



# 香港岩土及岩土環境工程專業協會

## ASSOCIATION OF GEOTECHNICAL & GEOENVIRONMENTAL SPECIALISTS (HONG KONG)

### AGS (HK) NEWSLETTER

#### Editorial

Welcome to the latest issue of the AGS (HK) Newsletter. This year the AGS (HK) has held a number of well attended ground forums, technical seminars and site visits. Further details can be found in the newsletter. The Association wants to thank the members of the previous Executive Committee for their hard work throughout the year.

One of our major accomplishments is that in April 2010, the Association has published and circulated among the geotechnical community the second Tunnel Construction Guideline on Underground Rock Blasting. This guideline is designed to provide the general practitioner in Hong Kong with an introduction to the various aspects of rock blasting for tunnels and shafts. The document also presented an overview of Hong Kong's regulations and procedures for rock blasting in urban areas. The new Ground Investigation Guidelines on Natural Terrain Mitigation Works and Horizontal Directional Coring will be prepared for publication later this year. In addition, the AGS (HK) in conjunction with the Applied Geoscience Centre and Hong Kong Construction Association have recently published the 2<sup>nd</sup> Edition of "Geology of Site Investigation Boreholes from Hong Kong" by Prof Chris J N Fletcher.

The Association thanks Dr Angus Maxwell of Maxwell Geosystem Limited for his continued tenure as Chairman in 2010 and appreciates the hard work of Mr Florent Desaintpaul who has just stepped down from the Executive Committee. Dr Siew-wei, Lee of Geotechnical Consulting Group (Asia) Limited is welcomed to the Executive Committee and Mr Barry Sum of AECOM Asia Company Limited is nominated to the Chairman-elect for 2011. Mr Chris Lee of C M Wong & Associates Limited and Mr Tse-hung, Lee of Gammon Construction Limited continues as Honorary Treasurer and Honorary Secretary respectively.

The AGS (HK) is committed to promoting the interests of its member organisations. Please feel free to share with us how the Association can best serve the fast-growing geotechnical and geoenvironmental profession. We always welcome volunteers who would like to be involved in the activities of the AGS (HK).

We hope you enjoy the newsletter.

#### 2011 Chairman's Address

Dear Members,

Another year comes round and sees many of us reeling from the effects of pre-Christmas deadlines and post-Christmas hangovers. Don't worry. The Chinese New Year is just round the corner. Not that there will be much rest. We have welcomed a host of new companies and several old names have returned. Welcome back. We will need you. The coming year will see an unprecedented number of tunnels under construction in Hong Kong. These will be augmented by several other government projects which are set to kick off this year in both design and construction. With this there will be the usual pressures on time and resources and plenty of potential for standards to slip. We must guard against this.

I am always reviewing in my mind what the role of the AGS should be. We are not a learned society such as the HKIE and HKGES. We are not a trade society like the HKCA and the ACEHK. We are a practical society advancing good practice in engineering geology, geotechnical and environmental disciplines, and providing a platform for the training of up and coming engineers and the dissemination of practical experience. That said, I believe the industry looks to us to champion the cause of sensible practical engineering and challenge the conservatism so often seen when time rather than money is the Principal pressure. I often hear colleagues who vent their frustrations regarding matters of procedures within the engineering practice and I wonder who is representing these views back to the decision

#### Suggestions

Please send any suggestions to:

Mr Tse-hung, Lee (Honorary Secretary and Newsletter Editor)

The Association of Geotechnical and Geoenvironmental Specialists (Hong Kong)

c/o Gammon Construction Limited  
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making bodies. Surprisingly, frustrations are voiced by client organisations, consultants and contractors, suggesting that there is plenty of space for communications to be improved. Perhaps the AGS can help. It has been suggested that we supplement our seminars and ground forums with the occasional debates (or moans) and I feel that this would be a valuable platform for various views to be aired without prejudice. We have arranged such forums several times previously and the response has been strong. Look out for this in the New Year.

