



ACES SEMINAR 2022

INNOVATIONS, CHALLENGES AND REGULATORY DEVELOPMENT



Mode of Delivery: Zoom Webinar

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CPD: 6 STU (Structural) confirmed
7 STU (M&E) confirmed
PDU to be confirmed

Registration Link

https://us02web.zoom.us/webinar/register/WN_LoAgLUNvT4yknrcHQw3R4w



Note to all participants: CPD points will be awarded based on the actual duration of the session that they have attended.

Day 1	Day 2	Fee per Person
26 May 2022 (Thu) 9.00 am to 6.00 pm	27 May 2022 (Fri) 9.00 am to 6.00 pm	ACES Member \$80 RE/RTO/ CIJC Members \$120 Non-Member \$150

INTRODUCTION

As consultants we face daily challenges of regulatory changes, keeping in pace with technology advancement, continual effort to improve efficiency in our works and ensuring core competency is always maintained as well as continual progression in learning from engineering challenges faced in the industry.

ACES as a representative of practitioners is always looking for ways to keep our members well informed of the industry practices, advancements and changes via these seminars to meet the challenges above.

OBJECTIVES

Our target audience are Professional Engineers & Practitioners (QPDs QPSs), Engineers and Builders in the industry. The focus of this seminar is to:

- provide a platform for sharing of innovative experience in line with productivity and digital delivery,
- share challenges in underground / infrastructure projects and
- Updates of regulatory requirements

PROGRAM OUTLINES

DAY 1: 26 May 2022 (Thu)- AM

Session 1		CONTENT	SPEAKERS
9.00 am		Welcome Address by ACES President	Er. Teo Yann (ACES)
9.05 to 9.55 am	50 mins	Revised Codes on Environmental Sustainability for New and Existing Buildings	Er. Yong Siew Hwa (BCA)
9.55 to 10.45 am	50 mins	Embedded Carbon Footprint	Mr. Alvin Ee Wei Liang (NUS)
10.45 to 11.00 am		Short break	
11.00 to 11.50 am	50 mins	Water conservation and PUB's Digital Transformation	Mr. Roland Chan (PUB)
11.50 to 12.40 pm	50 mins	The National Orchid Garden Cool House	Er. Scott Munro (Arup)
12.40 to 1.00 pm	20 mins	Q&A	Moderator: Er. Choong Choon Guan (ACES)
1.00 pm		Lunch break	

DAY 2: 27 May 2022 (Fri) - AM

Session 3		CONTENT	SPEAKERS
9.00 to 9.50 am	50 mins	Mechanical and Electrical System in Healthcare Building	Er. Lim Chin Huat Johnny (Surbana Jurong)
9.50 to 10.40 am	50 mins	Common Data Environment	Mr. Joseph KOH Song Bor (Squire Mech)
10.40 to 10.55 am		Short break	
10.55 to 11.45 am	50 mins	Impact of Design for Maintainability in Built Environment sector	Mr. Praveen Hassan Chandrashekar (Surbana Jurong)
11.45 to 12.35 pm	50 mins	Product Listing Scheme (PLS) for Regulated Fire Safety Products	CPT Daven Tan SCDF
12.35 to 12.55 pm	20 mins	Q&A	Moderator: Er. Yeow Mei Leng (ACES)
12.55 pm		Closing Remarks by ACES President	Er. Teo Yann (ACES)
1.00 pm		Lunch Break	

DAY 1: 26 May 2022 (Thu) – PM

Session 2		CONTENT	SPEAKERS
2.00 pm		Welcome Address by ACES Vice President	Er. Chuck Kho (ACES)
2.05 to 2.55 pm	50 mins	Performance based pile design for bored piles	Er. Dr Yet Nai Song & Er. Dr Huang YongQing
2.55 to 3.45 pm	50 mins	Environmental Impact Assessment (EIA) framework development in Singapore	Ms. Jagriti Dawra (AECOM)
3.45 to 4.00 pm		Short break	
4.00 to 4.50 pm	50 mins	Sydney Metro Cable Stayed Bridge; a Meeting of Precast Segmental Concrete and Cable Stayed Construction Technology	Mr. John Anderson (SMEC)
4.50 to 5.40 pm	50 mins	Asset Resilience and Repurposing	Mr. Kabi Subramaniam (Arup)
5.40 to 6.00 pm	20 mins	Q&A	Moderator: Er. Yong Fen Leong (ACES)
6.00 pm		End of Day 1	

