

ONE-DAY WORKSHOP

Recent Advances in Geo-environmental Engineering and Construction

Organised by

American Society of Civil Engineers (ASCE), Hong Kong Section
and

Department of Civil and Environmental Engineering, Hong Kong Polytechnic University

Date: 27 May 2016 (Friday)
Time: 9:30 – 17:30 (Registration starts at 9:00 am)
Venue: PQ306, The Hong Kong Polytechnic University
Language: English

Highlights of Workshop

- Geo-environmental site investigation and monitoring techniques
- Remediation technologies for contaminated soils
- Development of water-repellent soils for geo-environmental engineering
- Environmental and geotechnical issues involved in horizontal directional drilling in sensitive areas
- Rock cavern development in Hong Kong
- Construction and project management of environmental infrastructure projects
- History and future of landfills in Hong Kong

COURSE FEE

| Fee | Eligibility |
|---------|--|
| HK\$700 | Members of ASCE, supporting organizations and PolyU CEE alumni; <i>or</i> Early-bird registration (payment made on or before 13 May 2016, postmarked); <i>or</i> Group registration (≥ 4 person) |
| HK\$800 | Non-member |
| HK\$300 | ASCE Student member (limited seats) |

Fee includes lecture notes, tea/coffee and an attendance certificate. Lunch is not included.

SUPPORTING ORGANIZATIONS



PROGRAMME

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| 9:00 – 9:30 | Registration |
| 9:30 – 9:35 | Welcoming address |
| 9:35 – 10:20 | <p>An Overview of Remediation Technologies for Contaminated Sites</p> <p><i>Ir Dr. Albert Yeung, University of Hong Kong</i></p> <p>Summary: Contaminated sites can pose a significant risk to public health and the environment. Many different in-situ or ex-situ remediation technologies have been developed throughout the years to mitigate the risk imposed by soil contamination. These technologies may be contaminant and site specific. Remediation can be achieved by removal of contaminated soil; removal, containment, stabilization/solidification, transformation of contaminants, or different combinations of these mechanisms. It may also be necessary to apply these technologies in combination to achieve remediation goals, in particular, for cases of contamination by multiple contaminants. Some of the remediation technologies currently available are presented in this invited presentation, in particular, the theory, state of development, applicability, limitations, remediation efficiency, cost effectiveness, and potential side effects of the remediation technologies are presented.</p> |
| 10:20 – 10:40 | Coffee Break |
| 10:40 – 11:25 | <p>Geo-environmental Investigation and Monitoring</p> <p><i>Ir Carlton Hall, Fugro Hong Kong Group</i></p> <p>Summary: The first section of this presentation will consider a range of environmental impacts in air, water and ground, highlighting the inter-relationship between all three matrices and the relative sensitivity of our natural and build environments. A selection of investigation and monitoring processes for all matrices will be presented. This will be followed by a detailed critique of techniques for the investigation and monitoring of ground related contamination with emphasis on the acquisition of representative data through well-practiced sampling, in-situ measurements and laboratory tests. The importance of clearly understood procedures coupled with strong quality control and assurance protocols will be emphasised.</p> |
| 11:25 – 12:10 | <p>Horizontal Directional Drilling Below Lap Sap Wan</p> <p><i>Ir Alexi Bhanja, SMEC Asia Limited</i></p> <p>Summary: The AAE-1 Cable is a massive international project to lay one of the first telecommunication cable systems connecting Hong Kong, Singapore, Middle East, Africa and Europe. It stretches some 25,000 km between Hong Kong and France and within Hong Kong the length of the AAE-1 Cable is approximately 27.65km. The AAE-1 Cable enters Hong Kong's eastern waters and makes landfall at Lap Sap Wan. As the name suggests, Lap Sap Wan is often covered by rubbish, blown by the wind, which accumulates in large quantities on the beach. However, this degraded surface appearance hides the fact that below water, Lap Sap Wan is teeming with corals and fish, including a species of conservation value. Laying an underwater cable requires Gazettal under the Foreshore and Seabed (Reclamation) Ordinance (FSRO) and if the cable is in proximity to sensitive areas is also a Designated Project under the Environmental Impact Assessment Ordinance (EIAO). To avoid damage to this fragile underwater ecosystem, the local AAE-1 consortium partner (the Project Proponent) decided to adopt HDD to construct a cable duct below the main coral areas and punch out on to the seabed well away from the last coral reef. This presentation examines the environmental and geotechnical issues that were considered in the development of the HDD approach, compliance with FRSO and EIAO requirements, and the subsequent constrains that were imposed on the works.</p> |
| 12:10 – 12:15 | Souvenir presentation |
| 12:15 – 14:00 | Lunch (not included in registration fee) |

