with pipe diameters between $\phi 300\text{mm}$ to $\phi 1350\text{mm}$. The total length will be about 32,238 meters, and will be carried out using the pipe-jacking method. Household connection pipes will reach more than

14,619 households. The construction method of main sewers, sub-main sewers, branch sewers, and lateral sewers are mainly used the pipe-jacking method (pipes diameter $\geq \phi 300\text{mm}$). The household connection pipes will use the open-cut method (pipes diameter $\leq \phi 200\text{mm}$).

TURNKEY PROJECT FOR KAOHSIUNG MRT GANGSHAN-LUZHU EXTENSION (PHASE 1)

The MRT line is close to some of the important industrial parks, such as Kaohsiung Science Park, Telecommunications Park, Benjhou Industrial Park, and Yongan Industrial Park Service Center. As part of the Executive Yuan's Kaohsiung Business City Plan, these areas are expected to generate a 120,000 labor force and expect a 75,000 increased population. The MRT line benefits both the industries around it, as well as provides convenient means of transport. It travels from Gangshan South Station (R24) on MRT Red Line, through Jieshou Road Bridge, Agongdian Bridge, and the north part of the Provincial Highway, and arrives at its terminal station, Gangshan Train Station. Features of this project include a 150 m steel bridge across the Agongdian River, and a 564 m prestressed concrete viaduct. The total length of the route is 1.46 km.



MAA's Deputy Chief Engineer Mu-Kuei Chang attended The 2022 Urban Construction Golden Quality Awards ceremony



MAA ACADEMY

“ENVIRONMENT, TECHNOLOGY, AND HUMANITIES” WORKSHOP



LECTURE 7

INFRASTRUCTURE AND PUBLIC ENVIRONMENTS / 基礎建設與公共環境

Speaker: Shu Chang *Chief Director, Shu Chang and Architects Association*

Summary: City level planning and zoning lie at the heart of any city. For a city to function properly, the city must understand and focus on three major aspects; urban aesthetics, urban livelihoods, and urban interference. Mr. Chang first presented a case study on Barcelona’s urban development history, describing some of the typical challenges faced in urban planning due to different political agendas and difficulty to implement major changes. In Taiwan and globally, society has been placing greater value on the environment, especially to reduce the potential effects of climate change. Communities are also placing greater importance on human environment interactions. In order to respond to these changes, public infrastructure needs to be resilient and adaptable. When establishing a city’s plans, its urban aesthetics, or how it should look in the future, its urban livelihood, or the industries and purposes it must cater to, and its urban interference, or how the city can adapt to new issues and challenges, must be given careful thought.

Mr. Shu Chang of Shu Chang and Architects Association provided an engaging lecture on public infrastructure and public environments. Mr. Shu Chang is a leader in urban planning and urban design and has won numerous prestigious national architectural awards.



THE BEAUTY OF A.I. / 人工智慧的人文之美

Speaker: San-Cheng Chang *Chairman, SanCode Foundation*

Summary: Big Data and Artificial Intelligence (A.I.) are key modern technologies that affect our everyday lives. In modern society, data is produced from all our actions, from mobile phone usage, driving (location data), web search engines, and social media. How to use this data to provide better services or create new businesses is a challenge that modern societies face, with artificial intelligence assisting to unlock the future. The concept of AI was established in 1956, however, it was the advancements in big data analysis, improvements in hardware, and understanding of machine learning which has allowed AI technology to improve significantly since 2014. Modern applications of AI technology are now being seen in various industries, from agriculture, self-driving vehicles, sports analysis, to even arts. With the development of AI on the rise, however, modern scholars also warn of potential issues with AI adoption, and thus modern societies must be cautious of how this tool is utilized.



Dr. Chang San-Cheng is an accomplished scholar and politician, with experience leading major technology firms including Acer and Google. Dr. Chang has a background in Civil Engineering and is a guest lecturer at several universities. He is also Executive Director for Digital Domain Holdings, a pioneer in digital and virtual art and technology.



LECTURE

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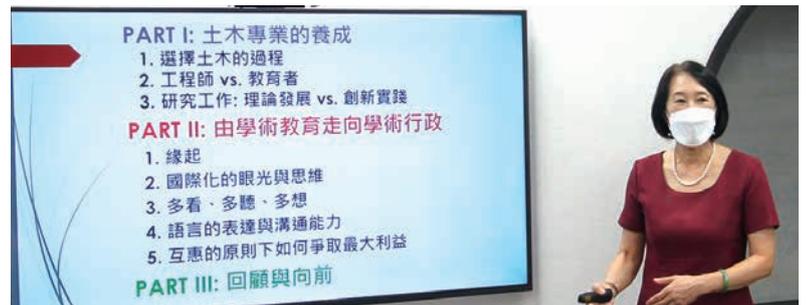
LECTURE

9

ONE INDUSTRY, MULTIPLE ASPECTS / 一份志業、多元經營

Speaker: Chia-Pei Chou *Vice President, National Taiwan University*

Summary: Civil Engineering has always been a respected field with broad potential. However, when choosing which profession to enter, Dr. Chou's passion for research and understanding the global viewpoint led her to pursue a career in academia. As an academic, Dr. Chou divides her time into education, teaching students how she would want to be taught, and research. Research for civil engineering is split into two main disciplines; theory development and practical innovations. Dr. Chou has experience in both disciplines, with a variety of development projects in fields such as VR development, airport runway analyses, dynamic loading of highways, improvement of pavement management systems, to the development of national CNS standards. Apart from academic prowess, Dr. Chou also stresses the importance of global awareness and connectivity. These may include improving communication skills and understanding to connect with the global community. By challenging the unknown and believing in their potential, Dr. Chou believes engineers will be able to achieve unlimited potential.



Professor Chiapei Chou from National Taiwan University is a distinguished professor with over 20 years of experience in academia. She has also participated in many international conferences and was a committee member in an intergovernmental workshop between Taiwan and the US on Severe Weather and Extreme Precipitation.



CASE STUDIES ON PLANNING PROJECTS / 探討都市策略項目概述

Speaker: Alexander Moh *Director, SURV*

Summary: Summary: Alexander Moh and the architectural firm SURV have accomplished many award-winning projects throughout Asia. Mr. Moh attributes a major part of his success to the ability to define each individual project's challenges and present thoughtful solutions, helping clients to truly accomplish their goals. With experience from city-sized projects down to outdoor malls and even boutique shops, Mr. Moh and SURV have the knowledge and technical competence to tackle each unique project. Mr. Moh places an emphasis on analysis, which can include a wide variety of subjects, including geography, transportation, circulation, connectivity, culture, etc. For city renewal projects, emphasis may be placed on Transit-Oriented Developments (TOD), combining transport networks into urban planning, and bringing it further with innovations in green energy and technology. Although outlying cities or areas may be facing population loss issues, focusing on local cultures and creating a branding strategy for the city integrating old cultures with innovations can revitalize the city. For regional planning, it becomes critical to not only focus on the site conditions itself and ensure various needs of the population can be met, but also on its potential interactivity with the surrounding communities and areas. For even smaller projects such as individual malls, the concept of manipulating three-dimensional space takes precedence. Careful planning of spaces can give future stores the option to lease multiple floors in the same space, allowing interconnected areas, as well as providing satisfying user experiences. Overall it is important to be able to communicate with the clients and different parties, not only to understand and accomplish their initial project goals but to go one step further and provide what they need.

Alexander Moh is a distinguished architect and director of SURV. They have partnered with numerous international architectural firms and provided services for various award-winning and iconic projects throughout Asia, with a focus in China.



LECTURE

10.1 & .2



LECTURE

11

GEARING TOWARDS SUSTAINABILITY – 2030/2050 GREEN INDUSTRIAL REVOLUTION / 邁向永續契機-2030/2050綠色工業革命

Speaker: Peter Pu *Managing Director, Northeastern Asia Region of British Standards Institution (BSI)*

Summary: In 2018, the UN warned that a climate increase of 1.5oC by 2030 would result in disastrous consequences for Earth. Since then, many nations and communities have begun taking action towards reducing carbon emissions as well as other GHG emissions to reduce the potential impact on our world. Taiwan’s National Development Council (NDC) in accordance with UN principles, announced on March 30th, 2022, its “Path to Zero Emissions in 2050”, which focused on four major sectors, including energy, industry, living, and communities. The Financial Supervisory Commission (FSC), the government agency which regulates securities markets, banking, and insurance sectors, published the “Green Finance Action Plan” to encourage investment toward companies and projects which are in accordance with the NDC’s plans. To promote green and sustainable companies, the FSC plans to develop a “Green Finance Grade” as well as “Sustainable Category Regulations” to provide a guideline for both investors and companies towards greener and more sustainable activities. Beginning in 2027, public companies in Taiwan will be required to provide GHG emissions inspections, with audits beginning in 2029, allowing for greater transparency and accountability for companies in their role toward sustainability. As public companies begin to adopt these policies, many have begun requiring their service providers or subcontractors to adhere to similar policies. Apart from greener services such as changes to transportation modes or materials for production, renewable energy has also been a major source of carbon reduction. With carbon reduction at the forefront of global issues, there is a huge potential for sustainability and carbon-neutral business.

Mr. Peter Pu is Managing Director for the Northeastern Asia Region for BSI, a global certification company. Mr. Pu is an international expert in certification as well as cybersecurity.



PREVENTING DISASTERS, GLOBALLY / 土木人的功德志業，和世界一起做防災

Speaker: Wei-Sen Li *Secretary General, National Science and Technology Center for Disaster Reduction (NCDR)*

Summary: Dr. Wei Sen Li of the National Science and Technology Center for Disaster Reduction (NCDR) gave an inspiring talk regarding the criticality of disaster prevention, and the need to collaborate with other countries. Taiwan is often hit with various natural disasters, including typhoons and earthquakes, having accumulated significant experience, as well as developed its own mitigation measures. As a leader in these fields, the NCDR hosts and attends numerous global conferences and seminars, both to share their experiences and research, and to also learn from the newest trends from the international community. The NCDR has collaborated with major institutions from around the globe, including Japan, Korea, Europe, US, and various countries in the Southeast Asian Region, sharing knowledge to enhance disaster resilience.

One of NCDR's recent successful initiatives includes promotion of Disaster Mitigation Information System Implementation and Operations in Southeast Asia, which began in 2008. Based on Taiwan's success in earthquake mitigation, NCDR assisted several countries, including Nepal, Philippines, Vietnam, etc., to develop earthquake monitoring networks, disaster information websites, as well as build capacity to improve disaster response.

Dr. Li is the Secretary General for the NCDR, having worked for the NCDR for over 18 years, and a background in academia, Dr. Li is a distinguished scholar and has represented Taiwan in many international conferences and seminars throughout his career.



LECTURE

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PROJECTS



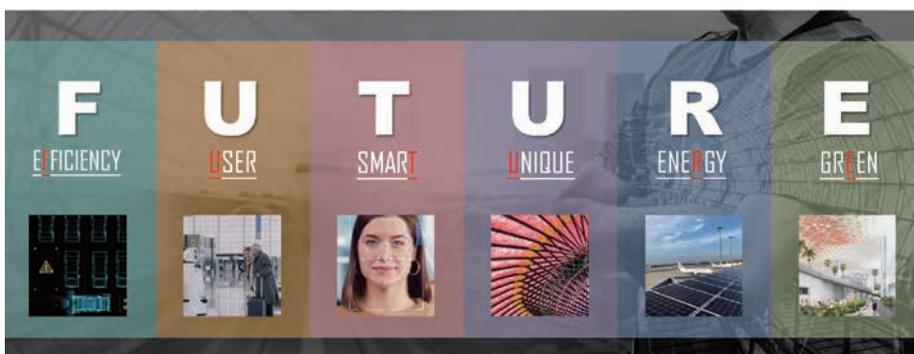
PCM FOR KAOHSIUNG INTERNATIONAL AIRPORT NEW TERMINAL PROJECT (PHASE 1)

Kaohsiung International Airport plays an important role in aviation in Southern Taiwan. During the post-pandemic era, the world is gradually lifting lockdowns, and the airport passenger volume is expected to be greater than in the pre-pandemic era. In order to meet the demand of passenger volume, as well as enhance service quality, Executive Yuan plans to build a new large centralized terminal through two phases, aiming to provide an annual capacity of 16.5 million passengers. The Phase 1 project includes the East boarding gates, the boarding halls for both domestic and international flights, the northward relocation of taxiway A, the common ducts, and a multi-storey car park. It is estimated to begin in 2025 and be completed by 2032. After construction, the new terminal will be able to accommodate 10.55 million passengers per year.



The project is one of Taiwan’s major infrastructure projects and will require close coordination and interfacing with stakeholders. One of the project’s major challenges will be to perform renovations while continuing to operate the airport. To comprehensively handle finances, schedules, and resources while coordinating an integrated communication interface, MAA, was engaged by Civil Aeronautics Administration, MOTC to provide project management services and implement the design review, tender process, tender award and construction supervision.

In order to complete the project on schedule and follow the development trend of the world's top airports during the process, MAA follows the “F.U.T.U.R.E” as its core vision, which represents six key components: “Optimizing Operational EFFICIENCY”, “Enhancing USER Experience”, “Adopting SMART Technology”, “Integrating UNIQUE Elements”, “Utilizing Renewable ENERGY”, and “Accomplishing GREEN Airport”. We strive to build a green, smart and sustainable airport, improve the overall air transportation layout, and make Kaohsiung International Airport become a pillar of Taiwan’s South Region industrial and economic development in the next 10 years.