DAY 2: 27 May 2022 (Fri) - PM

Session 4		CONTENT	SPEAKERS
2.00 to 2.50 pm	50 mins	Thomson-East Coast MRT Line (TEL) - Tunnelling Challenges and Solutions on the East Coast Stretch	Mr. Darryl Chen (LTA)
2.50 to 3.40 pm	50 mins	State of the art external post tensioning systems	Mr. Marcel Elsener (VSL)
3.40 to 4.00 pm		Short break	
4.00 to 4.50 pm	50 mins	How digital technologies are transforming workflows within the built environment	Mr. Shaun Koo (H3 Dynamics)
4.50 to 5.40 pm	50 mins	Possibilities offered by Geogrid as Construction Material for Environmental & Geotechnical Engineering Works	Er. David Ng (One Smart)
5.40 to 6.00 pm	20 mins	Q&A	Moderator: Er. Gwee Siong Mong (ACES)
6.00 pm		End of Day 2	

THE SPEAKERS AND THEIR SYNOPSIS

1. Revised Codes on Environmental Sustainability for New and Existing Buildings

Synopsis

Legislation on Environmental Sustainability was first introduced in 2008 as part of the key initiatives under the earlier Green Building Masterplans to advance sustainable building development. Under the latest Singapore Green Building Masterplan (4th Edition), more ambitious targets to implement sustainable building development in the Built Environment sector have been set to mitigate the effects of climate change. On this, one of the key measures include raising the minimum energy performance requirements for new buildings and existing buildings that undergo major retrofitting/major energy use change under the BC Regulations. This presentation shares the revised compliance framework and highlights the enhancements to the environmental sustainability requirements in the Codes.

Speaker: Er. Yong Siew Hwa (BCA)

Yong Siew Hwa is a Principal Manager of the Environmental Sustainability Group of the Building and Construction Authority of Singapore. He has more than 10 years of experience in the areas of building regulatory controls and currently oversees the building plan submissions on Environmental Sustainability for New Developments and Existing Buildings and the Periodic Energy Audit of Cooling Systems under the Building Controls Regulations. He also administers the BCA Energy Auditors Registration Scheme. He is a registered Professional Engineer in the branch of Mechanical Engineering and a certified Energy Auditor in USA and Singapore. He sits on the technical committee for Energy, working groups for SS553 and SS591 and the Singapore Green Building Council (SGBC) Mechanical committee. He also involved regularly in the board of judges for the ASEAN Best Practices for Energy Efficient Buildings and Green Buildings Awards.



2. Embedded Carbon Footprint

Synopsis

Moving away from measuring just operational carbon, the new Green Mark 2021 whole life carbon section includes the carbon emissions associated with the earlier life cycle stages – material production, transportation, and construction (A1 to A5). The embodied carbon, emissions associated with A1 to A5, may contribute to a significant portion of carbon emissions from buildings. This presentation introduces the Singapore-centric Embodied Carbon Calculator for the Built Environment developed by the Energy Studies Institute at the National University of Singapore in collaboration with Jurong Town Corporation (JTC), Building Construction Authority (BCA) and Singapore Green Building Council (SGBC). This is the first calculator in Singapore for the Built Environment that incorporates localized datasets for the computation of embodied carbon. The calculator is designed not only for Green Mark accreditation scheme but also suited for internal evaluation from design to construction evaluation.

Speaker: Mr. Alvin Ee Wei Liang (NUS)

Mr. Alvin Ee Wei Liang is a Research Associate with the Energy Studies Institute, National University of Singapore. He is the project lead of the Singapore-centric Embodied Carbon Calculator. His research interest is in Life Cycle Assessment and Decarbonization strategies.



3. Water conservation and PUB's Digital Transformation

Synopsis

We are at the crossroad in our water journey with major confluence of challenges. Digital Transformation holds the answers to allow us to become a smarter utility that will continue to meet our mission of supplying good water. Digitalisation gives us a huge opportunity to advance our mission in innovative ways. With the advent of IOT (internet of things) and smart technologies, we want to empower consumers with more real-time and detailed information about their water usage activities. We have introduced the Smart Shower Devices and more recently the **Smart Water Meters**. With such smart devices, we hope to motivate the consumers towards more water-conscious behaviour. All in all, we are living in exciting times in Singapore, as we embark on the next phase of our water conservation journey in Singapore, riding on the ongoing digital trends, and amidst a post-covid pandemic world.

