



Officiate by

**YB. Zairil Khir Johari**, Penang State Executive Councilor for Infrastructure & Transport

**Ir. Cheah Chin Kooi**, PKT, Acting Director of Engineering Department, Majlis Bandaraya Pulau Pinang

*Highlights on Engineering Plans Submission to MBPP, the Do's and Don'ts*



**Mohd Syukri bin Said**, Acting Director of Engineering Department, Majlis Bandaraya Seberang Perai

*Highlights on Engineering Plans Submission to MBSP, the Do's and Don'ts*

**Ir. Yau Ann Nian**, DJN, PKT, Chairman, Geotechnical Subcommittee, IEM Penang

*Penang Hill-site Development and Agricultural Land, Planning, Design, Stabilisation and Maintenance*



**Ir. Dr. Lee Sieng Kai**, Managing Director, Glostrex Group of Companies

*Wireless Network Automation (WiNA) System, Data Management & Visualisation Platform for Geotechnical & Structural Health Monitoring*



**Dr. Leong Kam Weng**, Director, Keller Foundations (S.E. Asia) Pte Ltd

*Ground Improvement for Reclamation & Developments on Reclaimed Land*



**Ir. Dr. Goh Teik Lim**, Director, Atsunew Giken Pte Ltd (Silent Piler) | Oriental Castle Sdn. Bhd.

*Earth Retaining or Stabilising Structures (ERSS) Works by Silent Piling Method using Advanced Steel Sheet Pile Materials*



**Ir. Dr. Wong Fook Keong**, Managing Director, WEA Engineers & Associates Sdn. Bhd.

*Case Study of Negative Skin Friction on piles in a Project and Evaluation of Pile Acceptance based on MLT Results*



# GEOTECHNICAL ENGINEERING SEMINAR 2022

Organised by IEM Penang Branch  
In Collaboration with MBPP and MBSP



Scan for more Details/Registration  
<https://iempenang.org/geotechnical-engineering-seminar-2022>

G-HOTEL GURNEY, PENANG  
1<sup>st</sup> SEPTEMBER 2022; 9.00am-5.30pm  
IEM MEMBER RM200  
NON-MEMBER RM250  
CPD: 6  
Ref. No. IEM22/PG/248/S

Sponsors:



# GEOTECHNICAL ENGINEERING SEMINAR 2022

## Tentative Program – 1<sup>st</sup> September 2022

8.30am	9.00am	Registration
9.00am	9.05am	Event Speech by Organising Chairlady, <b>Ir. Catherine Sim Siew Ping, PJK</b>
9.05am	9.10am	Welcoming Statement by IEM Penang Branch Chairman, <b>Ir. Bernard Lim Kee Weng, PJM</b>
9.10am	9.30am	Opening Speech by Penang State EXCO, <b>YB. Zairil Khir Johari</b>
<b>9.30am</b>	<b>9.45am</b>	Photo Session
9.45am	10.15am	MBPP: <b>Ir. Cheah Chin Kooi, PKT</b> - Highlights on <i>Engineering Plans Submission to MBPP, the Do's and Don'ts</i>
10.15am	10.45am	MBSP: <b>Mohd Syukri bin Said</b> - Highlights on <i>Engineering Plans Submission to MBSP, the Do's and Don'ts</i>
10.45am	11.15am	Tea Break 1
11.15am	12.00pm	<b>Ir. Yau Ann Nian, DJN, PKT</b> - <i>Penang Hill-site Development and Agricultural Land, Planning, Design, Stabilisation and Maintenance</i>
<b>12.00pm</b>	<b>12.45pm</b>	<b>Ir. Dr. Lee Sieng Kai</b> - <i>Wireless Network Automation (WiNA) System, Data Management &amp; Visualisation Platform for Geotechnical &amp; Structural Health Monitoring</i>
12.45pm	1.00pm	Q&A 1
<b>1.00pm</b>	<b>1.15pm</b>	Presentation of Certificates of Appreciation to Sponsors
<b>1.15pm</b>	<b>2.00pm</b>	Lunch Break
2.00pm	2.45pm	<b>Dr. Leong Kam Weng</b> - <i>Ground Improvement for Reclamation &amp; Developments on Reclaimed Land</i>
2.45pm	3.30pm	<b>Ir. Dr. Goh Teik Lim</b> - <i>Earth Retaining or Stabilising Structures (ERSS) Works by Silent Piling Method using Advanced Steel Sheet Pile Materials</i>
3.30pm	3.45pm	Q&A 2
<b>3.45pm</b>	<b>4.00pm</b>	Presentation of Certificates of Appreciation to Speakers
<b>4.00pm</b>	<b>4.30pm</b>	Tea Break 2
<b>4.30pm</b>	<b>5.15pm</b>	<b>Ir. Dr. Wong Fook Keong</b> - <i>Case Study of Negative Skin Friction on piles in a Project and Evaluation of Pile Acceptance based on MLT Results</i>
5.15pm	5.30pm	Q&A 3

