

Suara



PERUNDING



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CONSULTING ENGINEERS MALAYSIA



INTERNATIONAL FEDERATION OF
CONSULTING ENGINEERS (IFC)



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Ir. Lee Tet Fon

Ir. Lainus Ak. Lichok

Ir. Sharifah Azlina Bt Raja Kamal Pasmah

Ir. Romesh Srinivasan

Ir. Ahmad Masyhur b Jahaya

Ir. Dr. Muhammad Arkam b Che Munaaim

Publisher

**Association of Consulting
Engineers Malaysia (ACEM)**

Company No: 196301000185(5070-M)

Suite 20-9, Level 20, Menara 1MK

No 1, Jalan Kiara, Mont' Kiara

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MESSAGE FROM THE PRESIDENT

Dear ACEM Members and Readers,



As usual, time flies and we have now reached the end of the year. The time to reflect on how we performed this year 2020 and our think of our resolve to do better in 2021.

Yes, we all had a very challenging year due to the impact of covid-19 on our lives, our businesses and our industry. When ACEM did a rapid survey on the status of our businesses, the positions were bad. Many firms had cashflow issues, jobs opportunities were limited and jobs-in-hand were at the ending stages. Many responded quickly with reduction in salaries, stopped recruitment and renewal of contract and curtailed overheads and expenses. We also had to Work From Home (WFH) and this affected our productivity and therefore income.

ACEM has been active in several engagements with the Government over the past few months to raise our issues. These included meeting with the Economic Action Council (EAC) chaired by the YAB Prime Minister, several meetings with the Minister in the PM's Department YB Dato' Sri Mustapa Mohamed, YB Menteri Kanan Kerja Raya, KSU KKR, TKSU MITI and the EAC Secretariat. Our requests have been consistent – more job opportunities, faster payments, payments for site supervision during the WFH order, financial packages for firms rather than just for individuals under the economic stimulus packages, fairer terms and conditions of procurement and service contracts and gave our feedback on SOPs for a more practical application. We also cooperated well with our fellow professional associations through the BIPC in addressing current issues related to the covid-19 impacts. We appreciate that some of the Government's Economic Stimulus Packages have benefitted our businesses and we hope these will continue.

ACEM was also instrumental in getting a full waiver of CPD points as well as a 50% rebate on registration renewals for 2021 from BEM.

Over the last few months too ACEM has successfully conducted a number of webinars and many more are planned for next year.

We had a lively and successful AGM in June and following on will be to review our constitution to reflect the need to account for changes that has occurred as well as to be consistent with the Company Act.

The recent good news is that the ACEM President and Ir Sundraraj our Deputy President were recently appointed as members of the Board of Engineers and we will continue to work on continued improvements to our profession, business and industry. We hope that our Council Members would also be appointed to the BEM Standing Committees and contribute affirmatively to the profession.

What will 2021 be like for all of us? At present the economic forecast for Malaysia and the world as a whole is not that bright. Many are still dependent on existing jobs. But there are announcements of some of the reactivation of some major infrastructure projects. Generally, many of us have survived well in 2020. We can see some light at the end of the tunnel. Let us all think positive and take positive actions. ACEM has been around for 58 years. We have all gone through the ups and down and we should be more resilient now and forge ahead and grow.

The Hari Profesion Teknikal Negara is on the first Saturday of December every year. This year HPTN 2020 HPTN is on the 5th December and the celebrations will run from 5 to 30 December. We are all very much a significant part of this and let us all participate actively in the events organised over this period.

My prayers for a successful 2021 for all of us. **Merry Christmas** and a **Happy New Year** to all.

Datuk Ir. Mohd Adnan Mohd Nor
President, ACEM

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- 3-Days of Lab Session on “Administration of Contractors for Implementation of Sarawak Government's Projects
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New Members

(October – December 2020)

Individuals

October 2020

Name	Date
Ir. Tay Kho Jim	6 October 2020
Ir. Yong Sui Su	6 October 2020

December 2020

Name	Date
Ir. Pang San Moh	7 December 2020
Ir. Lee Kok Siong	7 December 2020
Ir. Arvind Viswanath Menon	10 December 2020
Ir. Beh Kim Boon	14 December 2020
Dr. Ir. Beh Kooi Ho	14 December 2020
Ir. Cheong Hon Wooli	15 December 2020
Ir. Chok Kai Kuang	15 December 2020
Ir. Mohd Sarudin bin Mohd Aziz	15 December 2020

Panel Member Firms

December 2020

Name	Date
KWA Consult Sdn Bhd	21 December 2020
BNH Consulting Sdn Bhd	21 December 2020
Associate Engineers Consulting Engineer	21 December 2020

Cessation of Membership

(September – December 2020)

Individuals

September 2020

Name	Date
Ir. Fauzi Abd b. Rahman	23 September 2020
Ir. Wong Boon Heng	25 September 2020
Ir. Mohd Haszuan b. Sukairi	29 September 2020