Speaker: Mr. Roland Chan (PUB)

Roland Chan has been in the water sector for the last 15 years, having involved in various subject matters such as economic regulation of water sector, water pricing, water demand management, legislation and enforcement. He currently oversees the Water Demand Management and Inspectorate (WDMI) Division, which is part of the Water Supply Network (WSN) Department in PUB, Singapore's National Water Agency.

He has two key portfolios. One part of his work resolves around working with industry partners and stakeholders to develop and implement policies to ensure the sustainable use of water resources in Singapore, while the other part of his work is to ensure that the industry complies with PUB's regulatory requirements to ensure the delivery of safe water to consumers.



4. The National Orchid Garden Cool House

Synopsis

The National Orchid Garden (NOG) is nestled in the UNESCO World Heritage Singapore Botanic Gardens. Reopened in 2021, it has expanded with a larger controlled climate glass house featuring and conserving rare and endangered orchids and hybrids.

The new Cool House is four times larger and two to three times more efficient than the building it replaced, utilising displacement cooling and chilled slabs to provide environment which mimics the Mediterranean mountain regions. We will explore the engineering process developed to meet the unique environmental conditions of this project.

Speaker: Er. Scott Munro (Arup)

Scott has over 20 years practicing in Singapore as Building Services Engineer. He has a keen interest in the holistic design of sustainable buildings. Scott has worked in a range of market sectors, including commercial, institutional and mission critical buildings. He has played leading roles in the successful delivery of projects including Singapore Management University, Create Campus, GSK Asia House and the Singapore Sports Hub.



5. Mechanical and Electrical System in Healthcare Building

Synopsis

Mechanical and Electrical system in hospitals and health care building plays a huge role during the design stage. It's critical to choose right mechanical and electrical system for the buildings to provide a code compliance, redundancy requirement, safe working environment, energy efficiency and high level of patient comfort.

This seminar shares different mechanical and electrical system in the buildings and applying a diligent approach to understanding the code and operational requirement and communicating the infra-structure provision to the operator.

Speaker: Er. Lim Chin Huat Johnny (Surbana Jurong)

Er. Lim Chin Huat Johnny is an M&E consultant since 1995 and a Professional Engineer (Mechanical) since 2002. He is currently a Director in Surbana Jurong Consultants Pte Ltd. He has designed mechanical service for buildings in Singapore and other countries. Project include Duke-NUS Medical School, Outram Community Hospital, Emergency Medicine Building at Singapore General Hospital, Gardens by the Bay. He has a special interest in Green Engineering and Environment Sustainability. He is a certified Green Mark Advanced Accredited Professional and LEED AP.



6. Common Data Environment

Synopsis

BIM without a doubt changes the manner by which design information is presented on drawings. With BIM, the evolution on how design data can be retrieved and use for numerous applications is limited only by our imagination. However, for the design data to be retrieved and used, is dependent on ensuring the information embedded are standardised and be can be use by what application that may be developed in future.

This is what Common Data Environment is all about. This session is to share clearly where is a need for the Common Data Environment, the process to development an encompassing standard not only for design, procurement and installer but also maintenance. It is also to share what can happen when we have a Common Data Environment Data for M&E Services.

Speaker: Joseph KOH Song Bor

Joseph has been working in the Squire Mech as an M&E Services Designer, almost immediately after the graduation from Nanyang Polytechnic for close to 25 years. Through the years he has work on various types of development from residential, malls, offices, hotels, educational institutions, healthcare, industry, MRT stations and even airport.

He started his BIM journey in 2012 and also obtained his Diploma in Building Information Modeling from BCA in 2016. He conducts in-house training and also assist in the development of BIM standard manual to enable BIM adoption within Squire Mech. Presently, he chairs the in-house BIM committee which oversees the BIM development within the company. He has also been the lead MEP coordinator for numerous projects that requires him to coordinate with his internal team and collaborate with the external project members (for example Architects and C&S Engineers), to ensure seamless project planning and execution. He is also well verse in Naviswork, widely used to manage coordination. He is also involved in the in-house Dynamo committee which writes dynamo scripts to improve productivity and design automation.