PROFESSIONAL SERVICE OF CONTRACT MANAGEMENT FOR RECLAIMED WATER BTO PROJECT OF NORTH DISTRICT WASTEWATER RECLAMATION CENTER IN TAOYUAN (PHASE I)

In the past decades, the population of Taoyuan City has grown from 1.93 million to 2.18 million, ranking first in terms of population growth in Taiwan. Taoyuan is the number one industrial and technological city, with more than one-third of the top 500 manufacturing industries located here, and the industrial output value has ranked first for the ninth consecutive year. Recently, due to the continuous promotion of various constructions, it has attracted a large population and industries, and the use of domestic and industrial water has increased. However, affected by climate change and uneven rainfall, fewer rainy days caused severe water shortages in the dry season, which in turn affected the development of industry and commerce in Taoyuan City.





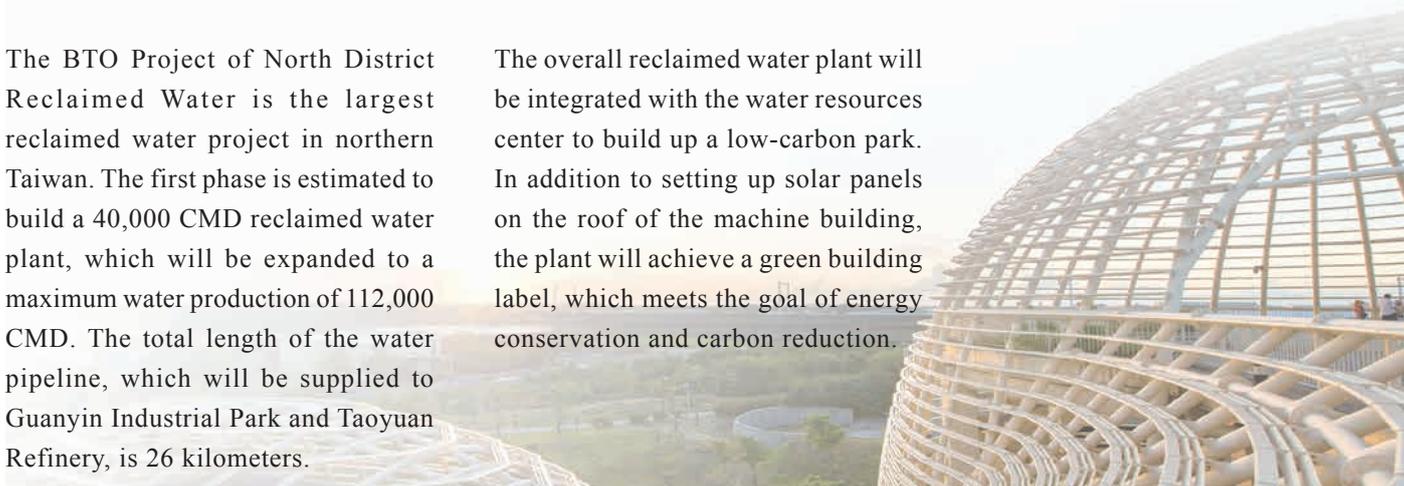
In response, Taoyuan City Government implemented the “Taoyuan City Reclaimed Water Assessment Plan” in 2016, initially planning to prioritize the reclaimed water from the north district wastewater reclamation center for use in Guanyin and Dayuan Industrial Park. After that, the government implemented the “BTO Project of North District Wastewater Reclamation Center in Taoyuan” in September 2021. The project includes the reclaimed water plant and the water pipeline construction. The reclaimed water plant is located in the north district wastewater reclamation center. The water pipeline begins from the north district wastewater reclamation center and supplies Taoyuan Refinery of CPC Corporation, Taiwan, Guanyin Industrial Park, Taoyuan Aerotropolis, and Nan Ya Plastics Co., Ltd.

The water production of the reclaimed water plant is 112,000 CMD and will be divided into three phases. The water production of reclaimed water in the first phase is 40,000 CMD, the second phase is 40,000 CMD and the third phase is 32,000 CMD. Review and expansions will be carried out based on water demand. In addition to reducing the pressure of water use to increase the flexibility of water resource dispatching in Taoyuan City, the project will enhance the stability of industrial water use, and create maximum industrial output value.



The BTO Project of North District Reclaimed Water is the largest reclaimed water project in northern Taiwan. The first phase is estimated to build a 40,000 CMD reclaimed water plant, which will be expanded to a maximum water production of 112,000 CMD. The total length of the water pipeline, which will be supplied to Guanyin Industrial Park and Taoyuan Refinery, is 26 kilometers.

The overall reclaimed water plant will be integrated with the water resources center to build up a low-carbon park. In addition to setting up solar panels on the roof of the machine building, the plant will achieve a green building label, which meets the goal of energy conservation and carbon reduction.



CONSTRUCTION SUPERVISION FOR ANKENG LRT PROJECT

Ankeng LRT started construction after Executive Yuan approved the comprehensive planning report in June 2015. In order to increase the mass transit demand for communities in Xindian and Ankeng, the LRT is connected with the Y7 station of MRT Circular Line to provide commuters with a more convenient transfer station and activate local development. The project is expected to be completed and open to traffic by 10th February 2023. The LRT would cut travel time for commuters from Ankeng to downtown Taipei or New Taipei City by 15 to 20 minutes in the future. In addition to improving the accessibility and efficiency of public transportation along the Ankeng area of Xindian, it will drive the overall development of the Ankeng area.

Ankeng LRT Project is located in the Ankeng area, Xindian District, with a total length of 7.5 km, a flat section of 3.2 km, and an elevated section of 4.3 km. There are 5 elevated stations, 4 flat stations and 1 depot. The project adopted sustainable practices such as ecology, environmental protection, carbon reduction, energy saving, waste reduction, ruggedness, landscape, and creativity, which were considered the key to sustainability issues.

“Anxin Bridge” is a long-distance railway bridge that has been installed in one of the elevated sections to connect Ankeng area on the left bank of Xindian Creek and Xidian area on the right bank. In consideration of the safety impact of reducing the pier blocking Xidian creek, the bridge



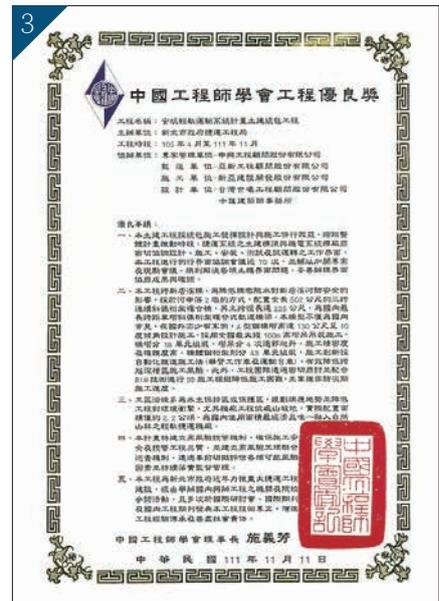
adopts an asymmetrical cable-stayed bridge design, and the cables of the main span and side spans are designed in a double-cable fan-shaped. There are only two piers within the limited embankment, which can avoid widely reducing the water flow area. The main span truss adopts the automated launching method, which effectively reduces the impact on the creek during construction. To protect the ecological environment, MAA has minimized the

impact during the construction and operation stage. The achievement of reducing carbon emissions through optimized equipment and machine management is particularly beneficial. The Anxin Bridge spanning Xindian Creek is the first single-tower cable-stayed composite truss track bridge, also the longest-span track bridge in Taiwan. Once the Ankeng LRT is in operation, it will become a highlight of Xindian riverside.



The project received the following awards:

1. Formosa 21 - Special Jury Award
2. New Taipei City Public Construction Quality Awards
3. Chinese Institute of Engineers Excellence in Engineering Projects Award



PROJECT CONSTRUCTION MANAGEMENT FOR THE CHUNGHWA POST LOGISTICS PARK

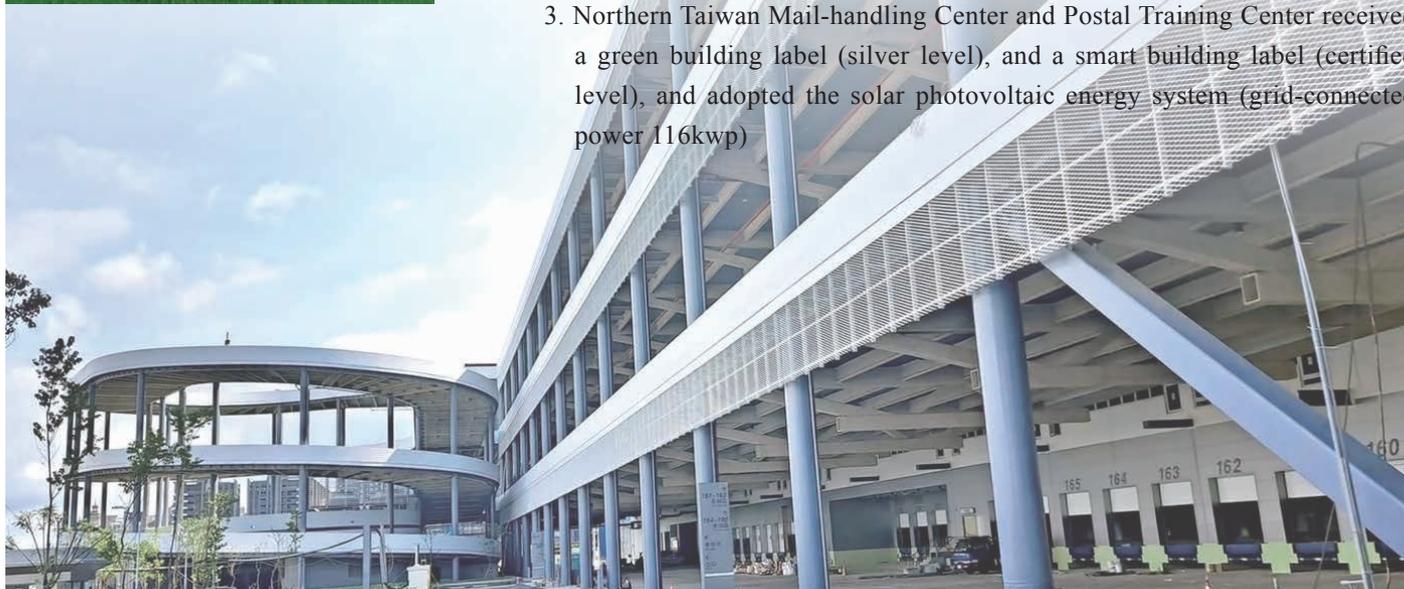
In order to promote smart logistics and move towards digital transformation, Chunghwa Post Co., Ltd built a Post Logistics Park and a logistics operation center near Taoyuan Airport MRT A7 station in Guishan District, Taoyuan City. The Park adopted the “coexistence with nature” ecological engineering method and was built with a width of 40 meters, a depth of 400 meters, and an area of more than 13,220 m², providing nearly 2 hectares of flood detention ponds, forming a natural ecological landscape.



The Post Logistics Park, with a total area of 17.14 hectares, is planned to build five buildings including a logistics center, a northern Taiwan mail-handling center, a postal information center, a postal training center and a business service center. Among them, the north Taiwan mail-handling center, the core of the park, is planned to purchase several automated facilities, such as the parcel sorting machine (PSM), robot arm (Robot), automation guided vehicle (AGV), etc., and utilize information and communication technologies, Big Data, Logistics Cloud, etc., to conduct whole-process monitoring of mail

and operation. For example, creating barcodes for addresses, package delivery with PDA, importing RFID to boxes and carts, intelligent vehicle guidance, GPS fleet management, etc. In addition, the center provides professional and high-quality logistics services by accurately grasping the flow of traffic, real-time dispatching of transportation capacity, improving management efficiency and saving labor load. Taking parcel mail as an example, it is estimated that the processing efficiency can be increased by 2.5 times compared with the current system.

Based on the demands of business transformation and the development of smart logistics, Chunghwa Post Co., Ltd has grasped international trends and built a comprehensive logistics park. In addition to improving business service quality, enhancing employment opportunities, and driving Taiwan’s economic development, it is expected to improve the environment, equipment and efficiency of Taipei Mail Processing Center, integrate with commerce flow, material flow, cash flow and information flow, and effectively connect consumer logistics, regional trans-shipment logistics and international logistics.



Project Description:

The land area of Post Logistics Park is 17.14 hectares, with a total floor area of 519,305 m².

1. Logistics Center: 1 building, with 8 floors aboveground and 1 floor underground, made of RC and SC. MAA has provided construction supervision and project management services, including the establishment of the construction site office, the construction planning, materials and equipment, and the construction interface integration. It is completed on 2nd December 2022.
2. Postal Information Center: 1 building, with 11 floors aboveground and 2 floors underground, made of RC and SRC. MAA has provided design, bidding, contract review, construction supervision and project management services, including the interview and confirmation of the client's need, the bidding procedure, the contract signing, the establishment of the construction site office, construction planning, materials and equipment, and the construction interface integration. It is estimated to be completed in late May 2023.
3. Northern Taiwan Mail-handling Center and Postal Training Center: 1 building for each, with 12 floors above ground and 2 floors underground, made of RC and SC. MAA has provided design, bidding, contract review, construction supervision and project management services, including the interview and confirmation of the client's needs, the bidding procedure, the contract signing, the establishment of the construction site office, construction planning, materials and equipment, and the construction interface integration. It is estimated to be completed on 9th May 2024.