October 2020

Name	Date
Ir. Hj Mohd Mazlan b. Md Ismail Merican	19 October 2020

November 2020

Name	Date
Dato' Ir. Ahmad Zakiyuddin B Abd Rahman	2 November 2020
Ir. Azlan b. Othman	2 November 2020
Ir. Jamaluddin b. Abdullah	2 November 2020
Ir. Roslan b. Yahya	2 November 2020
Ir. Farah Haznee Binti Ahmad	2 November 2020
Ir. Liao Chi Kuang	2 November 2020
Ir. Mohamed Suhaimi Baharuddin	2 November 2020
Ir. Maji. (R) Ahmad Mazlan Othman	2 November 2020
Ir. Kol (B) Abdul Ghaffar b. Abdul Rahman	2 November 2020
Ir. Dr. Yan Ngai Nen	2 November 2020
Ir. Chow Chew Hoong	2 November 2020
Ir. Syed Zakaria b. Syed Mohamed	2 November 2020
Ir. Ahmad Razef b. Ab. Rahman	2 November 2020
Ir. Teo Kok Jin	2 November 2020
Ir. Mohd Yaakob b. Zakaria	2 November 2020
Ir. Shamsuddin b. Abu	2 November 2020
Ir. Abd Isham b. Abd Karim	2 November 2020
Ir. Asri b. Hasan	2 November 2020
Ir. Ahmad Kamal Arif b. Mohamad	2 November 2020
Ir. Beh Hong Lin	11 November 2020
Ir. Gan Choon Hock	19 November 2020
Ir. Wong Chow Loong	19 November 2020
Ir. Mohd Rosli b. Sirin	19 November 2020
Dato' Ir. Mohamad Razali b. Othman	23 November 2020
Ir. Lim Chee Hai	25 November 2020

December 2020

Name	Date
Ir. Chua Yam Poh	2 November 2020

Panel Member Firms

November 2020

Name	Date
Ihsan Team Consultants Sdn Bhd	2 November 2020
MEG Consult Sdn Bhd	19 November 2020
Jurutera Perunding Tulin Sdn Bhd	19 November 2020

57th Annual General Meeting

The association's 57th Annual General Meeting was held on 26 September 2020 at the Sime Darby Convention Centre, Kuala Lumpur. 54 members were present at the agm to attend to the usual business of the agm which included:

- Confirmation of minutes of the 56th annual general meeting held on 26 June 2019;
- Adoption of council's report for the session 2019/2020;
- Adoption of audited accounts for year ended 31 december 2019;
- Election of council members for the 2020/2021 session; and
- Re-appointment of the auditors.

Ir. Ahmad Masyhur b Jaya and Ir. Dr. Muhammad Arkam b Che Munaaim were elected into council for the session 2020/2021. The council also appointed ir. Kuah kee hong to fill a casual vacancy at its first meeting of the session.

The ACEM council for session 2020/2021 comprises:

President

Deputy President

Honorary Treasurer

Honorary Secretary : Datuk Ir. Mohd Adnan b Mohd Nor

Council Members : Ir. K. Sundraraj

: Ir. Ahmad Rashidi b Zainudin

: Ir. Anuar Mohd Aris

: Ir. Ahmad Masyhur b Jahaya

Ir. Kuah Kee Hong

Ir. Lainus Ak Lichok

Ir. Lee Tet Fon

Ir. Liew Shaw Shong

Ir. Dr. Muhammad Arkam b Che Munaaim

Ir. Romesh Srinivasan

Ir. Sharifah Azlina bt Raja Kamal Pasmah



Council Session 2020/2021.

Standing (L – R): Ir. Kuah Kee Hong, Ir. Lee Tet Fon, Ir. Liew Shaw Shong, Ir. Romesh Srinivasan, Ir. Dr. Muhammad Arkam Che Munaaim, Ir. Ahmad Masyhur Jahaya and Ir. Lainus Ak Lichok. Seated (L – R): Ir. Ahmad Rashidi Zainuddin, Ir. Anuar Mohd Aris, Datuk Ir. Mohd Adnan b Mohd Nor, Ir. K Sundraraj, Ir. Sharifah Azlina Raja Kamal Pasmah



YBhg. Datuk Ir. Mohd Adnan, delivering the opening remarks for the AGM



From left, Datuk Ir. Adnan & Ir. Sundraraj.



From left, Ir. Rashidi & Ir. Anuar



From left, Ir. Liew Shaw Shong, Ir. Kuah Kee Hong & Ir. Sharifah Azlina.



From left, Ir. Romesh & Ir Chong Chew Fan



Line of Secretariat Committee with the Council Members



ACEM members who attended the AGM



Ir. Rashidi presenting the report to all members



Ir. Datuk Mohd Adnan presenting token of appreciation to (Left) Ir. Chong Chew Fan, one of the retiring Council Members present at the meeting assisted by GM, En. Ramli (right)



En. Ramli (GM) presenting token of appreciation to Ir. Datuk Mustaza b Salim (Left), one of the retiring Council Members at the ACEM Office.



Datuk Ir. Adnan spoke to the members whosed posing a question during AGM session.



Q&A session during AGM.



Some of the ACEM members posing the questions to the Council Members.

Council Members First Meeting 2020

The first Council Meeting for session 2020/2021 was held immediately after the 57th AGM on 26th September 2020. It was noted that:

1. Dr. Ir. Muhammad Arkam Bin Che Munaaim and Ir. Ahmad Masyhur Bin Jahaya being nominated by Members to fill the vacancies caused by retirement by rotation of Councillors, was duly elected to the Council.
2. Ir. Romesh Srinivasan who was retiring in accordance with Article 55 of the Articles of the Association and being eligible for re-election, was duly elected to the Council.
3. Ir. Lee Tet Fon, being the Sabah Branch Chairman and Ir. Lainus ak Lichok, being the Sarawak Branch Chairman were automatically elected into the Council, in accordance to Article 49 of the Articles of Association.
4. Datuk Ir. Mustaza Bin Salim and Ir. Chong Chew Fan end their term as Council Member at the end of Session 2019/2020.