Joseph also part of the BCA's BIM MEP Manager Workgroup and has contributed to development of the BIM Essential Guide for MEP Consultant. He is now assisting in the development of the Common Data Environment for M&E Services BIM Object.



7. Impact of Design for Maintainability in Built Environment sector

Synopsis

The concept of Design for Maintainability aligns with the national agenda of achieving sustainability, resilience, and higher productivity in the built environment sector. Enhancing maintainability of buildings helps to improve safety, cost-effectiveness and manpower-efficiency over the building lifecycle. Speaker will be introducing the “MiDAS tool”, which identifies critical (cost and labour intensive) maintenance items that are influenceable by design and presents a set of design strategies and solutions to address them with a view on the building’s overall lifecycle.

Key Takeaway: The participants shall gain greater understanding on “Design for Maintainability” and understand how to assess design solutions to make more informed design decisions upfront and take a life cycle view of the development, i.e. considering not only initial capital expenditure but also operating expenses.

Speaker: Mr. Praveen Hassan Chandrashekar (Surbana Jurong)

Praveen Hassan Chandrashekar is heading the Sustainability & Resilience Office (SRO) at Surbana Jurong. Praveen possess a strong passion for sustainability and environmentally conscious Passive and Active Design. Praveen has more than 8 years’ experience in the field of environmentally sustainable design and building performance assessment. He holds a Master Degree in Building Performance and Sustainability from National University of Singapore and Bachelor’s degree in Mechanical Engineering. Prior to this, Praveen has worked as a Mechanical Engineer for 6+ years and involved in many high-profile projects.

Praveen is a Certified Green Mark Accredited Professional, LEED Accredited Professional and EDGE Expert with experience ranging across different typologies for projects including in Singapore and across the region. He was part of the design team that oversaw the planning, design and supervision of Asia’s first high-rise rotatable laboratory located at BCA Academy. He played a key role and lead the ESD, Mechanical and BMS design. The project received “2017 Minister’s Award” and “IES Prestigious Engineering Achievement Award 2017”. Praveen is currently the Co-Principal investigator for Chilled Ceiling project, a R&D initiative under SJ-NTU Corporate Labs. He was the project lead for formulating the new standards on “Design for maintainability” involving Govt. agencies, designers, and built environment stakeholders. Praveen and his team are pushing the boundaries of Sustainable Design and have spearheaded the Net Zero Energy and Super Low Energy designs in Surbana Jurong.



8. Product Listing Scheme (PLS) for Regulated Fire Safety Products

Synopsis

The Product Listing Scheme ensures that regulated fire safety products conform to safety, reliability and performance standards for use in fire safety works. This presentation covers the overview of Product Listing Scheme and its certification regime. It provides guidance on how to check on the validity of certificates for regulated fire safety products and helps industry practitioners better understand the requirements that they need to adhere to.

Speaker: CPT Daven Tan (SCDF)

CPT Daven Tan has been serving the Singapore Civil Defence Force for 7 years. In his present appointment as Staff Officer of Product Listing Scheme (PLS) Branch, he helps to oversee the effectiveness and relevance of the regime. Some of the key projects that he was involved in include improving safety regulations for building cladding and fire-rated doors. He is also deeply involved in the periodic reviews of Fire Code Chapter 11 and its respective regulations to ensure clarity of the requirements and proper accountability of supply chain actors responsible for these regulated fire safety products.



9. Performance based pile design for bored piles

Synopsis

Based on current practice of bored pile design, one set of assumed geotechnical design parameters is used to derive the required pile penetration depth. The assumed geotechnical design parameters are required to be verified by the performance of the ultimate load test. If the ultimate load tests subsequently verify a better set of geotechnical design parameters which allows design optimization, amendment piling plan submission need to be made and approved before working piles can be constructed based on the optimized design.

To streamline the submission process, BCA is currently working with the industry stakeholders on a "Performance based pile design" guideline for bored piles. Under this guideline, QP may submit two or more sets of design parameters in a single piling submission for approval. The set of design parameters verified by the ultimate load test can be selected for working pile installation at site, without the need for amendment piling submission. This will simplify the pile optimization and submission process, resulting in considerable time and cost saving for a project. The presentation will cover this guideline which is currently being drafted, as well as an interpretation method of ultimate pile load test that must be used when adopting this performance based pile design method.