# SPEAKER 1



**Ir. Cheah Chin Kooi**, PKT  
Director of Engineering Department,  
Majlis Bandaraya Pulau Pinang (MBPP)

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## *Highlights on Engineering Plans Submission to MBPP, the Do's and Don'ts*

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Ir. Cheah Chin Kooi graduated with Bachelor of Engineering (Civil) from McGill University, Canada in 1997. He also obtained his Master Of Science (Project Management) from University Of Science Malaysia in 2003. He joined Majlis Bandaraya Pulau Pinang in the year of 1998 and held various important engineer positions in Engineering Department from 1998 until today. He was the Deputy Director Of Engineering from 2019-2022. Currently he is the Acting Director of Engineering Department, MBPP.

Ir. Cheah obtained his Professional Engineer with Practicing Certificate (PEPC) from the Board of Engineers, Malaysia since 2005 and he is a corporate member of Institution of Engineers, Malaysia (IEM) since 2004.

Ir. Cheah has more than 25 years of experience in the field of Civil Engineering. During his tenure as engineer in Engineering Department, he had supervised and managed various Infrastructure and flood mitigation projects such as Transfer Road Flood Mitigation project, George Town S10 Flood Mitigation, Widening of Bridges in Jalan Ross & Jalan Piggot and etc. He also given the task to comment and process the development plans and engineering plans submitted by practicing consulting firms.

MBPP's plan processing for Engineering Plans - namely Earthworks and Earthwork Exemption on this context was online via system called Intergrated Local Council Solution (ILCS) since May 2020. ILCS is an enhanced system that helps and hastens the processing of plan.

Approved Geotechnical Reports by the Committee for Development In Land with Risk for all hill site development and Submission of Geotechnical Basement as per our guidelines is mandatory for Earthworks Plan approval.

The Do's and Don'ts of the Engineering Plans Submission will be highlighted in this talk. Ir Cheah will include the steps, approval requirements which include submission of agricultural land, quarries and other non developments, and also maintenance report submissions for all projects

# SPEAKER 2



**Mohd Syukri bin Said**

Acting Director of Engineering Department,  
Majlis Bandaraya Seberang Perai (MBSP)

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***Highlights on  
Engineering Plans  
Submission to  
MBSP, the Do's  
and Don'ts***

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Mohd Syukri bin Said has more than 20 years of experience in his field of expertise. He obtained his Bachelor's Degree of Engineering in 2002, and for 6 years he worked in MBPP as the assistant director of engineering for development (earth work plan and road and drainage plan). In 2008, Mohd Shukri was the senior assistant director of engineering in Projects, before his promotion as the chief assistant director of engineering for flood mitigation projects and road and drainage projects and maintenance in 2010. From 2015 to 2019, Mohd Shukri became the deputy director of engineering in development for earth work and road and drainage plans. Currently, Mohd Shukri is the acting director of engineering department. Throughout his years of service, Mohd Shukri has played crucial roles for the thriving development works in the city council.

