

SEMINAR ON

BEM APPROVED CPD: 7
REF. NO.: IEM25/HQ/403/S

ENGINEERING SOLUTIONS FOR SOFT GROUND & PEAT SOIL: *CHALLENGES, INNOVATIONS AND BEST PRACTICES*

DATE: 18 DECEMBER 2025, THURSDAY
TIME: 8:30 AM - 5:30 PM
VENUE: AUDITORIUM, LEVEL 2,
JKR SARAWAK RESEARCH CENTER
JALAN CANNA, TABUAN JAYA, 93350 KUCHING, SARAWAK

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APPROVED DURATION: 26/08/2025 - 25/08/2026
HRD CORP SERIAL NO
10001592380

SPEAKERS



Dr. Vivi Anggraini



Dr. Fauzan Sahdi



Ir. Si Jet



Ir. Ts. Ahmad
Danial Ridwan



Ir. Chen Chuang Loom



Prof. Ir. Ts. Adnan
Bin Zainorabidin

GRADE	FEE* (WEBSITE REGISTRATION & NON-HRDC)	FEE* (EMAIL REGISTRATION & HRDC**)
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Time	Description	Speaker
8:00am – 8:30am	Registration & Breakfast	
8:30am – 8:45am	Opening Remarks & Welcome Address	Representative <i>JKR Sarawak</i>
8:45am – 9:45am	Session 1: Introduction to Soft Ground – Challenges and Engineering Solutions	Dr. Vivi Anggraini <i>Monash University Malaysia</i>
9:45am – 10:45am	Session 2: From Peat to Seabed: Some Geotechnical Aspects of Sarawak	Dr. Fauzan Sahdi <i>Universiti Malaysia Sarawak (UNIMAS)</i>
10:45am – 11:00am	Morning Tea Break	
11:00am – 12:00pm	Session 3: Alternative Foundation Solutions with Ground Improvement	Ir. Si Jet <i>Keller (M) Sdn. Bhd.</i>
12:00pm – 12:15pm	Token of Appreciation Conferment & Group Photo	
12:15pm – 1:15pm	Lunch	
1:15pm – 2:15pm	Session 4: Engineering Challenges in Soft and Peat Soils- A Case Study from the Pan Borneo Highway	Ir. Ts. Ahmad Danial Ridwan <i>Jurutera Jasa (Sarawak) Sdn. Bhd.</i>
2:15pm – 3:15pm	Session 5: Ground Treatment in Peaty Soils and Shallow Underpass Construction in Urban Areas	Ir. Chen Chuang Loom <i>Perunding JPG Sdn Bhd</i>
3:15pm – 3:30pm	Afternoon Tea Break	
3:30pm – 5:00pm	Session 6: Comprehensive Testing of Tropical Peat: Bridging Theory and Practice in the Lab and Field	Prof. Ir. Ts. Adnan Bin Zainorabidin <i>Universiti Tun Hussein Onn Malaysia (UTHM)</i>
5.00pm - 5.30pm	Q&A Session + Token Appreciation to Speaker	
5.30pm	Closure	

Session 1: Introduction to Soft Ground – Challenges and Engineering Solutions

Synopsis:

Soft ground, including marine clays, organic soils, and peat, poses significant challenges in geotechnical engineering due to its low strength, high compressibility, and complex behaviour under loading. As infrastructure development expands into marginal lands, understanding the nature of soft ground becomes increasingly critical for sustainable design and construction. This presentation aims to provide a foundational overview of soft ground characteristics, the geotechnical problems associated with it, and the engineering principles used to assess and improve its performance. The talk will cover key topics such as soil classification, consolidation behaviour, stability issues, and typical field observations. Special emphasis will be placed on practical ground improvement techniques, such as preloading, vertical drains, vacuum consolidation, and the use of geosynthetics, which are increasingly used in modern construction projects across Asia and beyond.