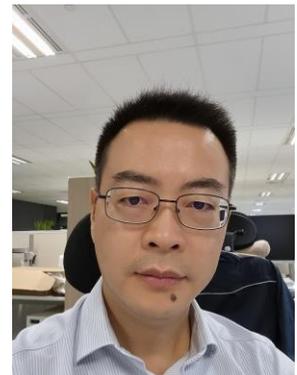
Speaker:

Er. Dr Yet Nai Song Director, Foundation Engineering Department, BCA

Dr. Yet has more than 25 years of experience in geotechnical engineering, and has worked in design consultant, geotechnical specialist contractor and academic institution prior to joining BCA. His present role in BCA include formulating guidelines relating to deep foundation work and pile load testing in Singapore, regulating the safety of building work involving deep foundation, deep excavation and tunnelling in Singapore. Dr Yet graduated from University of Malaya in 1991 with a first class honors in Bachelor of Civil engineering. He obtained his PhD degree from National University of Singapore in 1998. He is a registered PE, PE(Geo), and AC(Geo) in Singapore.

Er. Dr Huang Yongqing Senior Engineer, Foundation Engineering Department, BCA

Dr Huang has 13 years of experience in geotechnical engineering. He had worked with design consultants for 9 years before joining BCA. His present role in BCA is to regulate and safeguard the safety of building design and construction, with a focus on Geotechnical Building Works. Dr Huang obtained his Bachelor and Master degrees from Hohai University, China. He obtained his PhD degree from Nanyang Technological University in 2012. He is a registered PE in Singapore.



10. Environmental Impact Assessment (EIA) framework development in Singapore

Synopsis

On books, Singapore seems to be at its nascent stages in development of an EIA framework. A young city nation, Singapore- why did Singapore not choose to have a formal EIA framework all these years for infrastructure development? When did Singapore start rolling out an EIA? Who started it and how? Which agencies regulated it back then and how has it evolved? What does EIA framework really do? Is an EIA useful or does it just cost an infrastructure development 'crucial years' of delay? Are we using this tool wisely or do we have a long way to go? Find answers to these queries and many more in the webinar.

Just like we say "Safety in design", an EIA is an "Environment in design". It is world's oldest tool which can provide insights towards a Project GO- NO GO in feasibility stage, inform a design (for none or least environmental impacts during the whole life cycle of the project), guide the construction and operational stages to select environmental friendly design, methods and equipment, and provide environment friendly solutions in the decommissioning phase. If handled wisely, from early stages, this framework will embed Sustainability, or lets' say, *Environment, Social and good Governance* in an infrastructure project from cradle to grave. It can save an Infrastructure project a lot of pain in terms of complaints, cost, construction delays, and disasters if used correctly.

Speaker: Ms. Jagriti Dawra (AECOM)

Jagriti is a Technical Director for the Environment Business in AECOM Singapore. She has a bachelor's degree in environmental science and two masters' degree in Environmental Science Engineering from India. In her 21 years of experience, Jagriti has undertaken and led a wide range of projects including Pollution Control studies, Environmental Impact Assessments, Air and noise monitoring, noise modeling studies, Air modeling studies, Environmental audits, waste management plans, oil spill response plans, Water modeling, Contingency planning, Environmental Site Assessments, Historical Land Use Survey (HLUS) and Environmental Auditing. She also played a role in revision of EIA framework policy in India, and contingency planning framework in Brunei as well.

She has led innumerable environmental projects for industrial facilities including incinerator plants, chemical manufacturing plants, oil refineries, pharmaceuticals, offshore oil drilling, oil exploration and production, manufacturing plants, construction, treatment facilities and warehousing in South/ SE Asia, China, and Australia.

She has led several major Government Infrastructure projects as the Project lead and team member and is intimately familiar with the local permitting requirements and in handling inter-Government agency engagement in the region.