Datuk Ir. Mohd Adnan chaired the 1st council meeting and welcomed new council members of 2020/2021



From left, Ir. Ahmad Rashidi, Ir. Anuar Mohd Aris, Ir. Datuk Mohd Adnan and Ir. K. Sundararaj.



From left, Ir. Ahmad Masyhur, Ir. Romesh and GM, En. Ramli.



From left, Ir. Liew Shaw Shong, Ir. Kuah Kee Hong and Ir. Sharifah Azlina

Workshop on MS ISO 37001:2016 Anti-Bribery Management Systems (ABMS) & Corruption Risk Management

The workshop, held at ACEM, was scheduled for 21-22 September 12-13 October and 4-5 November 2020. The training is conducted by The Malaysian Institute of Integrity. There are eleven participants in total and to date, they have completed Workshop One on Understanding of ABMS and Workshop Two on Corruption Risk Assessment / Bribery Risk Assessment. Workshop Three on ABMS: Documentation Development has been postponed adhering to the CMCO standard operating procedure.



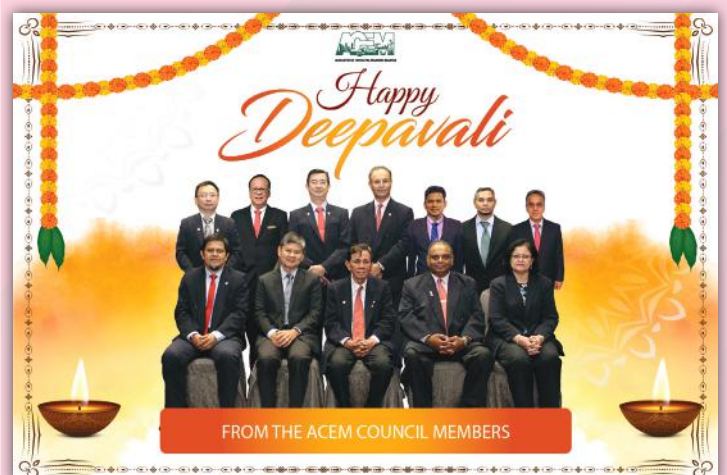
The speaker from IIM gave his lecture on Corruption Risk Assessment / Bribery Risk Assessment



Most of the participant attended the workshop are from ACEM Panel Members. They represented their company.



Ms Vivien opened up the workshop by welcomed the participants and introduced the speaker from the IIM



Malaysia's Construction Industry Suffers Record Decline Engagement Session with Minister of Work and Minister in Prime Minister Office (Economic)

The engagement session with construction industry players in was held on 23th September 2020 in Kuala Lumpur. The main point highlighted here were the impact to the construction players during COVID-19. Minister in Prime Minister Office (Economic) Datuk Seri Mustapa Mohamed, highlighted the proposal by ACEM which represented by Datuk Ir. Mohd Adnan Mohd Nor. He proposed the formation of a high-level committee, which would meet bi-monthly to address issues faced by the industry players and jolt Malaysia's construction sector. The news can be read at ACEM website under news & activity.

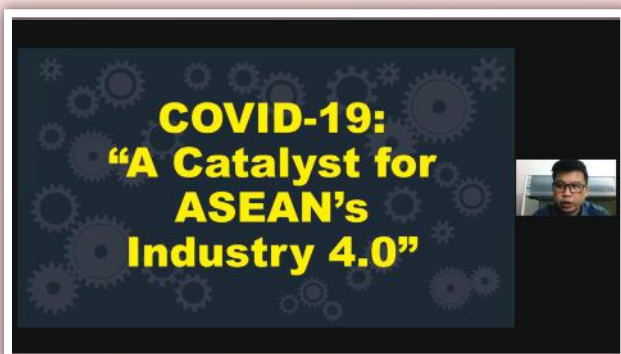


Group photo of Datuk Ir. Mohd Adnan, together with the head of government agencies and head of construction industry main players attended by Minister of Work and Minister in Prime Minister Office (Economic). Photo courtesy of NST.

Webinar on Digital Transformation for Engineering Consulting Firms: The Way Forward

The webinar was presented by Ir. Dr Tan Chee Fai, Director of Perunding IBS Sdn. Bhd. and Chief Technical Officer of Robolab Technology Sdn. Bhd. on 10 November 2020. A total of 35 participants attended the webinar.

The focus of this talk is on the importance of the Digital Transformation for Engineering Consulting Firms in the new normal during the COVID-19 pandemic period and the way forward for Engineering Consultancy Practices (ECP) to prepare ourselves for the new opportunity and challenges during the post pandemic. Some of the potential challenges that might be faced by ECP and strategies to be taken during the digital transformation process were also shared by the speaker during the talk.