A slope is an exposed surface of land that forms an angle to the horizontal plane. Usually slope failure is associated with steep slope conditions but this is not true as there are many cases of slope failure occurring on less steeper slopes (Dunn et. Al, 1980). This situation shows that the stability of a slope depends on many factors apart from the inclination angle. Most slopes are designed for specific applications considering its safety, economic and maintenance aspects. According to Bromhead (1992), the main factors for slope instability are:

1. Increased pore water pressure
2. Changes in the support at the foot of the slope either due to dredging work or soil erosion.
3. Changes in soil or soil shear strength
4. Loads due to earthquakes
5. Load on the slope either due to volume movement on the embankment or cut.

Slope failure is a worrying phenomenon and sometimes occurs unexpectedly due to the lack of regular monitoring to detect early signs of slope failure.

In this seminar, Encik Mohd Syukri Bin Said will present about the issues pertaining to slope failures in Seberang Perai, the conditions imposed on developers who intend to implement development in hilly or highland areas. He will also explain the risks and effects when the slopes are not strengthened with the right method.

# SPEAKER 3



**Ir. Yau Ann Nian**, DJN, PKT

Chairman, Geotechnical Engineering Subcommittee,  
IEM Penang

Ir. Yau Ann Nian has nearly 40 years of civil engineering experience. He joined Moh & Associates Inc. in Taiwan after his graduation and is currently the Resident Director of the Penang Office of WEA Engineers & Associates (since 1988). His engineering experience includes design and construction supervision in geotechnical, civil and structural engineering disciplines. He was involved in the construction supervision of a nuclear power station in Taiwan, design and supervision team on slope remedial investigations and design works undertaken by the Malaysian-Thai Development Corporation for the East-West Highway and the Kuala Lumpur-Karak Highway, and has carried out structural and foundation designs for several medium-rise buildings in the Seychelles, Mauritius and Thailand.

As the team leader for WEA Engineers & Associates Sdn. Bhd., Ir. Yau plays a key role on the geotechnical and geological investigations, and the design of the support structures for the Gunung Machinchang Cable Car Project in Pulau Langkawi. Ir. Yau is also a Qualified Geotechnical Engineer and Geotechnical Checker accepted by the committee of Penang High risk projects (Hill Land Projects, Projects with Reclamations) and also Geotechnical Engineer and Geotechnical Checker of Basement Projects to Majlis Bandaraya Pulau Pinang.

Ir. Yau has numerous professional affiliations with professional bodies. Ir. Yau is a registered Professional Civil Engineer (Malaysia), Fellow of the Board of Engineers, Malaysia and an Associate Member of the Institution of Civil Engineers (United Kingdom).



## *Penang Hill-site Development and Agricultural Land, Planning, Design, Stabilisation and Maintenance*



There has been a significant increase in hill site activities, this including the hill site development and also agricultural land open upon for Agricultural Land.

Hill site developments often cause man-made alterations to the landscape and the safety of properties. The irony is that hill sites can be safely beneficially developed with proper planning, design, construction control and maintenance.

Ir Yau's talk will highlight on the practical concern of hill site development in Penang including the planning of hill site development, soil investigation, laboratory test assignment, the design considerations, stability checks, method of strengthening hill slope, construction and slope maintenance. Also included will be on the planning / maintenance control for hill slope agricultural land and erosion control.

# SPEAKER 4



**Ir. Dr. Lee Sieng Kai**  
Managing Director,  
Glostrex Group of Companies

**“ Wireless Network Automation (WiNA) System, Data Management & Visualisation Platform for Geotechnical & Structural Health Monitoring ”**

Ir. Dr. Lee Sieng Kai has more than 30 years of experience in the field of geotechnical engineering, pile testing, geotechnical instrumentation and monitoring technologies. He obtained his Bachelor's Degree in Civil Engineering from University of Malaya in 1990, and was conferred the degree of Doctor of Philosophy (PhD) in Foundation Engineering in 2011 by the same University. His research has been awarded with three GOLD medals in the national and international innovation competitions.