11. Sydney Metro Cable Stayed Bridge; a Meeting of Precast Segmental Concrete and Cable Stayed Construction Technology

Synopsis

Sydney Metro's expansion into the north west of the city included the construction of 4.5 km of elevated viaduct that includes an interesting cable stayed rail bridge. Set out on a 403 m radius curve with a 130 m long main span, the bridge's prestressed precast concrete segmental deck is supported by a single plane of cables. An interesting feature of the bridge is a central reinforced concrete fin that reaches 1.8 m above the deck. This fin works to meet the strict deflection limits set for rail bridges and was necessary because of the urban design limits on the deck depth. A composite steel and concrete tower supports the cable stays and provides the necessary stiffness to limit the transverse deflections resulting from the splayed cable arrangement. An integral part of the design challenge was the need to construct the bridge using the same overhead gantry used to construct the simply support spans on the main viaduct. Using the gantry, the three span structure was first built as a continuous girder supported on the 4 permanent supports with 5 temporary supports. A significant challenge to this approach was to get the prestressing installed during construction to be effective in the bridge's permanent state. The deck sections were first erected as a series cantilevers, then connected into continuous girder and finally, after the release of the temporary supports, converted into a cable supported structure. Even with this metamorphism the bridge was erected without the need for temporary prestressing within the deck section.

Speaker: John Anderson

John Anderson is a civil engineer with 25 years of experience who has specialised in bridge engineering. He is currently SMEC's COO for Africa but for 15 years was the General Manager for the Structures and Geotechnical Group based in Cape Town South Africa. He has been fortunate enough to have worked on a number of large international bridge projects gaining experience on prestressed box girder and precast segmental construction. Working on design and build contracts has also allowed him to develop expertise in the erection engineering works required for both staged and launched construction. His current projects include the construction of a 590 m span cable stayed bridge on the Wild Coast in South Africa.



12. Asset Resilience and Repurposing

Synopsis

As Singapore matures as a nation, so too do her buildings. Greater emphasis is now placed on creating sustainable developments and improving building performance. Asset resilience is also increasingly relevant in terms of minimising the costs and resources required for building to function efficiently throughout its lifespan.

Demolishing reusable buildings and constructing new ones in their place will only add to stresses on our planet's finite natural resources. It is untenable that the lifespan of many modern commercial structures is often closer to 20 years than 100. Given that up to 87% of today's buildings will still be occupied in 2050, we must improve their performance towards zero carbon as soon as possible. Along with environmental benefits, transforming and reusing existing buildings often delivers greater commercial and social returns than demolishing and reconstructing. It can be far more cost-effective for clients, create characterful places for occupiers and preserve heritage value for communities. Adaptive reuse involves converting existing buildings to a new purpose. This allows us to delve into a building's past and breathe life back into it. Assessing the technical feasibility of reuse early on can uncover opportunities to add tremendous value. Although reuse is not appropriate for every building, where there is understanding of potential risks and rewards, clients can make informed decisions.

Speaker: Mr. Kabi Subramaniam (Arup)

Kabi is a chartered engineer with over 17 years of experience on existing assets. As the leader of the Asset and Operations Team in the Singapore office, he is responsible for steering the team's business direction and projects where he has managed a range of building retrofit projects. He continues to help clients to future-proof their businesses with long-term resilient and operation frameworks and implementation plans.

Working with building owners, he assists in providing an ESG strategy to respond to both their tenants, employees and shareholders. The maintenance of a building directly impacts the bottom line, and the ability to pivot and react to a fast-changing market is essential to the future of business practice. His passion in the adoption of digital technology to enhance the data collection and reporting processes has facilitated asset managers to look at their buildings and assess how they perform and therefore create an opportunity to design a strategy to ensure the assets are being run effectively.



13. Thomson-East Coast MRT Line (TEL) - Tunnelling Challenges and Solutions on the East Coast Stretch

Synopsis

Thomson-East Coast Line (TEL) is a fully underground Rapid Transit System that is approximately 43km long. The line runs along the north-south corridor from Woodlands to Marina, before extending eastwards towards Sungei Bedok.

The eastern stretch of TEL, previously known as Eastern Region Line, starts from Founders' Memorial Station to Sungei Bedok Station. There are in total, ten build-only contracts which were awarded between 2015 and 2016, and with project completion expected in 2024 to 2025. When operational, the route connects communities in the east of the island to the city center.

Tunnelling on TEL east coast stretch consists of 16.4km of tunnels, with many technical challenges along the alignment that runs predominately beneath existing roadways lined with adjacent properties and including numerous interfaces with existing infrastructures.

The presentation will detail how these challenges are being overcome across notable contracts such as T305, T307 and T308 with solutions implemented to deliver the project. Topics covered will include ground risks, impacts on existing structures, temporary works optimization and the improvements made to tunnelling.