Ir. Dr. Tan Chee Fai presenting his lecture

Induction Course for New M&E Engineers

The course was held from 19th to 23rd October 2020. This is the first time that the course is conducted online. The aim of the course is to introduce Professional M&E Consulting Engineering service to new M&E Engineers, provide a brief run through of M&E design engineering practice, and to prepare course participants for further training in specific M&E engineering practice. The course is opened to Mechanical or Electrical Engineers without formal training in Consulting Engineering practice, and Engineers in consulting engineering firms with up to 2 years' experience. A total of 24 participants attended the course. Subjects covered were Professional Practice, Lifts & Escalators, Plumbing & Sanitary, ELV System, ACMV Systems, Fire Safety System and Electrical High Voltage & Low Voltage Installations.

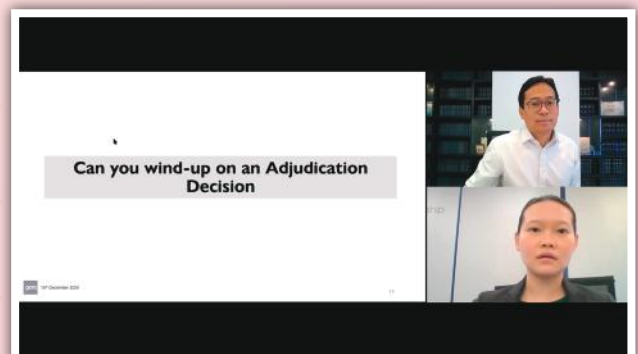


The Speakers were presenting their slides during the webinar.

Webinar On Recent Developments In CIPAA

The webinar was presented by Mr. Foo Joon Liang and Ms. Tan Min Lee from Gan Partnership on 15 December 2020. A total of 52 participants attended the webinar.

The focus of this talk is on the recent developments in the Construction Industry Payment and Adjudication Act (CIPAA) 2012 since its enforcement on 15 April 2014. Various case laws have been referred to in the talk to elaborate the interpretation of the provisions in CIPAA. Some of the potential challenges in the adjudication process with real examples were shared by the speakers and the session concluded with some key points for developers, consultants and contractors who wish to pursue with CIPAA.



Mr. Foo Joon Liang and Ms. Tan Min Lee presenting their lecture.

P. Ganendra Scholarship Fund

The P. Ganendra Scholarship, established in 2009 is set up in memory of the late Ir. P. Ganendra, one of the leading luminaries in engineering consultancy in Malaysia, who had set the pace for the growth of the industry in the 1970s through his vision and passion for engineering. The late Ir. P. Ganendra had set up Minconsult Sdn Bhd, one of the largest multidisciplinary engineering consultancy in Malaysia. The P. Ganendra Scholarship is set up to assist deserving individuals to pursue an undergraduate course in engineering at a local university recognized by the Board of Engineers, Malaysia. The P. Ganendra Scholarship is managed by the Association of Consulting Engineers Malaysia (ACEM) for and on behalf of the Ganendra family. This year, 37 applications have been received for three scholarships to be awarded. Based on the qualification criteria and financial constraints of the applicants, the following three students were selected to receive the scholarship:

- Chua Meng Kiat, BE(Elect), Asia Pacific University of Technology & Innovation, Year 2
- Eza Tham, BE(Mech), Monash University Malaysia, Year 3
- Matthew Lim Tze Min, BE(Elect) UCSI University, Year 1

The recipients were invited to tea with Council Members on 19 December 2020 at the ACEM office. However, due to the CMCO restrictions, only Ms. Eza Tham attended the ceremony and received the study grant from YBhg. Dato' Ir. Dr. Dennis Ganendra, Director of Minconsult Sdn Bhd, while Mr. Chua Meng Kiat attended online via Zoom as he is currently in Terengganu. Mr. Matthew Lim received the study grant a day earlier presented by Ir. Ahmad Masyhur at the ACEM office. ACEM would like to thank YBhg. Dato' Ir. Dr. Dennis Ganendra for attending the ceremony and presenting the study grant to the recipients.



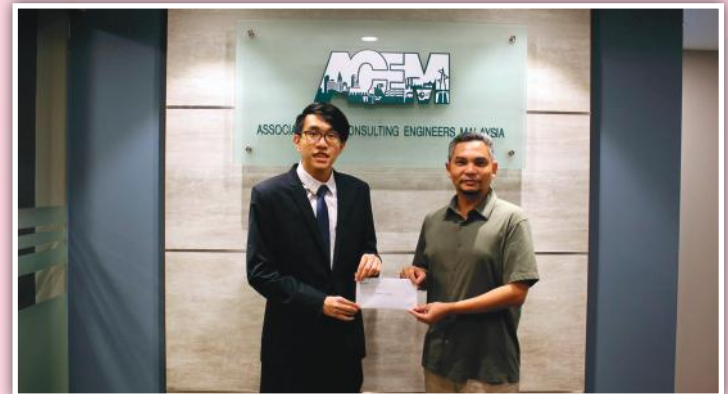
Group photo from left, Ir. Dr. Muhammad Arkam, Ir. Anuar, Datuk Ir. Mohd Adnan, Dato' Ir. Dr. Dennis Ganendra, Ir. Sharifah Azlina, Ir. Sundraraj, Ir. Romesh, Ir. Ahmad Rashidi, and GM En. Ramli.



From left, Dato' Ir. Dr. Dennis Ganendra presenting cheque to Ms. Eza Tham witnessed by Datuk Ir. Mohd Adnan.