He is a Professional Engineer registered with Board of Engineers, Malaysia and a Corporate Member of the Institute of Engineers, Malaysia. Currently, he is the managing director of Glostrex Group of Companies.

The early concept of smart dust is becoming real now in geotechnical instrumentation (GI) and structural health monitoring (SHM) related works. It is a progressive trend of the industry for companies to move toward automation by deploying advanced wireless sensor technology with web-based integrated platform. The creative Internet of Things (IoT) solutions in the geotechnical instrumentation and testing industries have enabled all sizes, from small, modest to mega projects (for both under construction and completed structures) to conduct real time automated continuous monitoring and online data visualization in a cost-effective manner. The obvious benefits of these wireless automation systems have visibly emerged in the light of Covid-19 crisis especially, and will continue to do so as the geotechnical industry is inevitably moving in transition into automation in many ways to achieve cost efficiency and reduce its carbon footprint. WiNA systems allow remote monitoring with minimal human intervention and remote access of data, anywhere and anytime hence fewer people are needed at construction sites at any one time, particular for hard-to-access or access-restricted infrastructures. Key features and author's experiences on the applications of these automation systems for GI and SHM will be highlighted and discussed.

# SPEAKER 5



**Dr. Leong Kam Weng**  
Director,  
Keller Foundations (S.E. Asia) Pte Ltd

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***Ground Improvement  
for Reclamation &  
Developments on  
Reclaimed Land***

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Dr. Leong graduated with Bachelor of Engineering (First Class Honour) in Civil Engineering from University of Malaya, Malaysia. He obtained his PhD from the National University of Singapore. He has more than 20 years of experience in Geotechnical Engineering. He has been active in the design and execution of Ground Improvement projects in South East Asia (ASEAN) for Keller like Exxon Mobil SPT in Singapore and KVMRT project in Malaysia. He is currently the Director of Keller Foundations (S.E. Asia) Pte Ltd and is heading the Business Development for the Ground Improvement business in ASEAN. He is a member of the Geotechnical Society of Singapore (GeoSS) since 2008 and served as committee member since 2012 and Vice President for 2014-15. He was the President of GeoSS for 2016-17. He was accorded the Outstanding Geotechnical Engineer award by GeoSS in 2018 for his contributions to the society and industry.

With rapid urbanization in major cities in the region, the demand for land is increasing. More new land is reclaimed on areas with very poor soil (e.g. estuarine or swamp) or extending to deeper sea. Such newly reclaimed land poses many geotechnical challenges like settlement, bearing capacity or stability concerns. To resolve these challenges, ground improvement techniques can be used. This seminar will give an overview of various ground improvement techniques and selection criteria of ground improvement techniques. Case studies will be presented to illustrate the applications of ground improvement to address the geotechnical challenges associated with reclaimed land.

# SPEAKER 6



**Ir. Dr. Goh Teik Lim**

Director,  
Atsunew Giken Pte Ltd (Silent Piler)  
| Oriental Castle Sdn. Bhd.

Dr. Goh Teik Lim has his early education in University of Malaya, Kuala Lumpur, Malaysia. After graduation, he joined OVE-ARUP (KL) as a consulting engineer. Dr. GOH came to Singapore to further his doctorate study in NATIONAL UNIVERSITY OF S'PORE, researching on a deep excavation topic in soft ground. Dr. GOH started practising as a geotechnical engineer in SEMBCORP Engineers & Constructors, specialising in deep excavation works where he was involved in the construction of cut-and-cover road tunnel in Singapore, so called the Kallang and Paya Lebar Expressway (KPE Contract 421). Dr. GOH has then joined GIKEN SEISAKUSHO ASIA as a Technical Manager, and soon thereafter, he was promoted to General Manager, in-charge of ASIA region in promoting the use of SILENT PILER. In Year 2011, Dr. GOH decided to establish his own company, ATSUNEW GIKEN to specialize in sub-contracting of Silent Piler works. Dr. GOH is currently a registered professional engineer in Singapore & Malaysia. Dr. GOH's focus is in geotechnical field with keen interest to implement cost-effective construction solutions in an environmentally responsible manner.