| | |
|---------------|---|
| 14:00 – 14:45 | <p>Synthetic Water Repellent Soils</p> <p><i>Dr. Sérgio Lourenço, University of Hong Kong</i></p> <p>Summary: The seminar will explore the potential of synthetic water repellent soils in geotechnical engineering. New laboratory research by our team has demonstrated that wetting in soils can be controlled by inducing and adjusting water repellency. Existing soils can be treated on a construction site to become water repellent; once treated, they are non-intrusive, integrate with the surrounding environment and are mechanically stable (due to their non-wettable behaviour). This ongoing research will provide Hong Kong with a novel technology for constructing water-tight barriers and fills that is both inexpensive and reliant on an abundant local resource – soils. Our research is aimed at verifying its stability, so that perceived risks to practical implementation are identified and alleviated.</p> |
| 15:45 – 15:30 | <p>Opportunities and Benefits of Rock Cavern Development to House NIMBY Facilities in Hong Kong</p> <p><i>Ir Mark Wallace, Ove Arup & Partners Hong Kong Ltd</i></p> <p>Summary: The talk will present some of the opportunities and benefits that rock cavern development have brought and could bring in the future to reducing the environmental impacts and nuisance of NIMBY (Not In My Back Yard) facilities in Hong Kong.</p> |
| 15:30 – 15:50 | Coffee Break |
| 15:50 – 16:35 | <p>Construction and Project Management Perspectives for Environmental Infrastructure Projects in Hong Kong</p> <p><i>Ir Kenny Cheung, China Harbour Engineering Company (Hong Kong)</i></p> <p>Summary: Environmental engineering projects can enhance our living environment. This presentation highlights special challenges and intrinsic complexities imposed by the special nature of environmental-related construction projects particularly from the construction management and project management perspectives in Hong Kong. The first part of presentation is about a CEDD contract - Environmental Improvement of Shing Mun River and EPD contract - Bioremediation Pilot Trial at Shenzhen River, where traditional dredging and bioremediation of riverbed sediments were adopted to improve the environment of the rivers. The experience of environmental engineering application of the river treatment shall be shared in the presentation. In the second part of the presentation, the project and construction management of a process treatment plant which integrate the installation of processing equipment, balance of power, building service and civil engineering work shall be illustrated by a completed project.</p> |
| 16:35 – 17:20 | <p>Hong Kong Landfills – the Past, Present and Future</p> <p><i>Ir Leo Overmann, Vista Consulting Engineers Limited</i></p> <p>Summary: There is limited information regarding landfills in Hong Kong prior to the 1970's; in fact there may not have been any; and certainly not as we know them today. The first landfills in Hong Kong would be referred to as “dumpsites” by current-day standards. Fortunately all of these are now closed, restored and many are part of a new Government initiative to be put to public use. This history and future will be described. Three large landfills currently serve the needs of more than 8-million residents of and visitors to Hong Kong. These landfills, designed and constructed nearly 20-years ago, are a rich combination of civil, geotechnical and environmental engineering features; and continue to serve the purpose of safely disposing of our daily refuse. Details and examples of many of these features will be presented.</p> |
| 17:20 – 17:30 | Closing remarks and Souvenir presentation |
| 17:30 | Distribution of CPD Certificates |

CERTIFICATE

This course is recommended for one CPD day.

ENQUIRY

Dr. Songye ZHU ceszhu@polyu.edu.hk

t: 3400 3964

ABOUT THE SPEAKERS

Ir Dr. Albert Yeung, Associate Professor, University of Hong Kong

Ir Dr. Yeung is on the civil engineering faculty of The University of Hong Kong (HKU). He received his BSc (Eng) in civil engineering from HKU with first class honors, MS and PhD from the University of California, Berkeley. He is the current chair of the Asian Civil Engineering Coordinating Council (ACECC) composed of thirteen (13) member societies. He is also the current chair of the Region 10 Assembly of ASCE, and the Immediate Past Region 10 Director and the Chair of the Board of Governors of ASCE Region 10 (International Region). He has more than a hundred and eighty publications to his credit. His notable awards include the IPA Research Grant Awards of the International Press-in Association 2008, 2012, 2014; the 1st Prize of Civil Engineering Papers of the Year Award 2008 of the Hong Kong Institution of Engineers (HKIE); the Peter H.K. Chan Award 2001 for the Best Environmental Paper of HKIE; the Samuel Arnold Greeley Award 1999 of ASCE; the Arthur Casagrande Professional Development Award 1996 of ASCE; the Dow Outstanding New Faculty Award 1994 of the American Society for Engineering Education; the Texas Engineering Experiment Station Select Young Faculty Award 1993; the Kumagai Prize 1994 of HKIE; among many others. He is a CEng and holds FASCE, FICE, FHKIE, RPE (Civil, Environmental, Geotechnical) and PE (Texas).