We continue to provide support to university students showing aptitude through a series of five scholarships. A number of jobs will be at the interesting stages of construction and we will attempt to facilitate visits for members. We are aiming at two full day CPD seminars during the year. The first which will focus on Fault Zones and how to deal with them is scheduled for March. The second will be targeted for October.

This will be my last year as Chairman. I am keen to leave an association able to deliver real benefits to its members. We have five ground investigation and construction guidelines in preparation and we are in discussion with GEO regarding the resurrection of the Hong Kong AGS borehole database. The latter in particular has been a personal goal for many years and we are aiming to make real progress on this within this year.

We hope all our members enjoy the busy year ahead. We encourage you all to speak out and debate the various challenges and issues we face and utilize the AGS as an avenue for positive feedback on the state of our industry. AGS (HK) will continue to promote Hong Kong ground engineering both within Hong Kong and through our contacts in the region.

Yours truly,  
Angus Maxwell

## New Faces

The Association warmly welcomes Dr Siew-wei, Lee to the Executive Committee:

**Dr Lee, Siew-wei**  
(Geotechnical Consulting Group)  
Siew-wei obtained his PhD in geotechnical engineering from Cambridge University, UK in 2001. Since then he has been working for



Geotechnical Consulting Group (Asia) Ltd in Hong Kong and he is now an associate director. His works mainly involve the design and assessment of soil-structure interaction problems in Asian countries. He is a qualified civil/geotechnical engineer and advanced registered analyst with NAFEMS (UK). He is a member of ISSMGE TC103 Numerical Method in Geomechanics.

## Forum on "Rock Mass Classifications"

An evening ground forum entitled "Rock Mass Classifications" was held at the Mariners' Club in Tsim Sha Tsui on Friday, April 23, 2010.

Classifications have played an indispensable role in engineering for centuries. Rock mass classifications which have developed from civil engineering case histories form the back bone of the empirical design approach and are widely employed in rock engineering. The forum was aimed at exploring the role of rock mass classifications in site characterization and engineering design.



The seminar was very well attended with more than 300 members

The ground forum featured four speakers representing different areas of the industry namely Contractors, Consultants and Clients. Mr Mark Wallace of Ove Arup & Partners (Hong Kong) Limited kicked off the forum by reviewing the basics of rock mass classification system from an engineering perspective and shared his insights on the application of the classification systems as a design tool in rock engineering and the limits of the various classification databases.

Mr Pawel Barmuta of Maxwell Geosystems Limited described the assessment of rock mass and the support selection in drill & blast tunnels and evaluated the risks for misclassification in underground construction projects. Mr Arthur

Tang of Mass Transit Railway Corporation (MTRC) and Mr David Clayton of Dragages Hong Kong Limited shared their experience in the application of the rock mass classification system in drill & blast tunnels and TBM Tunnels.

After their informative presentation, Dr Angus Maxwell of Maxwell Geosystems Limited chaired a lively and engaging discussion between the audience and speakers. The forum was a success as it was very well attended with more than 300 members.

## Technical Visit to “The Wind/Wave Tunnel Facility and The Geotechnical Centrifuge Facility at the HKUST

A visit by AGS (HK) members to the CLP Power Wind/Wave Tunnel Facility (WWTF) and the Geotechnical Centrifuge Facility (GCF) at the Hong Kong University of Science & Technology (HKUST) was held on Saturday, August 21, 2010. The WWTF and the GCF are two of the Central Research Facilities of HKUST.

The WWTF combines testing facilities and expertise in both wind tunnel model studies and full-scale measurement of wind-induced response and structural dynamics. The state-of-the-art facility comprises two boundary layer wind tunnel test sections and a water tank for aerodynamic, civil/structural engineering, environmental fluid mechanics and environmental engineering applications. The facility has also recently brought online a two-degree-of-freedom motion simulator that is capable of reproducing motion effects typically experienced at the upper levels of high rise buildings.