Project Features:

1. Logistics Center received a green building label (silver level), a smart building label (certified level), and a fireproof label, and adopted wind power (90kwp).
2. Postal Information Center received a green building label (silver level), a smart building label (silver level), an earthquake-resistant label (400gal), and TIA942 RATED 3.
3. Northern Taiwan Mail-handling Center and Postal Training Center received a green building label (silver level), and a smart building label (certified level), and adopted the solar photovoltaic energy system (grid-connected power 116kwp)

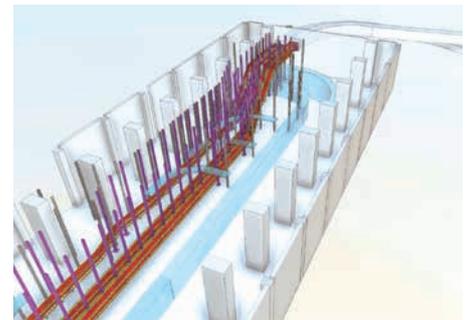
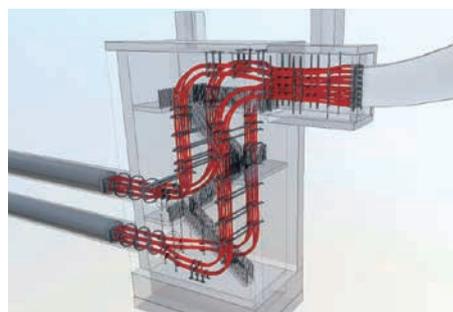
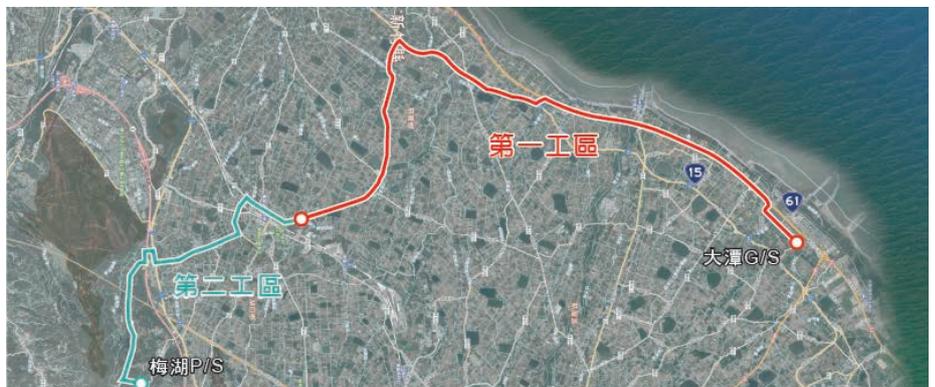
TURNKEY PROJECT FOR UNDERGROUND CABLE PIPELINE FOR 161KV POWER CABLE CONNECTING DATAN~MEIHU (FIRST CONSTRUCTION WORK AREA)

In order to improve the grid-connection capacity and power supply quality of offshore wind power in the northern region, Taipower plans to build 161kV Power Cable Connecting Datan~Meihu under the “Strengthening the Power Network with Offshore Wind Power Plan Phase I “ approved by the Executive Yuan.

This project starts from the Datan Power Plant in Guanyin District, Taoyuan City, passes by Provincial Highway No. 61, No. 15, and County Highway No. 117, and finally connects with the Second working area in Hukou Township, Hsinchu County, with a total length of 18km. MAA has provided detailed design services since July 2021 and expects to complete the project in May 2025.

ENVIRONMENTAL FRIENDLY

Energy is taken from nature. To find a balanced scheme between environmentally sustainable and providing energy at reasonable costs, Taipower has aggressively invested in development of renewable energy sources as well as implementing various environmental improvement measures. An ecological inspection was implemented in this project, and 13 eco-friendly measures were drawn up in the design stage, such as route planning along the existing roads to reduce habitat destruction; adopting the jacking method across the river to prevent sewage overflow and maintain the biological integrity.



INDUSTRIAL SAFETY TECHNOLOGY

The project established an active safety management system, which covers high-risk construction sites (such as deep excavation and jacking method), to provide two-way transmission of information in the construction site, and utilize handheld devices to manage personnel control and disaster warning to ensure construction workers’ safety.

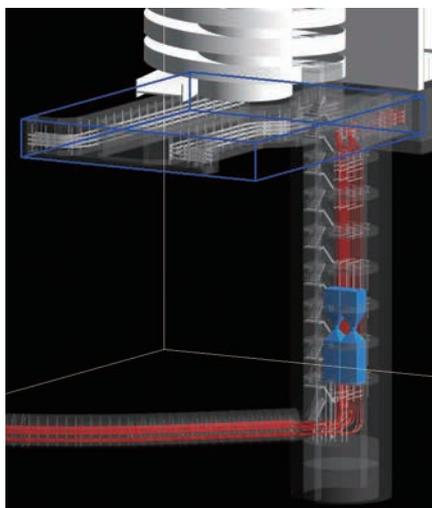
TURNKEY PROJECT FOR ZHONGSHAN D/S RECONSTRUCTION AND DAAN~ZHONGSHAN 161KV SHIELD TUNNELING

ZHONGSHAN D/S RECONSTRUCTION:

The project is to replace the existing secondary substation. The planned building consists of 12 stories aboveground and 1 story underground. The fifth floor and lower are for electrical substations. Floors from 6th to 12th are for the multi-purpose garage. The total floor area is 15,018 m².



DAAN~ZHONGSHAN 161KV SHIELD TUNNELING:



The total length of the utility line is 1.76 km with a 3.2 m inner diameter. Press-in caisson is used for two working shafts, 28.9 m and 42.5 m deep. There are 18 two-circuit cables with duplicated conductor cables with a total length of 160 m.



It's the first shield tunnel that passes through the shield tunnel of the MRT with a clear distance of 5.8 meters in Taiwan. The existing substation is rebuilt into a multi-functional substation building. In addition to being used by Taipower, it also provides parking space to the neighborhood and creates a win-win situation. The shield working shaft and shield tunnel, near the Taiwan Railway Tunnel, Taiwan High Speed Rail Tunnel, MRT Station, Metro Tunnel, and Xinsheng Viaduct construction, are challenging.

PROJECT CONSTRUCTION MANAGEMENT FOR SOUTHERN CAMPUS OF ACADEMIA SINICA

The Southern Campus of Academia Sinica is located in the industrial zone near Tainan High Speed Rail Station to meet the needs of national policies and the expansion of emerging technology development. In the future, this area plans to transform into a green energy science city. The Southern Campus project introduced the concept of living in harmony with nature and built ecological buildings and low-carbon energy-saving communities, with smart technology facilities and service systems to become a world-class smart campus.



In order to highlight the future of a sustainable environment integrated with “People, Life and Knowledge”, the Southern Campus of Academia Sinica is established with the urban green network, slow traffic, low-carbon transportation, technology and edible landscape to create a sustainable environment laboratory. The project has obtained the smart building label (diamond level), the green building label (gold level) and the earthquake-resistant label with team members’ effort.

Green buildings aim to seek green, energy saving, carbon reduction, and sustainable development, while smart buildings aim to improve the quality of life as well as energy conservation and sustainability by adopting perception technologies.

The innovations adopted are as follows:

1. The campus provides a “Green Living Room” with the image of “Agricultural Biology”, connecting the paths of various research units.
2. Building configuration combined with green building aims to have greenery scenery and separation of pedestrians and vehicles.
3. To meet the demands of Smart Green Energy Science City, as well as to maintain the characteristics of the agroecology cycle and achieve energy conservation and innovation.
4. The project adopts disaster prevention, flood detention, water conservation, rainwater recovery, and flood detention pond recycling.
5. The smart greenhouse can detect sunlight, carbon dioxide, humidity, etc., and send relevant information back to the central monitoring system to automatically adjust and save energy, creating a more humane research space

The campus meets the United Nations Sustainable Development Goals (SDGs) include: Goal 6 - Clean Water and Sanitation, Goal 9 - Industry, Innovation and Infrastructure, and Goal 11 - Sustainable Cities and Communities. The campus adopts the application of intelligent high-tech technology and products, which make the building have the active perception function to achieve safety, health, convenience, comfortable, energy saving and carbon reduction and to accelerate the specific actions of the vision of low-carbon sustainability.

MAA provides project management services and implements green building and smart building policies. In addition, MAA hired professional advisors and experts to provide consultation and guidance, gathering professional opinions as guidelines for supervision and improvement. Last but not least, MAA built a smart green campus to demonstrate the effectiveness of implementing smart green buildings.





PROJECT MANAGEMENT AND CONSTRUCTION SUPERVISION TECHNICAL SERVICE OF WENREN ANJU PUBLIC HOUSING PROJECT IN LINKOU DISTRICT, NEW TAIPEI CITY

In an effort to battle poverty and provide social housing, the National Housing and Urban Regeneration Center Project provides affordable housing to 1,065 young and disadvantaged households. MAA provides project management and construction supervision services. In line with national policies on new social housing, this project also sought to provide intelligent and

green buildings, aiming towards silver green building label and intelligent building certifications. Innovations in the building include the adoption of solar panels. To meet the needs of its potential inhabitants, the project also plans to include various public facilities, such as an elderly center, kindergarten, child care center, and others, to meet the everyday needs of the residents.

UTILITIES DATABASE AND GIS MANAGEMENT SYSTEM FOR NEW TAIPEI CITY

UTILITY DATABASE QUALITY STRENGTHENING

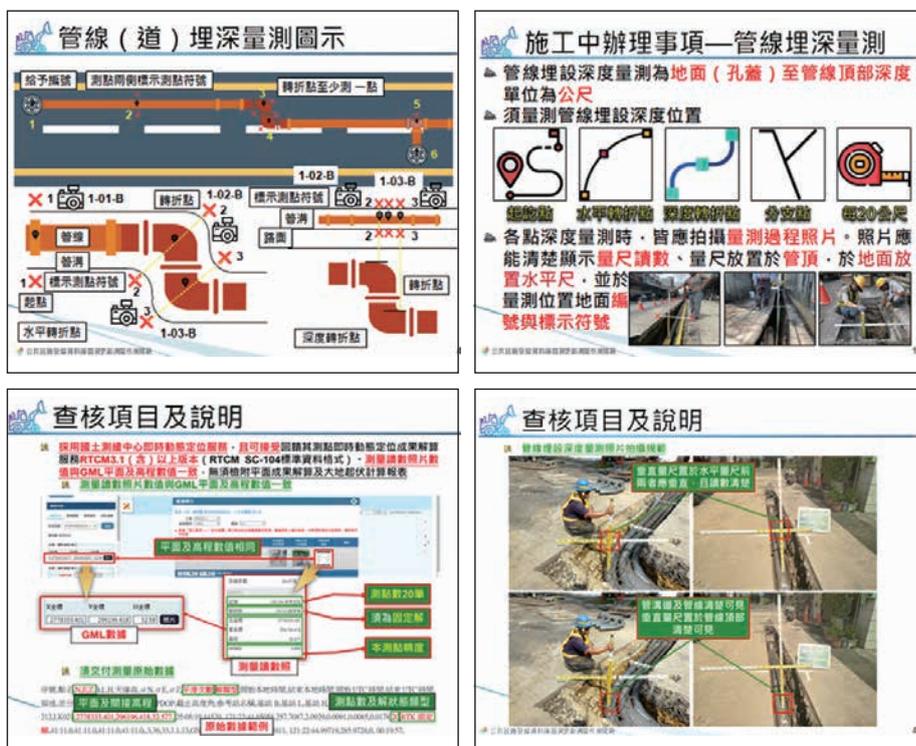
MAA was engaged by New Taipei City Government to initiate the “Utilities Database and GIS Management System Project” in 2001. The system has built up its utility database throughout the last two decades by gradually compiling investigation data, combining it with the GIS system to develop coordinated road-related management systems. By 2021, the establishment and maintenance of the utility database, such as underground, above-ground, overhead, side trench cables, etc., will be completed in 29 administrative districts of the city.

Along with the development of an accurate utility database, in recent years, MAA has assisted the government in developing “iRoad”, which improves the effectiveness of road maintenance with remote monitoring, intelligent management systems, and Big Data management models, and manages road constructions with virtual intelligence, cloud, and visualization models. iRoad combined with advanced technologies such as 3D GIS, BIM, AR, VR, AI, and IoT, and integrated roads, underground pipelines, and common conducts as the foundation for smart city management.

As the “Utilities Database” has been gradually established, in order to provide each unit with more detailed and accurate utility data, New Taipei City Government has strengthened the “Utilities Database Graphic Quality”, hoping to establish a complete procedure from external measures, internal graphics updates and review to graphics quality spot test to improve the quality of utility database graphics.

GRAPHIC DATA UPDATING STANDARD OPERATION PROCEDURES

The content of utility data is mainly divided into spatial data and attribute data. Spatial data obtains coordinate information of utilities by a theodolite or E-GNSS satellite positioning operations, while attribute data is the pipeline’s depth of cover. In order to ensure the correctness of the above information and the basis for subsequent information review, New Taipei City Government has specially formulated the “Utilities Graphic Data Updating Standard Operation Procedures” (shown in Figure 1), which makes on-site managing (supervision) staff, external measuring staff, internal graphic update staff, graphic verification staff of right-of-way agency, and quality check staff handle graphic update procedures.



(shown in Figure 1)

through the “Shallow Buried Pipeline Notification” system to handle the shallow burial improvement work for the managed cases.

The process-related information of the managed cases will be fed back to the related functions of shallow pipelines. In addition, the shallow pipeline location will also be marked in the “Track Excavation Graphic Inquiry” to provide notification of the shallow pipeline location and information. After the managed case is confirmed, the relevant information will also be returned to the competent authority.

When pipeline abnormalities such as “connection”, “inclusion”, and “crossing” occur in the display of the graphic, 3D pipeline simulation and pipeline position comparison analysis technology are used to analyze the type of conflict (connection, inclusion, crossing, conflict) to establish avoidance calculation and data correction procedures to provide solutions to the spatial data correction problem of conflicting and interlaced pipeline data (as shown in Figure 5).