Ir Carlton Hall, Manager, Fugro Hong Kong Group

Ir Carlton Hall is Site Investigation Manager for Fugro Geotechnical Services Limited. He is a chartered civil engineer and has over 30 years of international work experience across government, geotechnical consultancy and contracting organizations. He started his career within the wastewater engineering sector and, over time, he has worked within general construction, geotechnical engineering and laboratory management. Throughout much of his career he has been involved in some form or other with environmental pollutants and has experience in the investigation, quantification and monitoring of such, and the design and implementation of engineering mitigation measures to control their impact.

Ir Alexi Bhanja, Head of Water and Environment Group, SMEC Asia Limited

Ir Alexi Bhanja is head of SMEC's Water and Environment Group in Hong Kong, responsible for business development, project direction and project management. He is a Chartered Environmentalist, Chartered Water and Environmental Manager, Chartered Waste Manager and an Accredited Monitoring Professional with more than 25 years of experience, the last 23 years of which have been based in Hong Kong. Alexi has worked on major infrastructure and development projects in Asia, the Middle East and Europe and specialises in environmental assessment; sustainable development; impacts of tourism and leisure developments; solid waste management; and environmental monitoring and audit – he has carried out more than 350 such projects to-date. He is a Professional Reviewer for the Chartered Institute of Water and Environmental Management Hong Kong Branch, a Past Chairman of the Hong Kong Waste Management Association and sat on government's EcoPark Advisory Committee until it was

disbanded in 2014. He is a former Visiting Lecturer at Hong Kong Polytechnic University and City University, a former Guest Lecturer at Baptist University, and he previously sat on the Environment Committee of the British Chamber of Commerce and on government's Provisional Construction Industry Co-ordination Board.

Dr. Sérgio Lourenço, Assistant Professor, University of Hong Kong

Dr. Sérgio Lourenço is an Assistant Professor at the Department of Civil Engineering, University of Hong Kong having joined in 2014 from the School of Earth and Ocean Sciences, Cardiff University (UK). Prior to that he worked at Geotechnical Observations Ltd in London, a spin-off from the Imperial College. Sérgio's first, second and third degrees are from the New University of Lisbon (Portugal), Kyoto University (Japan) and Durham University (UK), respectively. Sérgio is currently investigating the fundamentals and applications of synthetic water repellent soils with funding from the HK Research Grants Council, UK Engineering and Physical Sciences Research Council, and the Royal Society UK with academic partners from the UK, Germany and Japan and an industrial partner (Arup HK). Immediate past research concerned unsaturated soils and rainfall-induced landslides. He currently sits at the editorial board of the Canadian Geotechnical Journal, ICE Geotechnical Research, and the Journal of Geotechnical Engineering and Rock Mechanics, and is a member of the Physical Sciences Board of the Royal Society UK. He is member of the ISSMGE TC211-Ground Improvement and an affiliate of the TC106-Unsaturated Soils, and holds FGS and FHEA professional memberships.

Ir Mark Wallace, Director, Ove Arup & Partners Hong Kong Ltd

Ir Mark Wallace is a Director in Arup's Hong Kong office and has over 27 years' experience in the field of Engineering Geology and Tunnelling related projects. He has carried out Project Management on various infrastructure projects from large scale MTR and HK Government projects to local private as well as regional scale studies. He has led teams of specialists in Tunnelling, Engineering Geology, Geographic Information Systems (GIS) and Geotechnical work in Hong Kong and the East Asia region. He has been in Hong Kong for over 19 years and has worked in various countries in the region from China, Philippines, Vietnam, South Korea, Thailand and Singapore advising on underground projects as well as ground based risks for projects. Recently he has been involved in all the current rock cavern development and planning studies in the territory. He has led teams of planners, engineers, economists, legal, fire and environmental specialists in developing, with Hong Kong Government, the strategic planning and approach to rock cavern development in the city taking advantage of its many potential opportunities. He has also been involved in various urban underground studies and has been involved in Hong Kong as well as Singapore urban underground study reviews. Prior to setting up home in Asia he worked in Arup in the UK and was involved in Limestone and Salt mines investigations in the West Midlands and in Northern Ireland. Mark is currently the Project Manager for the Long Term Strategy for Rock Cavern Development in Hong Kong and was previously the Project Manager for the preceding Enhanced Use of Underground Space Study completed in 2011. He is also currently the Project Manager for the current Territory Wide Study on Urban Underground Space in Hong Kong and is leading various teams of specialists in developing projects to seek opportunities for underground space creation as well as better connectivity across Hong Kong's urban fabric.