Speaker: Mr. Darryl Chen (LTA)

Darryl Chen is a Senior Project Manager with the LTA Tunnel Sub-Group. He started his career as a tunnel engineer with LTA on Downtown Line Stage 2. With more than 10 years of experience in the field of tunnelling, Darryl has been involved in projects on Thomson East Coast Line Stage 2, and Stage 4 (East Coast stretch). He is currently leading his team in project execution on Phase 1 of the Cross Island Line (CRL). In 2018, Darryl was awarded a full LTA scholarship and now holds a Master's Degree (merit) in Tunnelling and Underground Space from the University of Warwick, United Kingdom.



14. State of the art external post tensioning systems

Synopsis

As an introduction, this session of the seminar will give an overview on international regulations and guidelines related to external post tensioning systems. In the main part different types of state of the art external post tensioning systems are presented and discussed based on international examples on new build and strengthening/upgrading projects. Finally, a brief overview on technology for inspection and monitoring of post tensioning tendons is provided.

Speaker: Marcel Elsener

Marcel Elsener is the VSL Technical Centre manager in Singapore and has a Master's degree in civil engineering from Federal Institute of Technology Zürich, Switzerland. During his 14 years with VSL he acquired extensive experience on post tensioning and stay cable systems, as well as in construction of major bridges and design of bridge erection equipment. He joined the Systems and R&D department of VSL in 2007. After a year he moved to Mexico where he spent 3 years as Technical Manager for the construction of the Baluarte Bridge, a stay cable bridge featuring the longest span in Latin America and at the time of completion the highest stay cable bridge in the world. He then moved back to VSL's Technical Centre Switzerland, where he oversaw the design team. In 2017 he was transferred to VSL's Technical Centre Singapore.



15. How digital technologies are transforming workflows within the built environment

Synopsis

As Singapore's infrastructure ages, there is a need to ensure the continued safety of the built environment through regular inspections and maintenance. Using innovative technologies such as machine-learning, drones, robotics, and workflow automation would allow quality and safety inspections to be carried out in a faster, safer and more comprehensive manner.

Speaker: Shaun Koo

Designation: Chief Technology Officer, Co-founder of H3Zoom.ai by H3 Dynamics

Shaun Koo is the Chief Technology Officer and Co-founder of H3Zoom.ai, the artificial intelligence and digital solutions division of H3 Dynamics that specialises in digital intelligent inspection analytics. With more than 10 years of technology experience. He has been involved with both hardware and software startups with global venture funds and seed accelerators like 500 Global and Intema AI in helping companies scale globally, and brings a wealth of international experience from his time at HBO and NASDAQ-listed SPS Commerce. Prior to this, he co-founded a company that specialises in acoustic solutions for the built environment servicing corporations like IBM, Google, Airbnb, and Autodesk.



16. Possibilities offered by Geogrid as Construction Material for Environmental & Geotechnical Engineering Works

Synopsis

There are many possibilities of using geogrid as construction material for environmental and geotechnical engineering works. The conventional reinforced concrete retaining walls can be designed and constructed with Bio-Engineering slopes or walls with geogrid reinforcement. This can be used in road projects, building projects as well as river lining in ABC water projects. Foundation for drains, low rise buildings and industrial buildings and structures can be designed and constructed with compacted hard core or recycled aggregate stabilised with geogrid. Ground slab for cycling path and footpath, and temporary site office and carpark can be designed and constructed with geogrid and BRC reinforcement can be potentially replaced. These applications can reduce carbon emission thus should be promoted and encouraged to ensure sustainability in our built-environment. This presentation will illustrate the above applications with case studies in Singapore.

Speaker: Er. David Ng Chew Chiat

Er David Ng is a Professional Engineer (Civil), Specialist Professional Engineer (Geotechnical), Qualified Erosion Control Professional (QECP), ABC Water Professional and Competent Person (CP) for Periodic Facade Inspection (PFI) in Singapore. He has been involved in publication of more than 70 technical papers in the field of geotechnical and environmental engineering. He has more than 20 years of experience in management, planning, design and construction of major infrastructure and transportation projects in Singapore, Malaysia and India. He is co-founder of One Smart Engineering Pte Ltd which has offices and operations in Singapore, Malaysia and India.