The GCF is a powerful and advanced laboratory for physical modeling of various engineering related problems, such



Geotechnical Centrifuge Facility at HKUST

as rain-induced landslides, consolidation settlement of reclaimed lands, seismic ground response, and many others. The centrifuge has a rotating arm of approximately 8m in diameter, and is capable of creating an elevated gravity field 150 times that of the Earth's gravity for static model tests. The maximum modeling capacity of the centrifuge is 400g-ton. Geotechnical structures can be built in model boxes with maximum dimensions of 1.5m x 1.5m on plan and 1.0m in height. Construction processes such as excavation and piling can be closely simulated using a newly developed state-of-the-art 4-axis robotic manipulator. In addition, the centrifuge is equipped with a bi-axial (2-D) shaking table.

A delegation of about 20 people gathered at the Atrium at the HKUST in the morning. The site visit began with a presentation by Prof Charles W. W. Ng of HKUST, who detailed the principle of centrifuge modeling, advanced instrumentation and centrifuge tests and modeling. Following the presentation, the delegation visited the GCF. Then, the delegation visited WWTF and a brief explanation was given on the test and instrumentation of the facility.

### Article by Mr Chris Lee (C M Wong & Associates)

## Seminar on “Advances in Instrumentation and Geotechnical Control”

On Tuesday, September 28, 2010, the AGS (HK) held an evening seminar on “Advances in Instrumentation and Geotechnical Control” at the Mariners' Club in Tsim Sha Tsui.

Field measurements are an essential component of any successful geotechnical practice. Over the past fifty years, a wide variety of field measurement devices have been developed to measure force, deformation, velocity, acceleration, total stress, pore pressure, strain, tilt and temperature. On the other hand, data logging, data communications and data management equipment have gone through several generations of development over the last two decades. These changes are resulting in simpler equipment that operates more reliably, has more features and costs less to purchase.

The objective of this seminar was to examine the current state of geotechnical instrumentation and monitoring practice in terms of the advances in electronics, software and communications technology that have been made, and the retreats that have accompanied these advances. The seminar speakers included Dr Andy Green

of Maxwell Geosystems Limited, Mr Tony Frame of Gammon Construction Limited, Mr Ian Solomon of Fugro Geotechnical Services Limited and Prof Xiaoli Ding of the Hong Kong Polytechnic University.

The seminar was brought to a close by Dr Angus Maxwell of Maxwell Geosystems Limited with a lively and engaging discussion between the audience and speakers. The seminar was well attended with more than 50 members.



Over 50 members attended the seminar on “Advances in Instrumentation and Geotechnical Control” in September 2010

## Seminar on “Challenges of Underground Construction in Reclaimed Land”

This seminar was held at the Hong Kong University of Science and Technology on Saturday, November 13, 2010. The seminar was aimed to cover a range of spectrum of underground construction in the reclaimed ground, particularly with an emphasis on soft ground problems. Different Topics were presented in the seminar by various experienced working practitioners, which included examples that show a variety of means and methods to deal with the soft ground problem. Particular challenges included the variability of fill material such as the occurrence of boulders, underground voids or old seawalls which may not be identified during the desk study or site specific ground investigations was highlighted in the seminar. Problems relating to the protection of above ground structures against possible deformations caused by underground construction operations was also discussed.

A question and answer session was held after the presentation. At the closure of the seminar, Dr Angus Maxwell of Maxwell Geosystems Limited presented souvenirs to each of the speakers as appreciation.

The seminar was well attended by 70 participants.

## Article by Mr Warren Dou (Aurecon Hong Kong)



The seminar was well attended by 70 participants

## 2010 AGS (HK) Annual General Meeting and Technical Seminar on “Underground Space and Caverns in Hong Kong – A Review”

On Tuesday, December 14, 2010, the AGS (HK) held its Annual General Meeting (AGM) and a technical seminar on “Underground Space and Caverns in Hong Kong – A Review” at the Hong Kong Football in Happy Valley.

Dr Angus Maxwell of Maxwell Geosystem Limited started the AGM by providing a brief overview of the AGS (HK) activities and achievements over the 2009/2010 session. Dr Maxwell thanked the Executive Committee and all those who had contributed towards another successful year for the AGS (HK). He reported that the finances for the Association remain healthy. He raised a motion to re-appoint Anthony Kam and Associates as the account auditor and Acctax Company Secretary Limited as the company secretary to the Association which was accepted unanimously by the members. He further proceeded to welcome Mr Tim Kilmister and Dr Siew-wei, Lee to the Executive Committee and thank Mr Florent Desaintpaul who has just stepped down from the Executive Committee.