Ir Kenny Cheung, Project Manager, China Harbour Engineering Company (Hong Kong)

Ir Kenny Cheung T C is a Project Manager for China Harbour Engineering Company Limited with 30 years experience. He is the Member of Hong Kong Institution of Engineers and Member of Chartered Institute of Arbitrators. He has extensive experience in project and construction management in environmental-related infrastructure projects for key clients such as CLP, Drainage Services Department, Highways Department and Airport Authority. Mr. Cheung has

acted as Project Manager for a number of infrastructure projects including Black Point Cooling Water Intake Enhancement Project, Drainage Improvement Works in Tai Po Urban Areas, and Environmental Improvement of Shing Mun River –Stage 2. In his project management works, Mr. Cheung has always put environmental protection/enhancement as a core element with highest priority in construction project and has always worked with full cooperation in a multi-disciplinary environment.

Ir Leo K. Overmann, Director, Vista Consulting Engineers Limited

Mr. Overmann is a consulting civil and environmental engineer based in Hong Kong holding a Bachelor of Science degree in Civil Engineering from Purdue University with more than 35-years of international waste management experience; first on projects in the United States, Canada, Australia, United Kingdom and Sweden; and since 1995 throughout Asia, including Hong Kong, China, Indonesia, Malaysia, Taiwan, Vietnam and Thailand. Mr. Overmann has worked on all types of waste disposal projects, including: municipal solid waste, industrial waste, hazardous waste and low-level radioactive waste. He has been involved in various capacities with an estimated 150 municipal solid waste disposal landfills, both new and expansions (horizontal and vertical) of existing facilities; with experience in a broad range of disciplines, including: waste characterization; landfill siting and investigations; disposal unit formation and optimization/maximization; disposal unit construction and operations phasing/sequencing; landfill geotechnics (settlement and stability) and hydrogeology; leachate generation; lining and leachate collection/removal systems; landfill gas generation and extraction; capping systems; monitoring and afteruse. Mr. Overmann is a recognized expert in both natural soil and geosynthetic landfill lining/ leachate collection and capping systems.

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Recent Advances in Geo-environmental Engineering and Construction

27 May 2016, PQ306, The Hong Kong Polytechnic University

Registration Form

Name : _____
(Last Name) (First Name)

Office Tel.: _____ Mobile: _____

Email: _____ Company: _____

Membership (if applicable): _____ Membership No.: _____
 (ASCE/PolyU/HKIE/RISUD)

Membership grade: Member/ Associate Member/ Affiliate Member/ Student Member

Group Registration (please use separate sheets as necessary)

| No. | Last Name | First Name | Email | Phone |
|-----|--------------------------|------------|-------|-------|
| 1 | <i>(Contact person*)</i> | | | |
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Payment

I enclose a crossed cheque no. _____ (Bank: _____)

for the amount of HK\$ _____ x _____ person = HK\$ _____

Remarks

- All payments are non-refundable once booking is confirmed
- Please make a cheque payable to "**American Society of Civil Engineers – Hong Kong Section**" and post to:

Dr Songye ZHU, Department of Civil & Environmental Engineering,
 Hong Kong Polytechnic University, Hunghom, Kowloon

- Seat will be confirmed when payment is received.
- ASCE Hong Kong reserves the right to cancel or reschedule the conference at its discretion

Enquiry Dr Songye ZHU ceszhu@polyu.edu.hk t: 3400 3964

Campus Map

校園地圖

KEY TO CAMPUS MAP 校園索引

| | | | |
|--|--------------------------------------|--|--|
| | Core | | 閣下在此 You are here |
| | Wing | | 洗手間 Toilet |
| | Block | | 傷殘人士洗手間 Toilet for Disabled |
| | 大學醫療保健處 University Health Service | | 餐廳 / 酒樓 / 咖啡室 Canteen / Restaurant / Cafe |
| | 保安控制室 Guard Post | | 便利店 Convenience Store |

Location Map of Off-Campus Venues 校外場所位置圖



1. PolyU Main Campus 香港理工大學主校園
2. Student Halls of Residence (Hung Hom) 學生宿舍 (紅磡)
3. Student Halls of Residence (Homantin) 學生宿舍 (粉嶺)
4. Hong Kong Community College (Hung Hom Bay) 香港專上學院 (紅磡灣校園)
5. Hong Kong Community College (West Kowloon) 香港專上學院 (西九龍校園)
6. PolyU (Kowloon Tong Campus) 香港理工大學 (九龍塘校園)
7. Off Campus Housing (OCH - Shan Tung Street) 校外宿舍 (山東街)
8. Off Campus Housing (OCH - hillwood Road) 校外宿舍 (山景道)
9. Off Campus Housing (OCH - Yu Chau Street) 校外宿舍 (悠州街)



Online campus map : <http://www.polyu.edu.hk/fmo/eMap/CampusMap.pdf>