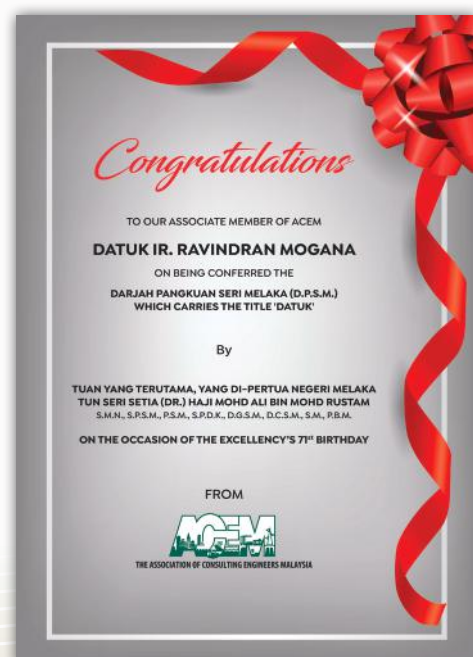
From left, Dato' Ir. Dr. Dennis Ganendra pictured together with online attended student, Mr Chua Meng Kiat witnessed by Datuk Ir. Mohd Adnan.



Ir. Ahmad Masyhur presenting cheque to Mr. Matthew Lim Tze Min



CONGRATULATIONS



SABAH & SARAWAK NEWS

Engagement Meeting with Construction Stakeholders in Sabah: Weathering Construction Industry in Sabah Amid the Pandemic – Covid -19 Crisis in 2020/2021.

Date : 5 November 2020 (Thursday)
 Venue : CIDB Office, Kota Kinabalu, Sabah.
 Organised by : CIDB
 Attended by : Ir. Razalie bin Sindong

ACEM Sabah and IEM Sabah had jointly released a joint statement on the recommendations for CIDB and Minister of Work consideration concerning to the COVID-19 and was submitted to Sabah Housing and Real estate Developers Association (SHARED A) for compilations.

1st Sabah Construction Consultative Meeting

Date : 30 November 2020 (Monday)
 Venue : SHARED A Office
 Organised by : Sabah Housing And Real estate Developers Association (SHARED A)
 Attended by : Ir. Lee Tet Fon

The meeting was chaired by SHARED A's president, Datuk Chew Sang Hai. The meeting was also attended by ACEM Sabah, IEM Sabah, PAM Sabah and RISM Sabah. The purpose of the meeting is to compile all the immediate issues relating directly to Sabah Construction Industry. The compilations will be submitted to Dr Roland Chia, the board member to be presented in the meeting at CIDB national level.



Meeting in progress.



The view of participants and speakers followed the SOP, i.e. wear face mask and social distance.

ACEM Sabah Online Talk on "Recent Development in CIPAA"

Date : 14 December 2020 (Monday)
 Venue : Online Platform
 Speakers : Grace Chaw Hei Hei (LL.B (Hons), FCI Arb, Adjudicator (AIAC), Mediator (SIMI)) & Foo Joon Liang, (FCI Arb, FSI Arb, FHKI Arb)
 Attended by : Open to all

The Construction Industry Payment and Adjudication Act 2012 has been in force since March 2014. The speakers will take the participants through recent developments in CIPAA case law and give guidance on practical aspects of adjudication given these recent developments. The talk was conducted via ZOOM webinar and was attended by 21 participants.



Webinar in progress.

SARAWAK NEWS

Induction Course for New Mechanical & Electrical Engineers

The Association of Consulting Engineers Malaysia (Sarawak Branch) organised 3 days of Saturdays on Induction Course for New Mechanical & Electrical Engineers which was begun on 14th March 2020, 12th September 2020 and 19th September 2020. The Induction Course was stopped for a while because of Movement Control Order /MCO implemented on 28th March 2020 in Malaysia. After the Prime Minister announced the Conditional Movement Control Order /CMCO on 12th May 2020, therefore the operation of businesses resumed with tight SOP. The Induction Course continued for 2 days of Saturdays which was held on 12th September 2020 and 19th September 2020 at Fifty Six Hotel, Kuching.



The group photo was taken on 14th March 2020 before MCO implemented on 28th March 2020



Presentation of token appreciation to Dr. Choo Chung Siung from ACEM (Sarawak Branch)



Presentation of token appreciation to Dr. Chai Chang Saar from ACEM (Sarawak Branch)



Presentation of token appreciation to Dr. Elammaran Jayamani from ACEM (Sarawak Branch)



Presentation of token appreciation to Ir. Professor Lau Hieng Ho from ACEM (Sarawak Branch)

4 Days of Evening Talks for the Month of October 2020

The Association of Consulting Engineers Malaysia (Sarawak Branch) organised 4 days of evening talks for the month of October 2020 at Fifty Six Hotel, Kuching. The evening talks which were organised are as follows: -

- Evening talk on "Micro tunnelling in Highly Weathered Rocks- Development and Validation of Some Novel Methods from case studies in Kuching" on 5th October 2020 by Dr. Choo Chung Siung from Swinburne University.
- Evening talk on "Construction 4.0" on 7th October 2020 by Dr. Chai Chang Saar from Swinburne University
- Evening talk on "Importance of Composite Materials in Modern Materials and Manufacturing Industry" on 12th October 2020 by Dr. Elammaran Jayamani from Swinburne University
- Evening talk on "Application of Cold-formed Steel in Construction Industry" on 14th October 2020 by Ir. Professor Lau Hieng Ho from Swinburne University