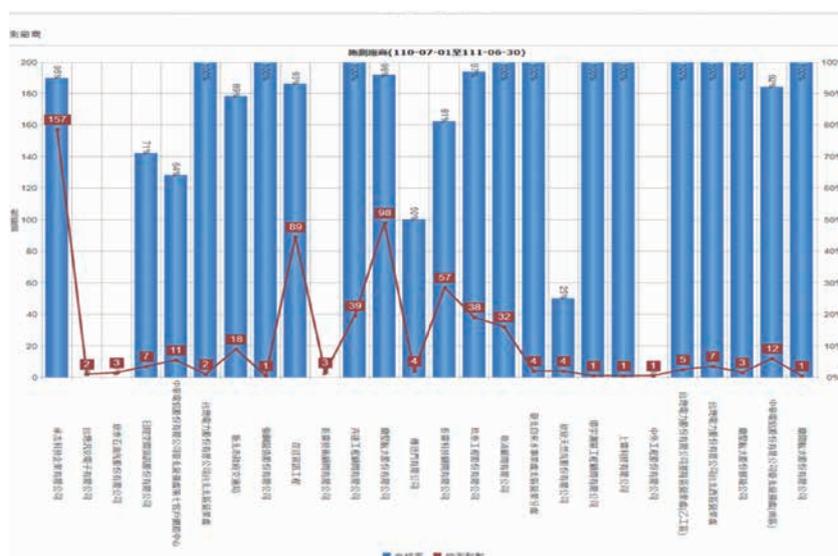
(shown in Figure 5)

SPOT CHECK AND QUALITY MANAGEMENT OF GRAPHIC UPDATING

The pipeline unit updates and uploads the case graphic, which is verified by the right of way authority, and completes the graphic update. In order to ensure the accuracy of external testing and the quality of the internal review, the client entrusted National Ilan University as a supervisor to handle the external spot tests and internal spot checks of the case in accordance with the regulations of the “Improving the quality of pipeline graphic updates (spot test and check of the case)” from Construction and Planning Agency, Ministry of the Interior.

In order to track and inquire about the improvement of the spot check progress, MAA has developed “Spot Check and Test Quality Management” to record the previous spot tests or spot checks over the years (as shown in Figure 6). The spot check and test operation records the filter conditions of each spot check and test project, the amount and list of spot check and test projects, and the review results of each case spot check and test project, and provides statistical charts for the result of each spot check and test.

MAA expects to strengthen the accuracy of pipeline unit external testing and the quality of the right-of-way agency’s internal review through the spot check and quality management to ensure and strengthen the quality of the utility database and improve the safety of road construction.



(shown in Figure 6)



DESIGN AND CONSTRUCTION SUPERVISION FOR LAND ACQUISITION FOR CHUNGLI SPORTS PARK IN TAOYUAN CITY

In order to relieve the pressure of urban development, improve regional transportation, and enhance overall efficiency, the Mayor of Taoyuan City Wen-Tsan Cheng plans to provide to develop a sports park as well as a Metro system and lay the foundation of development for the next 20 years in Chungli.

MAA helped Taoyuan City Government design the first underground detention basin and pumping station to achieve the following four major goals:

1. Plan urban flood detention space in Chungli.
2. Relieve the burden on Huangwuzhuang District.
3. Reduce the chance of flooding in the downstream area.
4. Adopt underground use of space, and provide a multi-sports park aboveground.

The underground detention basin and pumping station cover 2 hectares, with a detention clearance depth of 5.5 meters and a detention capacity of 76,900 tons. The freeboard is about 1.2~1.4 meters (based on the slope drain), and the clearance height of the structure in the pool is 6.7~6.9 meters. The project is estimated to be completed by the end of December this year and will become the largest underground detention basin in Taiwan.



DESIGN SERVICE FOR BTO PROJECT OF QIAOTOU RECLAIMED WATER IN KAOHSIUNG CITY

As part of Taiwan's effort to enhance its water supply capacity and support environmental sustainability, the Qiaotou Reclaimed Water project seeks to expand the existing sewage treatment plant to supply reclaimed water to the Nanzi Industrial Zone. The project duration includes 3-year construction and 18-year operation. The construction project includes the expansion of the sewage treatment plant (30,000CMD), while the units include a pre-treatment, preliminary sedimentation tank, biological treatment tank, Membrane Bio-Reactor Filter (MBR) and disinfection tank, improving plant efficiency and lowering costs. The reclaimed water treatment plant (30,000CMD) adopted the Reverse Osmosis (RO) process and added a boron wastewater resin tower and a membrane washing plant. The total length of the pipeline is about 12 km, with 3.2 km of the intake pipeline and 8.7 km of the water supply pipeline.



In addition, MAA provided the conceptual design of Kaohsiung New Town Sewage Treatment Plant (30,000CMD) on the reserved land. The scope of service includes the operation, maintenance, maintenance optimization, life extension, and replacement of Qiaotou sewage plant (including interception facilities), and the operation, maintenance, and replacement of the reclaimed water treatment plant (including intake and water supply pipelines).

TURNKEY PROJECT FOR FUTIAN WASTEWATER REUSE PLANT IN TAICHUNG

In the face of climate change and its impact on water resources, the government is pushing for wastewater reuse in urban areas. The reclaimed water from this plant is mainly planned for Taichung Harbor Industrial District and aims to reduce the overall water scarcity for water consumption in both industrial and domestic sectors in Taichung. The plant is expected to provide 105,000 CMD of water after treatment.



The scope of the project covers the construction of preprocessing facilities, and water pipelines inside and outside the industrial district. The preprocessing treatment facility is planned to be

located on the east side of the plant, which covers an area of 0.6 ha. The total length of the water pipeline outside is 29 km, starting from Futian Wastewater Reuse Plant, along the levee road to the south side of Zhongnan 2nd Bridge. The total length of the water pipeline inside is 280m, buried along Zhongnan 1st Road inside Taichung Harbor District.

LARGE-SCALE SLOPE EVALUATION AND SAFETY ASSESSMENT FOR TAIWAN HIGH SPEED RAIL PCDL-21-0292

In recent years, under the impact of extreme weather, changes in geology and groundwater have affected the safety of railway construction, especially the instability of large-scale slopes along the track, which could affect the safety of Taiwan High Speed Rail operations. Traditional slope monitoring is based on point displacement monitoring data, setting GPS points, inclined pipes or displacement meters at specific locations for point monitoring. However, there is a lack of large-scale collapse monitoring, and these monitors are mostly set within the project range. The external slope displacement or the premonition of collapse and sublimation cannot be detected in time. Even if the displacement is detected within the monitoring range, it is not easy to investigate the possible displacement range, which will consume huge costs and time. Therefore, it is necessary to apply new technologies to investigate large-scale surface deformation. Large-scale slope evaluation can make up for the limitations or insufficiencies of existing monitoring instruments and grasp the further impact on slopes from the large-scale surface deformation, avoiding slope failure along National Freeway No. 3 occur. It is expected to establish the preliminary investigation and early warning function.

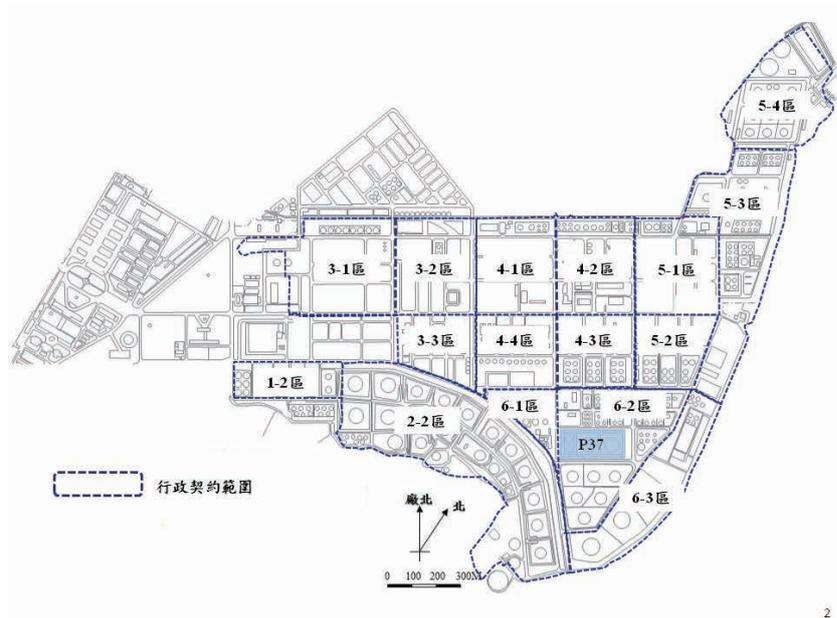
Large-scale slope evaluation integrated radar satellite imagery InSAR surface deformation analysis, GNSS multi-period surface displacement measurement, LiDAR topography, 3D model and surface geology investigation, compared with slope monitoring data, and evaluated the overall slope safety with a 3D geological model, and develop an early warning system for slope hazards.

Satellite imagery InSAR surface deformation analysis is active telemetry, with a longer radar wavelength, that can penetrate clouds and fog layers. It can be observed regardless of the weather day and night and can perform large-scale observations, with large-scale and multi-time series. During monitoring landslide disasters, it can be applied to the interpretation of new landslides, or to observe the dynamic changes of deformation and activity of potential landslides by using surface displacement, to assess the risk of slope damage and provide information on the prevention of landslides in advance.



POLLUTION REMEDIATION ASSISTANCE FOR GENERAL CONSULTANCY FOR KAOHSIUNG REFINERY DISTRICT

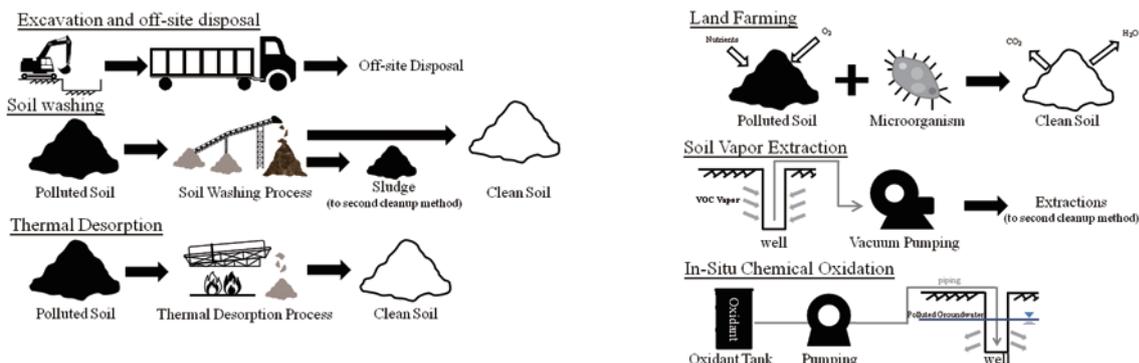
Previously the location of the Kaohsiung Refinery, the Bureau of Public Works of Kaohsiung City and CPC Corporation, began the implementation of the “Improvement of Soil and Groundwater Contamination in Kaohsiung Refinery District” on May 13th, 2021. The main goal of the project is to accelerate the removal of contaminants in the soil and groundwater to meet the standards of the Soil and Groundwater Pollution Remediation Act and allow the area to be deregulated by 2025. MAA provides remediation consultancy services for phases 2 and 3, which cover an area of 135 hectares.



In addition to establishing a Remediation Project Management Platform (as shown below) to carry out project management operations, the project established a Situation Center to review the on-site supervision status of each district at any time and to compile the document review.



The project started the pollution remediation in the third area on 1st September 2021. After the site condition assessment, the soil washing, bioremediation, thermal desorption and off-site soil of off-site treatment method (for excavation) as well as soil vapor extraction and in-situ chemical oxidation of onsite purification have been implemented. The pollution status of this district has been improved after the relevant construction methods have been remediated. The soil part has been deregulated by the Environmental Protection Bureau on 28th March 2022; the groundwater part has been reviewed and finally verified by the Environmental Protection Bureau, and deregulated on 31st May 2022.



PROFESSIONAL ACTIVITIES

MOU WITH NATIONAL CENTRAL UNIVERSITY

NCU has cultivated many outstanding engineering talents over the years in Taiwan, while MAA is a leading Asian architecture and engineering consulting service provider with 1200 people in the East and Southeast Asian region focused on the areas of infrastructure, land resources, environment, buildings, and information technology. On 23rd November 2022, MAA and National Central University (NCU) signed a Memorandum of understanding in the hope of integrating theory and practice through the internship program. Based in Taiwan, MAA upholds an international vision, cultivates talents, and leads students to go deep into engineering practice.