Dr. Vivi Anggraini
*Monash University
Malaysia*

Speaker's Profile:

Dr. Vivi Anggraini is a Senior Lecturer in Geomechanics at the Civil Engineering Department, Monash University Malaysia, with over 15 years of teaching and research experience. She holds a B.Eng (Hons) in Civil Engineering, an M.Eng in Geotechnical Engineering, and a PhD in Geotechnical and Geological Engineering. Her research focuses on geomaterials, geosynthetics, sustainable soil liners, and ground improvement. She has published over 50 research papers, a guideline on peat and organic soils, three book chapters, and a book on ground improvement. Dr. Anggraini currently serves as President of the International Geosynthetics Society Malaysian Chapter (MyIGS). She is a registered professional engineer (P. Eng) of the Institution of Engineers Indonesia, a graduate member of the Board of Engineers Malaysia (BEM), and a member of the Institution of Engineers Australia (MIEAust). Her industry experience spans projects in Indonesia, Malaysia, and Australia, supported by university, industry, and government.

Session 2: From Peat to Seabed: Some Geotechnical Aspects of Sarawak

Synopsis:

Sarawak's diverse geological conditions present a wide range of geotechnical challenges, from soft organic peat and clays in low-lying coastal areas to complex soil conditions offshore. This talk provides an overview of some geotechnical characteristics and engineering considerations associated with both onshore and offshore soils in the region.

Key topics include the importance of thorough geotechnical site investigations for optimising infrastructure design on problematic onshore soils, as well as the geotechnical issues encountered in offshore environments relevant to the oil and gas sector and the burgeoning offshore renewable energy industry. The talk also highlights ongoing research and innovation in Sarawak aimed at bridging the gap between fundamental soil behaviour and practical engineering applications.

Speaker's Profile:

Dr. Fauzan Sahdi is a Senior Lecturer in Civil Engineering at Universiti Malaysia Sarawak (UNIMAS) and Director of the Research Centre for Construction on Peat and Problematic Soils (COPPS). He obtained his PhD from The University of Western Australia (UWA) in 2013 and was a Postdoctoral Research Fellow with the Australian Research Council Industrial Transformation Research Hub for Offshore Floating Facilities from 2017 to 2021. He continues to collaborate with UWA as an Adjunct Senior Research Fellow. His research spans offshore and peat geotechnics, in-situ testing, soil-structure-fluid interaction, and fibre optic sensing. Dr. Fauzan is actively involved in research, consultancy, and teaching, with publications in leading geotechnical journals including *Géotechnique*, *Journal of Geotechnical and Geoenvironmental Engineering*, and *Canadian Geotechnical Journal*.



Dr. Fauzan Sahdi
UNIMAS

Session 3: Alternative Foundation Solutions with Ground Improvement

Synopsis:

With the growing disruption in the construction industry, geotechnical engineer is often tasked with solving geotechnical problems with solutions that are safer, more cost-effective and sustainable. Ground Improvement can be an innovative solution to such geotechnical problems. This talk will introduce the various Ground Improvement techniques and key criteria in selecting a Ground Improvement technique. Two Ground Improvement techniques; namely Deep Vibro Techniques and Deep Soil Mixing will be discussed in detail. Selected case studies will be used to demonstrate the successful applications of the techniques as alternative foundation solutions for structures.



Ir. Si Jet
Keller (M) S/B

Speaker's Profile:

Ir. Si Jet is a registered Professional Engineer (P.E.) with the Board of Engineers Malaysia (BEM). He earned his Bachelor of Engineering (Civil) from Universiti Teknologi Petronas (UTP) in 2018 and subsequently obtained a Master's degree in Geotechnical Engineering from Universiti Teknologi Malaysia (UTM) in 2021. He began his career as a geotechnical engineer with a local consulting firm in Malaysia, gaining experience across a wide range of geotechnical projects. He currently holds the position of Deputy Design Manager at Keller (M) Sdn. Bhd., where he focuses on technical review and design of ground improvement solutions, including deep vibro techniques, soil mixing, grouting, and other specialist geotechnical methods. Beyond his professional role, Ir. Si Jet actively contributes to the engineering community as a committee member of the Institution of Engineers Malaysia (IEM) Tunnel & Underground Space Technical Division (TUSTD) and the Youth Wing of the Malaysian Geotechnical Society (YMGS).

Session 4: Engineering Challenges in Soft and Peat Soils: A Case Study from the Pan Borneo Highway

Synopsis:

The Pan Borneo Highway project traverses a diverse range of soil types, including skeletal soils, red-yellow podzolic soils, grey-white podzolic soils, grey soils (soft clay/silt), and organic soils such as shallow to deep peat. During both the design and construction phases, significant engineering challenges arose, particularly in areas where soft clay, silt, and peat were encountered adjacent to existing roads. This presentation will delve into the geotechnical design and construction techniques adopted to address these challenges, highlighting issues such as ground stability, settlement control, and suitable ground improvement methods. Special focus will be given to the deep peat formations in the Sibul region, examining their unique characteristics and the engineering solutions implemented to mitigate associated risks.