Meeting on Working Committee For Joint Technical Consultative Committee (JTCC)

The Ministry of Local Government & Housing Sarawak held a meeting on "Working Committee For Joint Technical Consultative Committee (JTCC)" on 5th October 2020 at Waterfront Hotel Kuching. The meeting was chaired by YB Dato Sri Dr. Sim Hui Khian, Minister For Ministry of Local Government & Housing Sarawak. ACEM (Sarawak Branch)'s representatives whom were Ir. Clarence Chieng Sie Yui, Ir. William Tan Khoon Lee and Ir. Hii Tiong Koon attending the meeting. The major issues being discussed was Sarawak Building Ordinance and e-Submission during the meeting.



A group photo of JTCC meeting on 5th October 2020



photo courtesy of www.sarawaktimber.gov.my

3 days of Lab Session on "Lab Action Plan for Sarawak Bamboo Industry Development Masterplan"

The Sarawak Timber Industry Development Corporation (PUSAKA) organised 3 days of Lab Session on "Lab Action Plan for Sarawak Bamboo Industry Development Masterplan" from 5th to 9th October 2020 at UCSI Hotel, Kuching. A few government agencies, universities, private agencies and associations attended the lab session. The representatives from ACEM (Sarawak Branch) whom were Ir. Rudy Zulfika bin Yusof and Ir. Wong Sie Ung attending the lab session. The purpose of conducting the lab session was to develop the bamboo industry in Sarawak.

3-days of Lab Session on "Administration of Contractors for Implementation of Sarawak Government's Projects"

The Ministry of Infrastructure and Port Development Sarawak organised 3-days of Lab Session on "Administration of Contractors for Implementation of Sarawak Government's Projects" from 13th October to 15th October 2020 at UCSI Hotel, Kuching. A few government agencies, associations and councils attended the lab session. ACEM (Sarawak Branch) delegate attended the lab session and the delegate was led by Ir. Lainus ak Lichok, Chairman of ACEM (Sarawak Branch). There were a few issues such as salary allowances, actual Multiply Factor, IOW issues and Supervision issues being raised up during the lab session.

Half Day Course on "Sewerage Management in Sarawak"

The Association of Consulting Engineers Malaysia (Sarawak Branch) organised a half day course on "Sewerage Management in Sarawak" on 19th October 2020 at Fifty Six Hotel, Kuching. Mdm Annastesia Sulastris binti Salleh from Sewerage Services Department Sarawak (SSDS) was the speaker for the course.



Mdm Annastesia Sulastris from SSDS received token appreciation from ACEM (Sarawak Branch)



The view of participants attended the course following the SOP Covid-19

Half Day Seminar on “Noise Control Design Calculations & Selections for Engine-Generator Installations

The Association of Consulting Engineers Malaysia (Sarawak Branch) organised a half day seminar on “Noise Control Design Calculations & Selections for Engine-Generator Installations” on 26th October 2020 at Imperial Hotel, Kuching. The speaker of the seminar was Ir. Tnay Choon Hwa.



The view of participants and speaker during the seminar



The participants followed the SOP Covid-19 during the seminar

INSURANCE FAQ

1. What is a professional service?

Professional services shall mean the following activities:

- (a) Design or specification, including advice, oversight and supervision in respect of design;
- (b) Drafting, drawings and technical documentation;
- (c) Technical calculation;
- (d) Measurement, testing and /or certification of materials;
- (e) Project or construction management where the insured is specifically remunerated by way of a fee for service in respect of the overall control and supervision of a contract;
- (f) Feasibility studies;
- (g) Programming and time flow management; and training in respect of (a) – (g) above.



2. Why does a professional need a Professional Indemnity Insurance (PII)?

No matter how thoroughly your company prepares and executes each project, a significant element of risk is always present in your work as a professional. When you least expect it, you may find yourself at the center of disruptive and expensive claims involving negligence or any act or error leading to a breach of duty. Litigation is expensive and damage awards if you lose, can be ruinous.



GEOHAZARDS STUDY USING LIGHT DETECTION AND RANGING (LIDAR) METHOD VIA UNMANNED AERIAL VEHICLE (UAV)

Overview of the Guidelines by:

Ir. Sharifah Azlina Raja Kamal Pasmah¹
Muhammad Faiz Kasim²
Afiq Farhan Abdul Rahim³

¹HSS Integrated Sdn Bhd, Malaysia - azlina@hss.com.my

²HSS Integrated Sdn Bhd, Malaysia - faizkasim@hss.com.my

³Geomapping Technology Sdn Bhd, Malaysia - afiq@geomapping.com.my

INTRODUCTION

Geohazards in both natural and man-made terrain along operating highways in Malaysia can have adverse impacts such as obstructing traffic, damaging infrastructure and in some cases, leading to injuries and fatalities. Notable occurrences in the past include Bukit Lanjan rock-slope failure in 2004, Genting Sempah debris flow in 1995 and Gunung Tempurung debris flow in 2004.