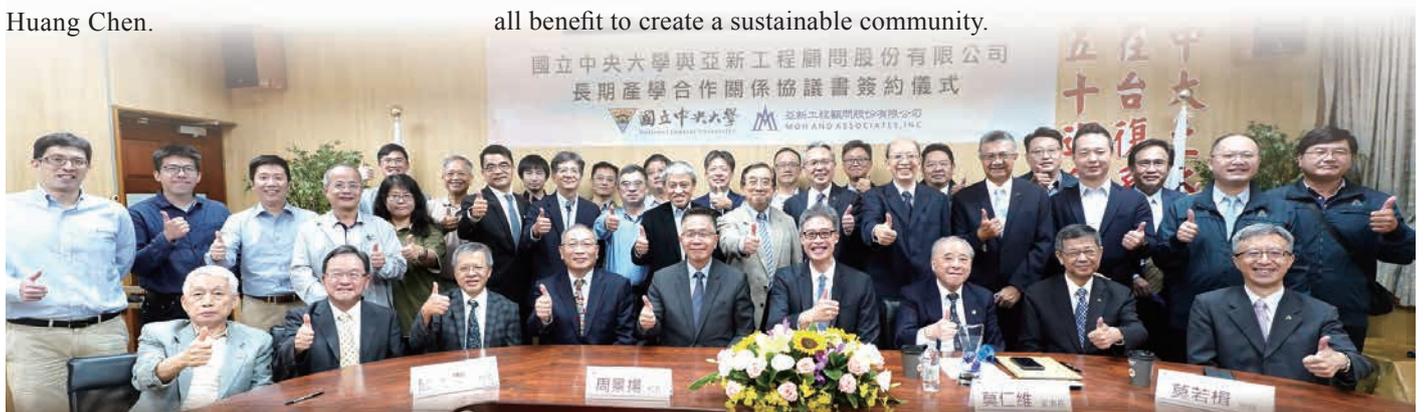
The signing ceremony was held in NCU with many attendees, including MAA’s Non Executive Chairman Dr. Moh, Chairman Richard Moh, Vice Chairman Chung-Cheng Kao, President Chen-Hui Hsieh, Senior Vice President Travis Chien, Senior Vice President Ting-Chiun Su, Senior Vice President Shi-Chang Huang, NCU’s Vice President Shang-Yao Yan, Emeritus Professor Chien-Chung Li, Emeritus Professor Jhih-Dong Lin, Emeritus Professor Hui-Wen Chang, Vice President for General Affairs Jyh-Bin Yang, Dean of College of Engineering Shu-San Hsiao, Professor Wei-Ling Chiang, and Professor Shih-Huang Chen.



NCU President Jing-Yang Jou (left) and MAA’s Chairman Richard Moh (right) at the signing



By signing the MOU, MAA will cooperate with NCU to establish its Capstone course and promote inter-industry-academy collaboration through internship and research projects, guiding students through their research and helping them determine their future career paths. Through these efforts, the students, universities, and enterprises all benefit to create a sustainable community.



MAA’s management team at the signing



MAA's management team at the signing

MOU WITH NATIONAL YANG MING CHIAO TUNG UNIVERSITY

On 22nd November 2022, MAA and National Yang Ming Chiao Tung University (NYCU) signed a Memorandum of understanding.



NYCU President Chi-Hung Lin (right) and MAA's Chairman Richard Moh (left) at the signing

NYCU President Chi-Hung Lin believes that NYCU is the most comprehensive, historical and representative institution of higher education in Taiwan, upholding great responsibilities of academic research and education. NYCU includes 19 colleges including the College of Engineering, College of Humanities and Social Sciences, College of Biological Science and Technology, International College of Semiconductor Technology, College of Electrical and Computer Engineering, College of Management, and College of Medicine. In order to cultivate professional engineering talents, develop new technologies and research patents, and collaborate between industry and academy, NYCU and MAA will jointly implement the internship program and practical training, and integrate the excellent young engineers.

MAA's Chairman Richard Moh believes in the close bond between MAA and NYCU which has developed over the years. Many of MAA's employees are alumni of NYCU, and MAA has a longstanding scholarship program with NYCU. In addition, MAA is a leading engineering and consulting service provider in the East and Southeast Asian region focused on the areas of infrastructure, environment, buildings, land resources, and information technology. In recent years, MAA has been a great supporter of sustainable development in engineering design. While improving the quality of projects, MAA is engaged to achieve a balanced development of "Environmental Conservation", "Economic Development" and "Social Justice". Moreover, MAA's core value includes "Sustainability, Digitalization and Innovation". Through the industry-academy cooperation, MAA utilizes technology to develop new materials and construction methods, which will enhance the digitalization capabilities and achieve sustainable development of engineering technology, create job opportunities for outstanding students from NYCU, and jointly contribute to engineering development in Taiwan.

CEREMONY OF SIGNING THE MEMORANDUM OF UNDERSTANDING BETWEEN ASIA INSTITUTE OF TECHNOLOGY AND NATIONAL SCIENCE AND TECHNOLOGY CENTER FOR DISASTER REDUCTION



National Science and Technology Council (NSTC) continually promotes smart disaster prevention, accelerates international exchanges and cooperation in disaster prevention technology, and enhances the disaster resilience of international partners. With the guidance and support of NSTC, National Science and Technology Center for Disaster Reduction (NCDR) adopts technological research and development results and industry-government-university cooperation to advance efforts for disaster prevention and hazard mitigation in Taiwan. Natural disasters frequently occur in the Asia-Pacific region, and it is critical to combine the efforts of the various research institutions to determine the best disaster prevention and hazard mitigation measures. Asian Institute of Technology (AIT) has had a close interaction with NCDR on disaster prevention and hazard mitigation issues in recent years, and both parties agreed to sign a Memorandum of Understanding (MOU).

On 17th November 2022, NCDR’s Director Hong-Yu Chen and AIT’s President Kazuo Yamamoto signed a Memorandum of Understanding in witness of NSTC’s Vice Minister (also NCDR’s Chairman) Tzong-Chyuan Chen and AIT’s Deputy Chairman of Board Dr. Moh.

Director Chen and President Yamamoto indicated that they look forward to cooperating to improve the capability of scientific research on disaster prevention and promote technological innovation in disaster prevention. Vice Minister Chen emphasized that NSTC will continually promote regional cooperation and experience sharing on



MAA’s Non Executive Chairman Dr. Moh (left 2) and Chairman Richard Moh (left 1) attended the ceremony of signing MoU

disaster prevention and enhance the disaster resilience of our country and international partners to cope with composite disasters resulting from extreme weather.



ANKENG LRT SITE VISIT

On 15th April 2022, Students from the Department of Civil Engineering, National Yang Min Chiao Tung University visited the site as a part of the off-campus internship program to provide students with on-site experience and demonstrate practical applications of civil engineering knowledge and expertise.

The 7.5km Ankeng LRT in Xindian, New Taipei City is under construction and scheduled to launch in 2022. The line will shorten the commute time between Taipei City and New Taipei City. MAA provides construction supervision services for the project.



MAA's Project Manager of Ankeng LRT Construction Supervision Han-Ting Lo (right) received a letter of appreciation from NYCU



BEAM RAISING CEREMONY FOR PROJECT MANAGEMENT FOR TAICHUNG CITY CULTURAL CENTER

To celebrate Taichung’s cultural industry after the merging of Taichung City and Taichung County, Taichung City Government is planning a new cultural park in the Gateway City district. Named the Taichung City Cultural Center, it will include a public library and a fine arts museum, combining art, education and recreation in a single location. Besides serving their public functions (reading, guided tours, exhibitions), the two institutions will also fulfill policies and objectives related to reading promotion, artistic development and collection and research of artifacts. These facilities will be tasked with integrating the resources of Taichung’s branch libraries and art exhibition spaces to improve the city’s cultural services and facilities.

On 11th May 2022, MAA’s Manager of the Central Taiwan office Chi-Chieh Huang attended the beam raising ceremony.



Taichung City Mayor Shioh-Yen Lu gave a speech at the beam raising ceremony for project management for Taichung City Cultural Center



BEAM-RAISING CEREMONY FOR PCM SERVICE OF THE DEVELOPMENT OF PARCEL NO. 15 OF JINMAO SECTION IN NANGANG DISTRICT, TAIPEI

Taiwan Life Insurance Co., Ltd. was awarded a 45-year land lease for the No. 15 parcel of Jingmao Section at Nangang District, Taipei on 15th December 2015. This development plans to include hotels, as well as office space and commercial retail areas. This project is expected to become the new major commercial complex of east Taipei and plans to provide up to 50,000 additional job opportunities.



MAA was selected to provide general consultancy and PCM services for this project. The total floor area of the project is around 400,000 m².

On 17th March 2022, MAA’s Chairman Richard Moh attended the beam-raising ceremony.



MAA’s Chairman Richard Moh attended the beam raising ceremony for PCM service of the development of parcel no. 15 of Jinmao section in Nangang district, Taipei



BEAM RAISING CEREMONY FOR TURNKEY PROJECT FOR SANXIA YOUTH SOCIAL HOUSING CONSTRUCTION (PHASE II)

The development of youth social housing is to alleviate high housing prices and serve as a remedy for housing inequality for minorities. The building is for rent only and its design encompasses concepts of green building, universal design, and smart community.

On 31st October 2022, MAA’s SVP of Building & Facilities Group Ta-Hsing Lee attended the beam raising ceremony.



MAA’s SVP of Building & Facilities Group Ta-Hsing Lee (right 4) attended the beam raising ceremony for turnkey project for Sanxia youth social housing construction (phase II)

BEAM RAISING CEREMONY FOR PUBLIC HOUSING CONSTRUCTION PROJECT OF SITE A & B AT LIUZHANGLI CAMP IN TAIPEI CITY



In order to alleviate high housing prices in the metropolitan area, Taipei City Government has implemented housing justice and promoted social housing policies to build public housing on sites A and B at Liuzhangli camp.

The project consists of 6 buildings in sites A and B, with a total of 722 units. The highest building is 22 stories above ground. In addition, it provides relevant social welfare facilities, such as a public childcare center, a multi-functional care center, environmental protection department, a community center, etc., to create a multi-functional smart public housing community. In response to energy saving and carbon reduction and integrating the ICT industry to enhance smart life services, the buildings are designed and constructed based on the standards of intelligent green building labels (silver level). The project is expected to be completed on 20th July 2023.

On 15th August 2022, MAA’s Manager of Project & Construction Management Department I Kuo-Hsiung Chen attended the beam raising ceremony.



GROUNDBREAKING CEREMONY FOR PCM AND CONSTRUCTION SUPERVISION FOR ELDERLY CARE MEDICAL AND HEALTHCARE RESEARCH CENTER



The advance of medical science, rising life expectancy and declining fertility and death rate have resulted in population aging. “Long-term Care 2.0” was established to create a basic community-based healthcare service. Located in National Taipei University, Yunlin Campus, the project aims to build an elderly medical center, at the 54 ha site, to support the “Long-term Care 2.0” program. The RC building is 6 stories aboveground and 2 stories underground, with slope open cut method applied. The facilities include an international conference room, gym, library, recovery room, experimental hospital beds, medical center, etc. The outdoor landscape includes ornamental grasses, a garden, an ecological pond, and other greenscapes. Red bricks are used to complement the environment on campus. The building plans to achieve the gold green building standard. AIoT is installed as a core



MAA’s SVP of Construction Supervision and Management Group Shi-Chang Huang (right 2) attended the groundbreaking ceremony for PCM and construction supervision for elderly care medical and healthcare research center

operating system for the smart medical system; BEMS building energy system to regulate the electricity and AC system to achieve a sustainable approach.

On 15th August 2022, MAA’s SVP of Construction Supervision and Management Group Shi-Chang Huang attended the groundbreaking ceremony.

GROUNDBREAKING CEREMONY FOR TURNKEY PROJECT FOR TAOYUAN AEROTROPOLIS LAND ACQUISITION LOT C & D



MAA's SVP of Engineering Design Group Ting-Chiun Su attended the groundbreaking ceremony for turnkey project for Taoyuan aerotropolis land acquisition lot C & D

Home of Taoyuan International Airport, Taoyuan City is an important transportation hub in Taiwan. As one of the fastest-growing cities in Taiwan, the Taoyuan Aerotropolis is planned to attract retailers and international talents and become a focal point in Northern Taiwan..



Lot C1 is part of the “Taoyuan Aerotropolis Zone Expropriation Project”, which is divided into 10 lots. The 120.59 ha. lot is divided into 42.4 ha. priority zone (North side of W Zone, BD Zone, BR-B3 bridge) and the 78.19 ha. non-priority zone area (including BR-B4 bridge, BR-E2 bridge) and the construction will be carried out in 2 phases. The constructions in this project include earthwork, road, drainage, bridge, water supply, sewage, wastewater, common duct,

transportation, geotechnical, lighting and mechanical, and landscaping constructions. MAA is responsible for construction supervision for the entire zone, and PCM and detailed design consultancy for the non-priority area.

D2 Lot is located on the north side of the Aerotropolis’s planning district, with an area of 209.12 ha., including Priority Zone E and Z (68.9 ha.). At its western end, it is bounded by the right bank of Puxin River, which includes

Priority Zone E, Road 1-1-60M, and Priority Zone Z. The south side is adjacent to Lot A1 and A2. MAA provides construction supervision for the entire lot and detailed design consultancy for the non-priority zones.

On 29th April 2022, MAA’s SVP of Engineering Design Group Ting-Chiun Su attended the groundbreaking ceremony.



GROUNDBREAKING CEREMONY FOR DETAILED DESIGN PROJECT (DF116) OF CIRCULAR LINE NORTH SECTION OF THE TAIPEI METRO MASS RAPID TRANSIT SYSTEM

The radial design of the Circular line is to provide more efficient and budget-friendly transfers. This project is a part of the Circular line and will be the first fully automatic driverless rapid transit system on steel rails in Taiwan, with a medium-capacity transit system. The trains pass through the New Taipei City districts of Xindian, Zhonghe, Banqiao, and Xinzhuang, with a total length of this line of 6.41 m. CECI Engineering Consultants and MAA partnered for this project. MAA is responsible for the civil engineering, structural engineering, and geotechnical engineering design services for the following: daylighting section (334 m), Y19A Station (177 m), Y19A to Y19B tunneling shields (1,202 m), Y19B Station (184 m), and electrician design and general consultancy for Y19A Station.

On 3rd March 2022, MAA's SVP of Engineering Design Group Ting-Chiun Su attended the groundbreaking ceremony.



GROUNDBREAKING CEREMONY FOR PROJECT MANAGEMENT AND CONSTRUCTION SUPERVISION FOR TAOYUAN ARMED FORCES GENERAL HOSPITAL NEW MEDICAL BUILDING

Having been in service for 20 years, this project will proceed to rebuild the armed forces general hospital, providing improved facilities to better serve its purpose. The construction will consist of a 7-story and 1 basement building, and a 4-story power center with a parking tower.