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***Earth Retaining or Stabilising Structures (ERSS) Works by Silent Piling Method using Advanced Steel Sheet Pile Materials***

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ASEAN countries has been persistent in developing and upgrading its infrastructure in recent years. This has led to greater design and construction requirements. With new requirements, local engineers face many challenges dealing with ERSS works. Shoring solution using steel sheet piles and struts are the most common practice because steel materials are re-cyclable. In the first part of the talk, the speaker will focus on various methods to install steel sheet piles. This includes the use of Silent Piling Technologies originated from Japan which has recently gained popularity in Singapore. The capability of different models of Silent Piler applied in local construction sites will be compared and some latest development in Silent Piling Technology will be reviewed. In the second part of the talk, the speaker will introduce the recent development of steel sheet piles and strutting materials from ArcelorMittal, which is the world biggest steel producer. Through its subsidiary company in Asia Pacific (so called Oriental Sheet Piling), many shoring solutions using steel sheet piles and struts has been introduced into local construction scenes in many parts of ASEAN countries. The presentation will emphasize on cost-effective solutions to solve various geotechnical conditions.



# SPEAKER 7



**Ir. Dr. Wong Fook Keong**  
 Managing Director,  
 WEA Engineers & Associates Sdn. Bhd.

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***Case Study of  
 Negative Skin  
 Friction on piles in  
 a Project and  
 Evaluation of Pile  
 Acceptance based  
 on MLT Results***

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Ir. Dr. Wong has over 44 years of civil engineering experience and was a Research Assistant at the University of Strathclyde in Scotland (1978 - 1981). He then joined the Moh & Associates Group in Taiwan as a Senior Engineer and later as Managing Director of its Malaysian Office. While with Moh & Associates, he was the Lead Engineer in the slope repairs at the East West Highway and KL-Karak Highway. He started his own practice in 1990 and is currently the Managing Director of WEA Engineers & Associates Sdn Bhd (Geotechnical, Civil & Structural Consultant). He has completed many C&S projects involving highrise projects in Penang, Kuala Lumpur and Selangor, and specialist geotechnical projects, including forensic engineering studies (geotechnical, structural failures and fire damaged structures), water supply projects (IWSS) and geotechnical and structural remedial works. He has many arbitral and adjudication appointments and had appeared as expert witness in many arbitrations and litigations. He is on the panel of several insurance companies and loss adjusters on construction related insurance claims, including fire and flood damage. He was a Committee Member to draft the Penang State HillSlope Manual. One of his special projects is the design of the Pulau Langkawi Cable Car structure.

Ir. Dr. Wong is a registered Professional Civil Engineer (M'sia), Chartered Civil Engineer (UK) and Chartered Arbitrator (UK). He has professional affiliations with: (1) BEM - P.Eng., FIEM, Accredited Geotech Checker; (2) ICE - Chartered Eng., FICE; (3) ASCE - FASCE; (4) CIArb - Chartered Arbitrator, FCIArb; (5) MIArb - FMIArb; (6) ACEM - MACEM; (7) ASEAN Engr. He is on the AIAC panel of Arbitrators, Adjudicators and Mediators.

The interpretation of Maintained Load Tests is an important aspect of pile installation. The talk will present some popular methods of MLT interpretation and emphasis will be given to the JKR 2005 and JKR 2020 specifications on the acceptance / rejection of installed piles using MLTs. A case study using the results of MLTs for a piling project and the consideration of negative skin friction in the interpretation of MLTs will be presented.