One of the urban expressway under construction in the Klang Valley traverses through hilly terrain near Bukit Saga in Ampang municipality. As the nature of terrain consists of steep valleys and side slopes, this area is susceptible to potential geohazards if not adequately addressed and treated. Therefore, a comprehensive study was carried out to identify potential areas of geo-hazards and thereafter formulate effective preventive measures. This article deliberates on the aspects of study undertaken.

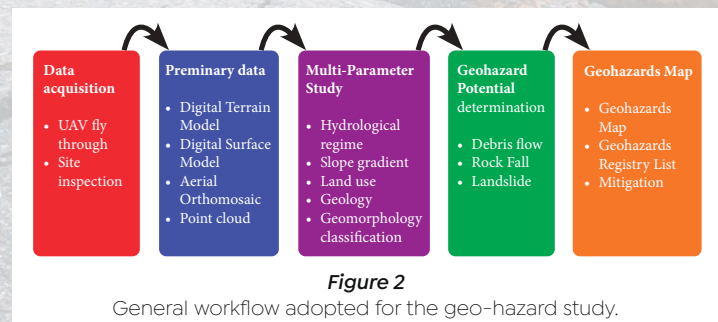
METHODOLOGY

Light Detection and Ranging (LiDAR) method via Unmanned Aerial Vehicle (UAV) was used to obtain accurate topography within the study area. See Figure 1

LiDAR has been used in multiple instances for geohazards study in Malaysia (Zainab Mohamed 2018, Habibah Hanan et al. 2016) particularly for its capability to penetrate thick vegetation canopy to obtain accurate topographical settings. The data acquisition here was performed along a 4km stretch with 500m-width corridor covering an area within the proximity of Bukit Saga's peak.

Detailed evaluation on geohazards using LiDAR data for this area has been carried out based on the Guidelines for Natural Terrain Hazard Studies (Ho and Roberts 2016) and other

published methods in identifying associated geomorphology, hydrology and relic structures (Varnes and Cruden 1996, Hungri et al. 2013, McCalpin 1982). Figure 2 shows a simplified workflow of this study.



FACTORS CONTRIBUTING TO GEOHAZARDS OCCURRENCE

Geographic Information System (GIS) was subsequently used to integrate LiDAR data for geo-hazards identification. Digital Terrain Model (DTM) of the study area has shown the elevation of the rugged terrain to be ranging between 100m to 400m above sea level. Hydrological regime in the north to middle section of study area shows a northwesterly flow direction while southeasterly flow direction is identified at the southern part. Watershed area on hill slope based on flow accumulation map generated are small (0.1 – 0.4 km²) but this is sufficient to allow potential debris flow generation (Norhidayu et al. 2016).

The study area is predominantly underlain by granite obvious from the ubiquitous granite boulders along the side slopes. The boulders that were observed on site as well as via DTM image, can potentially lead to rock fall. Boulders and cobble deposits concentrated in an area may also pinpoint to a relic landslide deposit.

Geomorphology of the area also hints of relic landslide morphology observed via hill-shade and topographic openness imagery. The morphology is recognized by its arcuate, sharp break in topography (of what used to be an arcuate head scarp of a landslide) at the upslope, hummocky grounds (indicating slow, but progressing movements), and convex slope downhill. Figure 3 shows the changes from a fresh landslide to a relic one. The relic landslide interpretation is also strengthened by presence of colluvium deposit – a poorly sorted and unconsolidated ground consists of rocks (cobbles and boulders) and soil.

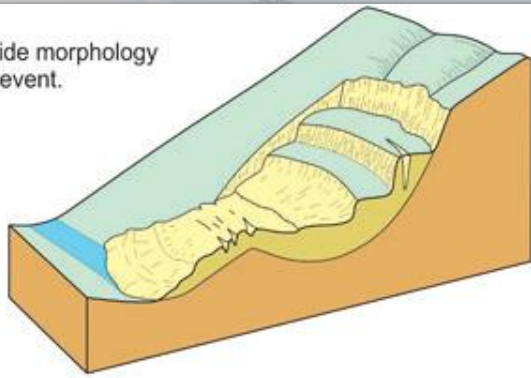
Land-use is also an important factor contributing to geo-hazards occurrence. This particular construction area was selected and given attention due to erosion observed from aerial photographs indicating potential instabilities along the



Figure 1

Unmanned Aerial Vehicle (UAV) for LiDAR data acquisition. The vertical take-off and landing (VTOL) capability of the UAV eliminates the needs of a runway.

Clear landslide morphology from recent event.



Landslide body almost disappeared. Drainage shows weak structural control as per prior to landslide event.

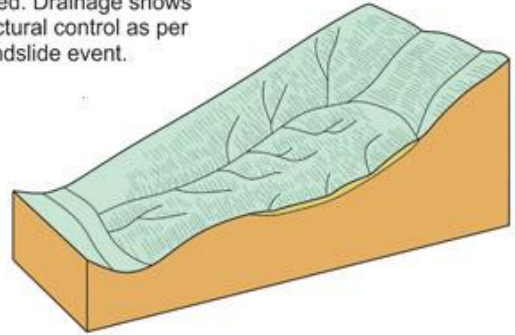


Figure 3

Deterioration of landslide morphology over time from recent events (left) to relic (right) (McCalpin 1982). Due to intense weathering and thick vegetation, most relic landslide in Malaysia lost its distinctive morphology.

slopes. With insight into hydrology, geomorphology, land use, geology and slope gradient, geohazards potential can be effectively identified.