On 25th March 2022, Eng. Mu-Chun Yeh attended the groundbreaking ceremony.



Taoyuan City Mayor Wen-Tsan Cheng gave a speech at the groundbreaking ceremony for project management and construction supervision for taoyuan armed forces general hospital new building

GROUNDBREAKING CEREMONY FOR PROJECT MANAGEMENT FOR LAND REZONING IN YONGKANG AND NORTHERN DISTRICT, TAINAN CITY



MAA's SVP of Construction Supervision & Management Group Shi-Chang Huang attended the groundbreaking ceremony for project management for land rezoning in Yongkang and Northern district, Tainan City

Tainan County and Tainan City have consolidated into one municipality during the government reform in 2010. As a result, Annan and Yongkang District, which was originally located in the border area of Tainan City, became the center of urban development. In addition, the Southern Taiwan Science Park has been attracting

population growth and housing demand in Annan and Yongkang Districts. This project includes landscaping, public construction, and public housing construction for the rezoning of the Annan, Yongkang, and Northern Districts. The project covers an area of 5 districts, with a total area of 62.62 ha. The scope of services includes project management and consultancy services for embankment, land leveling, drainage, road, transportation, common duct, and public utility works.

On 3rd November 2022, MAA's SVP of Construction Supervision & Management Group Shi-Chang Huang attended the groundbreaking ceremony.

2022 NATIONAL COLLEGE CREATIVE ENGINEERING IDEA COMPETITION

National College Creative Engineering Idea Competition was started by MAA's Chairman Richard Moh in 2014, aiming to encourage college students to develop innovative ideas and knowledge inheritance. The objectives of the competition are to promote interdisciplinary development, innovative ideas, hands-on experiences, and collaboration between professionals and students. It is hosted by Chinese Institute of Civil and Hydraulic Engineering (CICHE), The Chinese Association of Engineering Consultants (CAEC), and Institute of Engineering Education, Taiwan (IEET).

This year marked the 8th year of hosting the Competition. Over 15 teams with 78 students participated. MAA's Yuan Sheng Lin was the President of the Competition, with top-notch professionals from the engineering industry invited to participate as judges. This year's theme is "Carbon-Free Construction starts with us". 15 teams initially qualified in July, with 7 teams entering the second round in November. The top 4 teams were selected on 2nd December 2022. The award ceremony was held on 27th December 2022. The detailed information on the top 4 teams is as follows:



GOLDEN AWARD

Team Name: Tanjirou

Project Theme: Microalgae Your Style

Project Description: The exhaust emission of the parking lot and the feces from the septic tank of the rest area are used by microalgae with Microalgae-Based Carbon Fixation in order to reduce the main source of carbon emissions at the rest area.



SILVER AWARD

Team Name: Needless to say, it must be the thumb. if it is not the thumb, it must be the thumb

Project Theme: Green Magic Forest Life

Project Description: Utilize BIM technology and precast method, replace traditional steel rebar with fiberglass rebar, replace traditional concrete with Geopolymer Concrete, and replace traditional concrete walls with CLT to achieve the benefits of carbon reduction.



BRONZE AWARD

Team Name: Happiness issss a friend

Project Theme: Seeking Nothing but Coating in Asphalt. New Plastics Economy, Embodied Carbon Reduction in Construction

Project Description: Use waste coating instead of cementing material in asphalt to improve the performance of asphalt concrete, reduce the frequency of road paving and maintenance works, and achieve the effect of reducing the amount of asphalt.

Team Name: Technology Includes BIM

Project Theme: Establishing the circular design process of the bank which integrates its material with BIM.

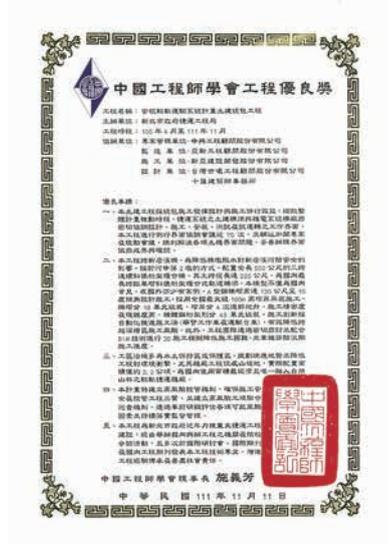
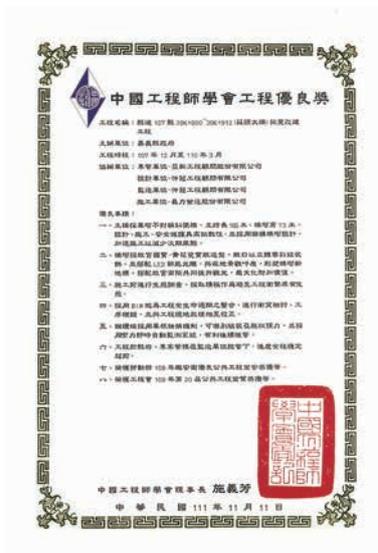
Project Description: Adopt modular design and precast elements, and establish a “Material Passport” regulation for architectures to achieve the goal of circular economy buildings.



PROFESSIONAL AWARDS/HONOR

EXCELLENCE IN ENGINEERING PROJECTS AWARD - CHINESE INSTITUTE OF ENGINEERS

On 11th November 2022, MAA received the Excellence in Engineering Projects Award from the Chinese Institute of Engineers for Project Construction Management Services of County Road 157 line 29K +800 ~ 30K +759 Widening Reconstruction (Suan Tou Bridge).



PERFORMANCE AND EVALUATION FOR TAOYUAN METRO GREEN LINE

In April, MAA received an outstanding award from the Department of Rapid Transit Systems, Taoyuan City Government for Taoyuan MRT Green Line.



LETTER OF APPRECIATION



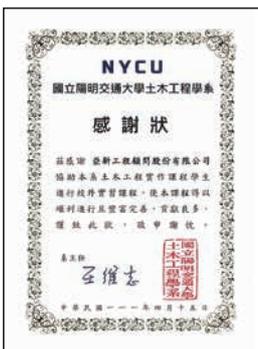
On 3rd May 2022, MAA received a letter of appreciation from Occupational Safety and Health Administration, Ministry of Labor for the 16th Public Construction Safety Golden Awards Observation Seminar.



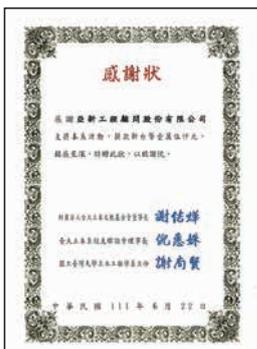
On 22nd July 2022, MAA received a letter of appreciation from the Organizing Committee of SCEM 2022 for its contributions to The 26th Symposium on Construction Engineering and Management.



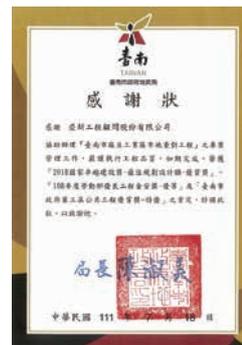
On 11th November 2022, MAA received an appreciation trophy from Chinese Institute of Engineers (CIE) for preparing and organizing the annual joint conference of CIE.



On 15th April 2022, MAA received a letter of appreciation from National Yang Ming Chiao Tung University for the off-campus internship program.



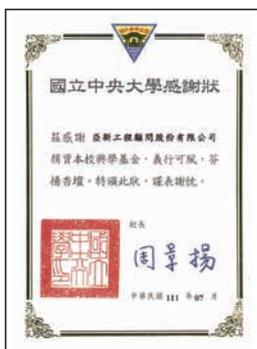
On 22nd June 2022, MAA received a letter of appreciation from National Taiwan University for supporting its activities.



On 18th July 2022, MAA received a letter of appreciation from Bureau of Land Administration, Tainan City Government for project management of Matou Industrial Zone.



On 10th June 2022, MAA received a letter of appreciation from Chinese Taipei Tunneling Association for its contributions to society.



In July, MAA received a letter of appreciation from National Central University for donating its scholarship.



In July, MAA received a letter of appreciation from National Penghu University of Science and Technology for the off-campus internship program.

SEMINARS AND CONFERENCES

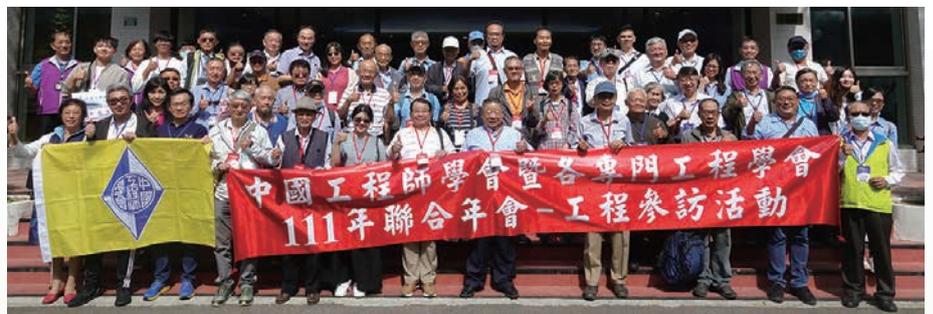
IN THE TIME OF FLOWING RIVER WHERE THE HEART OF ENGINEERS REMAINS THE SAME AS IN THE VERY BEGINNING

The annual joint conference of Chinese Institute of Engineers (CIE) and specialty engineering associations was held in Taichung, Taiwan, on 11th November 2022. Four technical tours were arranged on 10th November with the destinations to the project sites of Central Taiwan Branch of National Chung-Shan Institute of Science and Technology, Taichung Central Park, Taichung Public Library, and Taichung International Conventional and Exhibition Center.

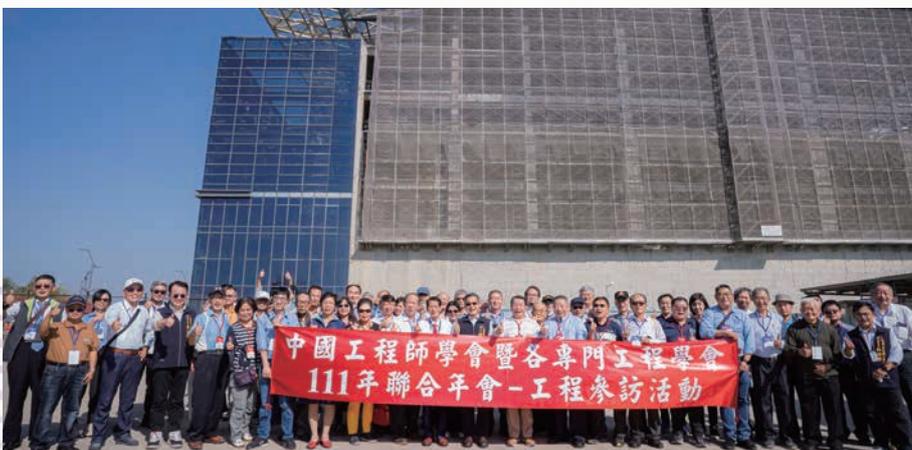
The chairman of Moh and Associates, Inc. Mr. Richard Moh was invited as the chair of organizing committee and the Moh and Associates, Inc. took charge of the preparation and organization works for the conference. In association with the vision 2031 on strategic development declared in CIE white book, the theme of the Conference was set up to be “In the time of flowing river where the heart of engineers remains the same as that in the very beginning”.



Project site of Taichung Green Museumbrary



Group photo of Technical tour



Group photo of Technical tour



Project site of Taichung International Conventional and Exhibition Center



Glorious Arch



The motif of the conference is “river” which symbolizes constant and never stopping flow of transmitting and inheriting the responsibility and commitment to the earth from engineers of generation after generation. It is expected the activities initiated by the conference can motivate the big engineering family to continuously sharpen their mind by thinking about the past, to explore the causes of climate change and its impacts nowadays, and to cultivate insight on sustainability and smart technology for the future. As year 2022 is equivalent to Taiwan year 111, the date on which the conference was held can also be expressed by seven number ones with Arabic numerals. To strengthen the impression, seven distinguished features were incorporated into the activities or events in the conference.

1. CIE 2031 Vision: The theme of Conference, topic of keynote lecture, contents of exhibition, program of technical tour, and image of souvenirs are all planned or designed in accordance with CIE 2031 vision which includes:
 - To build a platform for integration of the activities and enhancement of the interactions among enterprises, government agencies, universities, and institutes.
 - To become the pilot think tank for engineering development for the nation.
 - To become the driving force for sustainable development for the nation.

2. Interaction opportunities: The events such as reception, break, or technical tour in the conference were designed to provide opportunities for participants to communicate and interact vertically and horizontally with each other.
 - Vertical: The conference intended to provide interaction opportunities for participants among senior generation, mid-age generation, and young generation.
 - Horizontal: The conference also intended to provide interaction opportunities for participants such as awardees of this and past conferences, engineers among interdisciplinary areas, enterprises, government agencies, universities, and institutes.