Speaker's Profile:

Ir. Ts. Ahmad Danial Ridwan obtained his Bachelor of Civil Engineering from Universiti Industri Selangor, Malaysia, in 2008. He is currently one of the Directors at Jurutera Jasa (Sarawak) Sdn. Bhd. With approximately 16 years of experience as a consulting engineer, his expertise spans a wide range of projects, with major involvement in geotechnical works, road infrastructure, and other civil engineering disciplines. He holds several professional memberships, including as a Professional Engineer with Practising Certificate (PEPC) with the Board of Engineers Malaysia (BEM), a Member of the Institution of Engineers Malaysia (IEM), and a Professional Technologist (P.Tech) registered with the Malaysia Board of Technologists (MBOT).

Ir. Ts. Ahmad
Danial Ridwan
Jurutera Jasa
(Sarawak) S/B

Session 5: Ground Treatment in Peaty Soils and Shallow Underpass Construction in Urban Areas

Synopsis:

The talk will focus on the geotechnical challenges and solutions associated with ground treatment in peaty soils and the construction of shallow underpasses in densely populated urban environments. The session will highlight common risks and constraints, including settlement, stability, and limited working space. Advanced ground improvement techniques and emerging technologies that enhance the engineering properties of soft organic soils will be highlighted.

Speaker's Profile:

Ir. Chen Chuang Loom obtained his Bachelor of Civil Engineering from Universiti Malaysia Sarawak (UNIMAS) in 2013. He is currently the Director of Perunding JPG Sdn Bhd and has long been affiliated with Jurutera Jasa, particularly in geotechnical engineering projects. With over 11 years of experience, Ir. Chen specialises in the design and construction of foundations, slopes, and other geotechnical works, primarily across Sarawak. He holds several professional memberships, including as a Professional Engineer with Practising Certificate (PEPC) with the Board of Engineers Malaysia (BEM), a Member of the Institution of Engineers Malaysia (IEM), and a Member of the Malaysia Geotechnical Society, Malaysia (MGS)



Ir. Chen Chuang Loom
Perunding JPG S/B

Session 6: Comprehensive Testing of Tropical Peat: Bridging Theory and Practice in the Lab and Field

Synopsis:

Peat is found in many countries and is described differently at times from both a qualitative and quantitative perspective. It naturally forms through the decomposition of plant and animal matter under anaerobic conditions that occur over long periods. It exists in various climatic zones, from the Arctic to the tropics in both the northern and southern hemispheres. The physical and chemical properties of peat, along with the vegetation that supports it, vary depending on geographical location, climate, topography, hydrology, and hydrochemistry. Tropical peat soils, found extensively in Southeast Asia and equatorial regions, are highly organic, extremely compressible, and water-saturated. These characteristics pose significant challenges for construction, infrastructure development, and environmental conservation. This study undertakes a comprehensive testing program to better understand the engineering behaviour of tropical peat and to bridge the gap between theoretical knowledge and real-world field performance.



Prof. Ir. Ts. Dr. Adnan
Zainorabidin
UTHM

Speaker's Profile:

Prof. Ir. Ts. Dr. Adnan Zainorabidin is a renowned geotechnical engineering professor with over 25 years of expertise, particularly in peat soil technology. He holds a PhD from the University of East London, UK, and is the founding head of the Research Centre for Soft Soil Malaysia (RECESS) at Universiti Tun Hussein Onn Malaysia (UTHM). Prof. Adnan has supervised over 40 postgraduates and published more than 150 academic works. He is a sought-after keynote speaker and consultant in forensic geotechnics, contributing significantly to national guidelines on peat soil construction, i.e. Malaysian Guidelines for Construction on Peat Soil (CREAM, 2015 & 2020). His recent accolades include being named one of UTHM's Top 10 Outstanding Researchers (2020-2021) and ranking 3rd for international grants in 2021.

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EXHIBITION LAYOUT***



***THE SKETCH LAYOUT IS PROVIDED FOR REFERENCE ONLY AND
MAY VARY BASED ON THE ACTUAL DAY'S ARRANGEMENT.