IDENTIFIED GEOHAZARDS

There are three main types of geohazards identified for the areas namely debris flow, landslide and rock falls. Debris flow potential exists when there are channelized catchments drainage (CD) characterized by steep valleys, substantial catchment and restricted outlet. Debris flow may be triggered by landslide upstream, flowing along narrow valley which concentrates the energy towards an expected outlet. Mitigation against debris flow potential include installing a series of debris flow barrier along the route near the outlet, capable of reducing the accumulated energy.

Landslide geohazards identification focuses on relic landslide morphology. Most visible recent landslides in the area are shallow and relatively small (<10m across). However, relic landslide identified within the study area is large with well-defined morphology. Detailed study is needed to verify its status of activity, in which if reactivation potential exists, monitoring equipment shall be installed.

Rock fall geohazard within the study area are restricted to excavated rock slopes. Boulders occurred naturally within side slope that pose potential risk, however, its trajectory is restricted by thick vegetation based on run out analysis. Rock fall barriers and rock ditch are proposed to be constructed in accordance to its predicted trajectory as mitigation effort. Example of geohazards identification is shown in Figure 4.

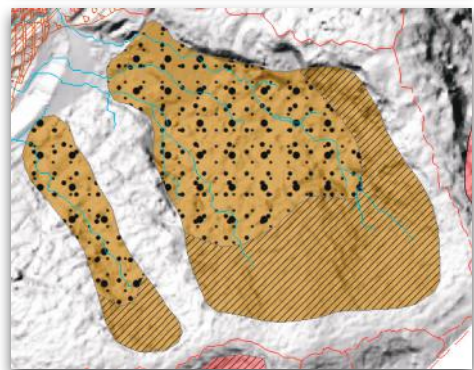
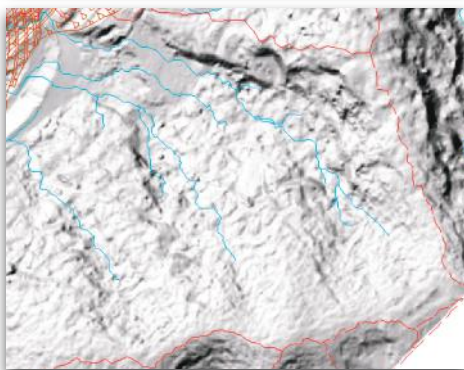
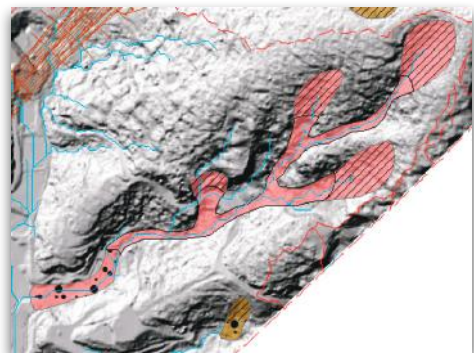
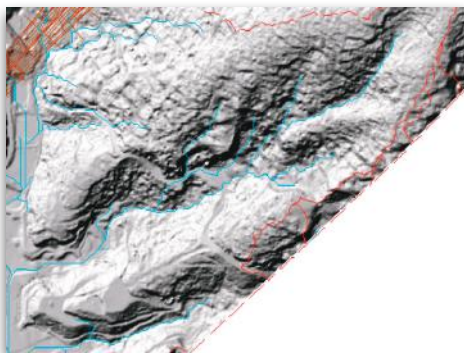


Figure 4

Figure 4: Exemplary instance of potential geohazards identification via hill-shade image generated from LiDAR DTM along the study area. Identifying potential debris flow morphology inside a channelized drainage catchment (CD) (a). Interpreted potential debris flow channel (b). Identification of surface morphology and characteristics of debris flow channel (c) Complete demarcation of debris flow relict integrated with surface morphology and characteristics (d).

CONCLUSIONS

Interpreted geohazards distribution namely debris flow, landslide and rock falls, still require on-site verification to enhance the certainty of its spatial probability (location of geohazard). Without access to periodic aerial photograph, accurate temporal probability (likeliness of such event to occur in a certain period of time) cannot be established. Hence, continued regular aerial photography must be carried out to monitor these. Monitoring of the site conditions with the utilization of LiDAR & UAV method provides an effective and fast data procurement for this purpose even within limited space constraints and highly-challenging terrain and environment.

The interpreted geohazards occurrence within the study area were successfully identified, mitigations and preventive efforts recommended with the objective to reduce its risks to the expressway. Prevention of disaster through early mitigation can significantly reduce potential costly disasters that may disrupt the expressway operation and impair the facility.

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MEMO

This image shows a full-page view of a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. At the bottom, there is a decorative border consisting of overlapping, translucent blue and white wavy patterns, resembling stylized waves or smoke. The overall appearance is clean and professional, typical of a notebook or a template for a document.

57TH ANNUAL GENERAL MEETING



ASSOCIATION OF CONSULTING ENGINEERS MALAYSIA

Suite 20-9, Menara 1MK, No. 1, Jalan Kiara, Mont' Kiara, 50480 Kuala Lumpur

sec@acem.com.my | 03-6413 1503

www.acem.com.my