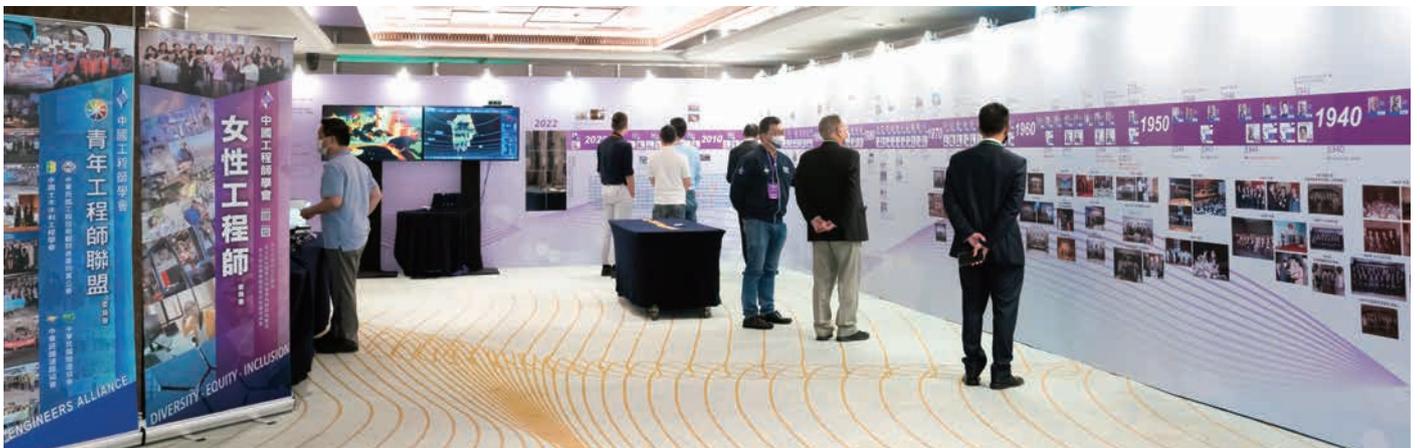




MAA's Chairman Richard Moh (right 2) performed Qiji Daoyin in the opening ceremony performance



Qiyuan Chamber Orchestra in the opening ceremony performance



Time corridor space

3. Engineers in conference preparation and performance act: Young engineers and female engineers were invited by the organization committee to join the preparation for the conference. Engineers were provided the opportunities to play an important role with their art talent and humanistic literacy in the opening ceremony performances including the Qiji Daoyin, a life nourishing exercise originated in Taiwan, and string quartet.
4. Time corridor space: History of CIE along with records of epoch making engineering projects in Taiwan was demonstrated with the idea of time corridor. Purposes of the time corridor exhibition were to inspire new generation engineers continuing to make effort in promoting the status of Taiwan in the world and commit to creating new milestones in the future.

Cases exhibited in the time corridor included:

- Chronological list of CIE presidents and Engineering Medal awardees.
- Chronological list of the recipients of excellent young engineer award.
- Curated selection of the photos of CIE activities at home and abroad
- Significant engineering projects having completed in Taiwan
- Milestones for engineering and industrial development in Taiwan
- Optical technology for the future.





Group photo of Opening Ceremony

Through the exhibition, it is expected that, by retrospective on the past, engineers are reminded that their mission remains the same as that in the very beginning. By exploring on what is happening now, engineers realize impacts of climate change and irreversible damages to the earth if efforts are not done enough and in time. Also, by cultivating hindsight on the future, engineers may find solutions for the great aims of sustainability.



Dr. Chia-Wei Lee delivered the keynote lecture

5. Keynote lecture: Keynote lecture delivered by Dr. Lee Chia-Wei, professor of Tsing-Hua University, was to provide a different way of thinking for engineers from the aspects of biology, ecology, and life science.
6. Live-stream of the conference: The joint annual conference was live-streamed on the CIE facebook for members who were not able to attend the event physically.
7. Photo booth: A photo booth was setup in the reception area of the venue with professional photographer arranged to take photos for the invited guests and participants. A service of instant photo print was also provided.

With the presence of about 490 participants in the conference and 66 participants in the technical tour, all the planned features were successfully delivered and carried out. The 2022 annual joint conference was considered a complete success.

INTERNATIONAL FORUM ON CROSS-SEA BRIDGE ENGINEERING

In order to improve civil engineering to be in line with new international standards, on 18th December 2022, China Engineering Consultants, Inc. held the “2022 International Forum on Cross-sea Bridge” at the GIS MOTC Convention Center to discuss the design, planning, construction, and maintenance of cross-sea bridges. MAA’s Chairman Richard Moh was invited to be a host to this prestigious event. The forum adopted both physical and online meetings, with more than 300 professional and academic participants.



MAA’s Chairman Richard Moh (right 1) attended International Forum on Cross-Sea Bridge Engineering

In addition to the participation of Taiwan’s experts, the forum invited Dr. Bijan Khaleghi, Bridge Design Engineer of Washington State DOT, USA, Dr. Katsuji HASHIBA, President of Infrastructure Development Institute, Japan, and Dr. Tsutomu YOSHIOKA, Section Manager of Nippon Engineering Consultants, Japan to jointly discuss cross-sea bridge materials, construction methods and maintenance technology to overcome various environmental challenges such

as corrosive environment, geological variation, and rough sea condition, and achieve design goals and maintenance performance.

On the morning of the Forum, Dr. Bijan Khaleghi, as the first keynote speaker, delivered an engaging speech on “Life-Cycle Consideration of the Cross-Sea Floating Bridges and Innovations Related to Design and Construction”. Dr. Katsuji HASHIB delivered a speech on “Aging

Bridges~Importance of Maintenance and Rehabilitation~”. Dr. Tsutomu YOSHIOKA, who is in Japan, delivered an online speech “Efforts to Improve Crisis Resilience at the Design Stage of the Kesenuma Bay Bridge”.

In the afternoon agenda of the Forum, Taiwan’s experts hosted panel discussions on the topic “Design and Construction of Cross-Sea Bridge” and “Supervision and Maintenance of Cross-Sea Bridge”.



THE INTERNATIONAL OUTREACH CAMP FOR YOUNG ENGINEERS

Co-organized by MAA, the International Outreach Camp for Young Engineers was held at the Great Roots Forestry Spa Resort from 14th to 15th October 2022. MAA’s Chairman Richard Moh was invited to be a lecturer, with the topic of “Professional Societies and its International Affairs - Importance and Significance”. In addition, MAA’s Acting Manager of the Transportation and Civil Engineering Department Mr. Yuan Sheng Lin, served as the instructor for the group exploration of the camp, guiding the students to explore related issues and complete the group presentation.



MAA’s Chairman Richard Moh (left 2) attended The International Outreach Camp for Young Engineers



The trainees of the camp are promising young engineers recommended by industry, government, and academia, including various agencies affiliated with the Ministry of Transportations and Communications, engineering consulting firms, National Taiwan University of Science and Technology, National Taipei University of Technology, Feng Chia University, etc. MAA also assigned two young engineers, Mr. Chia Ren Liu and Mr. Ke Jie Lai, from the Department of Transportation and Civil Engineering, to join the camp. By participating in the camp, we wish to promote the brainstorming of young engineers and the cross-border communication and interaction between industry, government, and academia.



YOUNG ENGINEERS NETWORKING FORUM

In response to the outflow of talent in the civil engineering industry, on 21st October 2022, New Taipei City Government Public Works Department held the “Young Engineers Networking Forum” at Fuzhong 15 Exhibition Center. The forum invited experts from industry, government and academia to exchange experiences from different fields and perspectives, hoping to come up with countermeasures that attract students to join the civil engineering industry and promote the development of national infrastructure. The event attracted more than 200 young engineers to actively participate and attend through both onsite as well as online platforms.



MAA's Chairman Richard Moh gave a speech at the Young Engineers Networking Forum



MAA's Manager of Transportation and Civil Engineering Dept. Yuan-Sheng Lin attended the Young Engineers Networking Forum

The forum was divided into three themes, wishing to guide young engineers to understand the value of construction and future development trends step by step. The first topic “First Steps: Looking Towards the Horizon” invited Mr. Yu-Ling Wang, Head of Construction office, New Taipei City Government, Vice Professor Ching Hung, National Cheng Kung University and MAA's Chairman Richard Moh to share the value and vision of civil engineering, encouraging young engineers to explore their passion and love.

The second topic “Set Sail: Voyages' Scenery” invited Mr. Kun-Chan Chien, Host of QQ Civil Life Podcast, Mr. Eng-Huat Teo, Manager of CECI and Mr. Rong-fong Jhan, Director General of Public Works Department, New Taipei City Government to share the unforgettable experience in their engineering career, hoping to serve as a reference for future generations.

Last but not least, the third topic “Explore: Future Vision” invited Mr. Zi-Huan Huang, Engineering Consultant of NIRAS, Ms. Peggy Hsu, Manager of BIM division, T. Y. Lin Malaysia and Mr. Ming-Ta Tsai, Senior Manager of R&D Department, Concord Tech Co., Ltd to discuss how booming issues in the engineering industry such as offshore wind power, BIM technology and Net Zero Emissions will affect future development trends, encouraging young engineers to take risks, make breakthroughs, and face future challenges.



TECHNICAL PUBLICATIONS

MAA'S 2022 TECHNICAL PUBLICATIONS

Chang, J. F., Chou, C. R., Tseng, H. C., Moh, Z. C., Takashi Mitsui, (2022), “*Advanced Technologies in Shield Tunneling – A Case Study in Taiwan*”, Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering, Sydney.

Chang, J. F., Lin, K. D., Hong, M. S., Tseng, H. C., Chou, C. R., Hsiao, T. I., (2022), “*Application of Innovative TBM Method – An Example in Taipower Dalin-Gaogang Project*”, Proceedings of the 19th Conference on Current Researches in Geotechnical Engineering in Taiwan. (in Chinese)

Chou, C. R., Chang, J. F., Su, T. C., Moh, Z. C., Takashi Mitsui, (2022), “*A New Milestone of Shield Tunneling Technologies in Taiwan*”, 11th Asian Rock Mechanics Symposium, ISRM International Symposium, Beijing.

Chou, C. R., Su, T. C., Chen, C. H., Kao, C. C., (2022), “*Development of Geotechnical Engineering in Rapid Transit Projects*”. (In Chinese)

Hu, I. C., Chung, W. J., Chou, C. R., Li, Z. A., (2022), “*Application of Life Cycle Thinking in Foundation Design –an Example of New Taipei City MRT Sanying Line*”, IEM-CIE-HKIE Tripartite Seminar 2022.

Liu, C. M., Huang, T. M., Peng, J. F., Chou, C. R., Tseng, H. P., (2022), “*Design and Construction of Tunnels Passing Through Faults – A Case Study in Xinyi Expressway Project*”, Sino Geotechnics, pp.65-73, Vol. 172. (In Chinese)

Sheu, K. S., Tseng, H. C., Chou, C. R., Shen, K. C., Lin, M. S., (2022), “*Application and Advantages of Pilot Test in Ground Improvement for Reclaimed Land*”. (in Chinese)

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Yu, C. J., Cheng, K. Y., Chen, J. T., Lin, C. H., (2022), “*Case Study of Applied BIM Technology in New Taipei City Sanying Metro Line*”, The 9th of Civil Engineering Conference in the Asia Region (CECAR9).

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CORPORATE SOCIAL RESPONSIBILITY (CSR)



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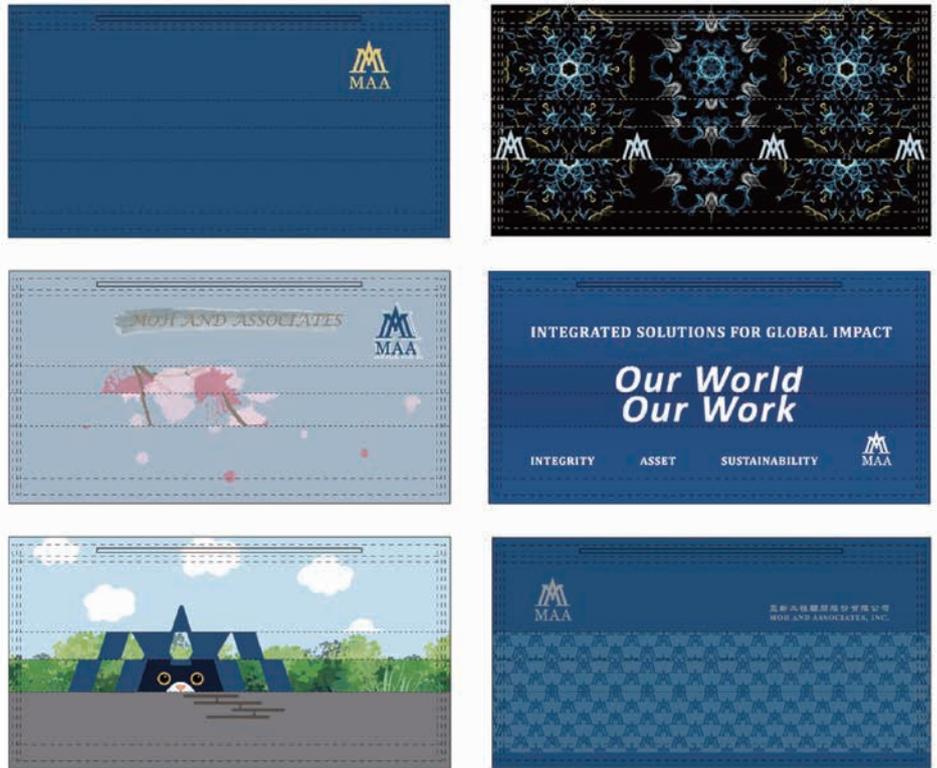


MAA MASK DESIGN CONTEST

The Covid-19 pandemic has brought about challenging times and has made wearing masks an everyday accessory. As a part of our daily wear, masks can also become an expression of personal characteristics, image, clothing, and lifestyle. The contest aims to take advantage of the talents of MAA employees to create image masks with MAA's culture, core values, and creative ideas, and to let employees show their talents and creativity.

The contest received a total of 52 submissions from 21 departments. Employees from each department enthusiastically participated in the event. The works, ranging from hand-painted designs to computer graphics, have shown that employees have a deep appreciation for MAA’s culture, core values and expertise. Through every interpretation, the hearts and creativity of each work can be felt.

During the one-week voting period, all works and design concepts were displayed on the corridor of the head office in Xizhi and on the online voting system. The competition sparked many conversations and words of encouragement between the personnel, promoting interdepartmental discourse. As the competition came to an end, five mask designs were selected to represent MAA and were produced for all employees.



NATIONAL TAIWAN UNIVERSITY CIVIL ENGINEERING RESEARCH SCHOLARSHIP

In order to encourage the students to study diligently, become involved in building the foundation for the developing society, and act as Taiwan’s pillars in the future, MAA established the “Civil Engineering Research Scholarship” in the Department of Civil Engineering of National Taiwan University. This scholarship has been a longstanding commitment of over 30 years and has helped many young and aspiring engineers in their path.

PROFESSIONAL PROFILES

MAA is pleased to announce and congratulate the following promotions and new hires in 2022.

The list is as follow (in chronological order):

Chih-Kang Huang	黃志剛	Senior System Engineer and Information Center Deputy Director
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Ting-Chiun Su	蘇鼎鈞	Senior Vice President of Engineering Design Group and Manager of Rail Engineering Dept.
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Sheng-Sheng Mao	毛聖生	Vice President of Engineering Design Group
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Song-Tsang Lin	林松蒼	Vice President of Engineering Design Group
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Hung-Yen Lee	李泓彥	Manager of Urban Development Dept.
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Yuan-Sheng Lin	林元生	Manager of Transportation and Civil Engineering Dept.
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Chi-Ming Lee	李啓銘	Manager of Environmental & Water Dept.
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Li-Chi Liu	劉力旗	Manager of Environmental & Sustainability Dept.
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Shau-Heng Chiou	邱紹恒	Deputy Manager of Rail Engineering Dept.
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Gwo-Jenn Liu	劉國鎮	Chief Engineer of Building & Facilities Group
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Chao-Sheng Hsu	徐朝聲	Acting Manager of Project & Construction Management Dept. I
Shian-Tsair Sheu	許先才	Project Manager of New Wanda Market, Project Management and Supervision
Chung Wan	萬鍾	Deputy Project Manager of New Wanda Market, Project Management and Supervision
Ching-Tien Chen	陳景田	Senior Engineer
Wei-Hau Lai	賴韋豪	Senior Electromechanical Engineer
Ian-Shyun Chen	陳彥勛	Senior Environmental Engineer
Cheng-Lieh Hsin	辛承烈	Senior Civil Engineer
Chien-Lu Chan	詹乾陸	Senior Civil Engineer
Jiun-Nan Chen	陳俊男	Senior Civil Engineer
Cheng-Po Yu	余振波	Senior Civil Engineer
Huan-Jung Wu	吳桓榕	Senior Electric-Mechanical Engineer
Jen-Da Sung	宋政達	Senior Civil Engineer



Ting-Chiun Su
蘇鼎鈞

Ting-Chiun Su was promoted to Senior Vice President of Engineering Design Group and Manager of Rail Engineering Dept. in May 2022. Mr. Su received his bachelor's degree in 1984 from Chung Yuan Christian University and his master's degree in 1989 in geotechnical engineering from National Central University. He joined MAA in 1989 and has been involved in site investigation and foundation analysis 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, land developments and Taipei MRT design.

Major projects he has participated in include Taipei Metropolitan area Rapid Transit System Xin Yi Line Extension Project Detail Design Lot DR149, Detailed Design for Sanying MRT System Turnkey Project, Urban land consolidation of the first industrial zone in Linkou District, New Taipei City, Planning, Design and Supervision Services of Hsinchu City Provincial Highway 68 Extension Project, and Urban Land Consolidation of District 2 of Xinzhuang Taishan Wen Zi Zun area in New Taipei City. Mr. Su is a member of Taiwan Geotechnical Society and a member of Taiwan Railway Society.



Sheng-Sheng Mao
毛聖生

Sheng-Sheng Mao was promoted to Vice President of Engineering Design Group in May 2022. Mr. Mao received his bachelor's degree in 1984 and master's degree in 1987 in environmental engineering from National Cheng Kung University. He joined MAA in 1989 and has been involved in the following projects:

Design and Supervision Service of the first phase construction of sewage system in Chiayi City, Design and Supervision Services of the first phase construction of sewage system in Puli Town, Nantou County, Environmental Impact Assessment for the BOT Development Program of Recreation Park Phase II at Dapeng Bay National Scenic Area, Environmental Impact Assessment for the reconstruction of the Tai-Provincial Road No2 line 136K+800~137K+865 include Jinma bridge and Zouan bridge, and Environmental Impact Assessment and Soil and Water Conservation Plan for the Syue Gu Line Cable Car Construction at Taichung City.

Mr. Mao is a member of The Chinese Institute of Environmental Engineering.



Song-Tsang Lin

林松蒼

Song-Tsang Lin was promoted to Vice President of Engineering Design Group in May 2022. Mr. Lin received his bachelor's degree in 1988 and master's degree in 1990 in Hydraulic and Oceanic Engineering from National Cheng Kung University. He joined MAA in 1992 and has been involved in the following projects:

Land Acquisition for Chungli Sports Park in Taoyuan City, Planning, Engineering Design Service for the Yangon Htantbin Technology Park, Planning, Design and Supervision Services of Hsinchu City Provincial Highway 68 Extension Project, Project Management and Construction Supervision Service for Shuei-Nan Economic & Trade Park development project, and Commissioned to design the instant reconstruction of No.27(number one) Provincial Highway 6K+500~8K+500(Morak typhoon).



Yuan-Sheng Lin

林元生

Yuan-Sheng Lin was promoted to Manager of Transportation and Civil Engineering Dept. in January 2023. Mr. Lin received his bachelor's degree in 2000 and master's degree in 2004 in civil engineering from National Central University. He joined MAA in 2005 and has been involved in the following projects: Urban land consolidation of the first industrial zone in Linkou District, New Taipei City, Taipei Metropolitan Area Rapid Transit System Xin Yi Line Extension Project Detailed Design Lot DR149, Taiwan Taoyuan International Airport Rehabilitation Project, and 161KV Cable Transmission Links (Anan to Fucheng) and Underground Section from Anan to Yun River.

Mr. Lin is a member of The Chinese Institute of Civil and Hydraulic Engineering, and also actively participates in international activities. He was recommended by the Chinese Association of Engineering Consultants to participate in the YPMTP (Young Professionals Management Training Programme) in 2016. He communicates with young engineers from all over the world and collaborates to complete the Future Leaders Forum, one of the activities at FIDIC International Infrastructure Conference in Marrakesh, Morocco.



Chin-Kang Huang
黃志剛

Chin-Kang Huang was promoted to Senior System Engineer and Information Center Deputy Director in January 2022. Mr. Huang received his bachelor's degree in 1993 and master's degree in 1995 in mechanical engineering from National Taiwan University. He joined MAA in 2001 as an engineer at Information Center.



Hung-Yen Lee
李泓彥

Hung-Yen Lee was promoted to Manager of Urban Development Dept. in January 2023. Mr. Lee received his bachelor's degree in 1999 from Chung Hua University and his master's degree in 2008 from Chung Yuan Christian University. He joined MAA in 2005 and has been involved in general construction management, Harbor and Coastal Engineering works planning and construction supervision, and Sewage Engineering analysis, planning, design, assessment, and Construction Supervision. Major projects he has participated in include Design and Supervision Service for Urban Land Consolidation of District 2 of Xinzhuang Taishan Wen Zi Zun area in New Taipei City, Turnkey Project for the Redevelopment of Caota Area Sections 1, 3, and 6, at Guanyin District, Taoyuan City, and Project Construction Management on First Development Project of Dan-hai New Town Development (Phase 2).



Wei-Hau Lai
賴韋豪

Wei-Hau Lai was promoted to Senior Electromechanical Engineer in July 2022. Mr. Lai received his bachelor's degree in 1999 in electrical engineering from Feng Chia University and his master's degree in 2005 in mechanical and aerospace Engineering from Chung Hua University. He joined MAA in 2013 and has been involved in several turnkey projects and public infrastructure projects, with expertise in power and lighting design. Some of his major projects are Taipei MRT Circular Line North Section Detailed Design DF116 Lot (Phase 2), and Design and Construction Consultancy Services for Orsted O&M Facilities in Taichung.



Ching-Tien Chen
陳景田

Ching-Tien Chen was promoted to Senior Engineer in July 2022. Mr. Chen received his bachelor's degree in 2008 and master's degree in 2011 in civil engineering from Chung Hua University. He joined MAA in 2012 as an engineer in the BIM Management and Engineering Integration Center. Some of his major projects are PCM service of Parcel No.15 Jingmao Section, Nankang District, Taipei City, Taipei MRT Circular Line North Section Detailed Design DF116 Lot, and Civil BIM Services for Taipei MRT System Sanying Line Turnkey Project.



Chi-Ming Lee
李 啓 銘

Chi-Ming Lee was promoted to Manager of Environmental & Water Dept. in January 2023. Mr. Lee received his bachelor's degree in 1996 in civil engineering from Chung Yuan Christian University and his master's degree in 1998 in harbor and river engineering from National Taiwan Ocean University. He joined MAA in 2009 and has been involved in many large-scale public construction projects. Some of his major projects are: Quality & Safety Management and Supervision for the Chung-Li Sewer System Build, Operate and Transfer (BOT) Project, Promotion of Private Participation in Yanshui Sewerage System's Build, Operate and Transfer (BOT) Plan (Third issue), Tainan City, Feasibility Study on Recycling Wastewater from Futian Wastewater Treatment Plant in Taichung City, PCM Services for Tamsui Sewer System Phase IV BOT Project, and Design and Supervision Service for Chiayi City Sewer System Design Phase I



Li-Chi Liu
劉 力 旗

Li-Chi Liu was promoted to Manager of Environmental & Sustainability Dept. in January 2023. Mr. Liu received his bachelor's degree in 1995 from National Pingtung University of Science & Technology and his master's degree in 2006 in Environmental Engineering from National Central University. He joined MAA in 2007 and has been involved in environmental impact assessment, environmental monitoring, and soil and groundwater pollution monitoring. Major projects he has participated in include Environmental Impact Assessment (Environmental Impact Statement) for the Reconstruction of New Qiwei Bridge on 406K+830, No.3 Tai-Provincial Highway, Environmental Impact Assessment for Taipei MRT Minsheng-Xizhi Line, and Wind Farm Environmental Impact Assessment in Shengang and Lukang Townships, Changhua County.



Ian-Shyun Chen
陳 彥 勛

Ian-Shyun Chen was promoted to Senior Environmental Engineer in July 2022. Mr. Chen received his bachelor's degree in 2001 from Feng Chia University. He joined MAA in 2012 and has been involved in many large-scale Public Construction projects. Some of his major projects are Turnkey Project for Anping Reclaimed Water Plant Construction in Tainan, Design for the Yangon Htantabin Technology Park, and Design and Supervision Service of the first phase of construction of the sewage system in Chiayi City. Mr. Chen is a member of Taiwan Sewerage Association.



Cheng-Lieh Hsin
辛 承 烈

Cheng-Lieh Hsin was promoted to Senior Civil Engineer in July 2022. Mr. Hsin received his diploma in 1996 in civil engineering from Sih Hai Junior College of Industrial and Commercial Management. He joined MAA in 2012 and has been involved in planning, design and project management of many large major public projects, including East-West Expressway, highway widening, city planning, and industrial park developments. Some of his major projects are Taoyuan Aerotropolis Zone Expropriation in A3, B1, D2, and Turnkey Project for the Redevelopment of Caota Area Sections 1, 3, and 6, at Guanyin District, Taoyuan City.



Chien-Lu Chan
詹乾陸

Chien-Lu Chan was promoted to Senior Civil Engineer in July 2022. Mr. Chan received his bachelor’s degree in 2013 in civil engineering from National Taipei University of Technology. He joined MAA in 2010 and has been involved in the following projects:

Supervision Work on Land Acquisition of Beitou Shilin Technology Park (Phase 2), Design and Supervision Services of ground improvement engineering of the 44 hectares of reclaimed land at the south port area of Taipei harbor, and Dongmen Public Retail Market Construction Project in Taoyuan.



Jiun-Nan Chen
陳俊男

Jiun-Nan Chen was promoted to Senior Civil Engineer in July 2022. Mr. Chen received his bachelor’s degree in 2004 in construction engineering from Chao-Yang University of Technology. He joined MAA in 2000 and has been involved in the following projects:

Project Management and Construction Supervision for Yu Chin Army Camp, and Design and Construction Supervision for Urban Replanning in Guo Lin, Taoyuan City.



Cheng-Po Yu
余振波

Cheng-Po Yu was promoted to Senior Civil Engineer in July 2022. Mr. Yu received his diploma in 1987 from National Taipei Institute of Technology. He joined MAA in 2017 and has been involved in Construction Supervision for Ankeng LRT Project.



Huan-Jung Wu
吳桓榕

Huan-Jung Wu was promoted to Senior Electric-Mechanical System Engineer in July 2022. Mr., Wu received his diploma in 1992 from Ching-Ming College. He joined MAA in 2015 and has been involved in Project Management and General Consultant Service for “Land No. 15 in the Economic and Trade Section of Nangang District, Taipei City”, and Residential Development of the Le Bassac in Cambodia.

**Jen-Da Sung**

宋政達

Jen-Da Sung was promoted to Senior Civil Engineer in July 2022. Mr. Sung received his bachelor's degree in 1985 from Chung Cheng Institute of Technology and his master's degree in 2004 from National Defense University. He joined MAA in 2016 and has been involved in the following projects:

Design and Supervision Service of Social Housing Construction at Sanxia, Xindian and Tucheng, Planning, Design and Supervision Service of Gongguan Camp, and PCM services for the reconstruction of the 29th Summer Universiade venues



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