After the AGM, a technical seminar on “Underground Space and Caverns in Hong Kong – A Review” was given by Mr Mark Wallace of Ove Arup & Partners (Hong Kong) Limited. Mr Wallace presented the history and current status of use



Dr Angus Maxwell provided a brief overview of the AGS (HK) activities and achievements over the 2009/2010 session



The seminar was well attended with over 50 members

of underground space in Hong Kong. He then provided an update of the major rock cavern projects in Hong Kong and worldwide since the Study of the Potential Use of Underground Space (SPUN) and benchmark the Hong Kong's practice with that elsewhere.

He highlighted in his presentation that the geology of Hong Kong is extremely suitable for developing rock caverns for underground space. He suggested that we should examine the opportunities for enhanced use of underground space in Hong Kong and identify strategic issues that need to be addressed, including selection of existing above-ground public facilities that could be re-housed in rock caverns. He furthered discussed approaches and the way forward for planned development of underground space by promoting enhanced use of rock caverns in Hong Kong. The seminar was followed by a question and answer session chaired by Dr Angus Maxwell of Maxwell Geosystems Limited. The seminar was well attended with more than 50 members.

## Site Visit to "Harbour Area Treatment Scheme (HATS) Stage 2A, Contract No. DC/2007/23"

A site visit by the AGS (HK) members to the site of the North Point Preliminary Treatment Works was held on Saturday, February 19, 2011. This is a Drainage Services Department (DSD) Contract for the Harbour Area Treatment Scheme (HATS) Stage 2A. The Contract is supervised by AECOM Asia Company Limited and performed by Gammon Construction Limited.

The Contract involves (i) Construction of sewage conveyance system from the North Point Preliminary Treatment Works to the Stonecutters Island Sewage Treatment Works via the Wan Chai East Preliminary Treatment Works, the Central Preliminary Treatment Works and the Sai Ying Pun junction shaft; (ii) Construction of drop shafts, riser shaft and junction shaft at the North Point Preliminary Treatment Works, the Wan Chai East Preliminary Treatment Works, the Central Preliminary Treatment Works, the Sai Ying Pun and the Stonecutters Island Sewage Treatment Works; (iii) Construction of temporary production shafts at North Point, Wan Chai East and Stonecutters Island to provide access for the construction of the sewage conveyance system; and (iv) Construction of connection channels, pipes, chambers and tunnel connecting the proposed drop shafts/riser shafts to the facilities of the preliminary treatment works / sewage treatment works.

HATS Stage 2A will provide treatment to the sewage from the northern and south-western parts of Hong Kong Island. With the completion of HATS Stage 2A, the water quality of the Victoria Harbour will be significantly improved. The Contract started in July 2009 and is due for completion in 2014.



Dr Angus Maxwell (right) presented a souvenir to Mr Mark Wallace on behalf of the AGS (HK)

A delegation of 16 people gathered at the site office in North Point on the morning of February 19. The technical visit began with a brief introduction of the scope of the works by the Engineer's representative, Ms Edith Sia and this was followed a presentation of the construction challenges and constraints to build the deep shafts in urban areas, given by the Contractor's representative, Mr Wing Law.

After the presentations, the attendees were escorted to the North Point production shaft and drop shaft for a closer inspection of the ongoing shaft excavation works. A lively question and answer session followed the site tour with participants expressing particular interest in the design and construction of the drop shaft by application of the steel casing for downpipe raise boring.

We thank Ms Edith Sia and Mr Wing Law for their hospitality and for their efforts to make the event highly informative and successful.



Multi-stage pumping station for grouting of rock shaft in the project



A delegation of 16 people attended the technical visit to DSD HATS Stage 2A, Contract No. DC/2007/23 in February 2011

## Recipients of the AGS (HK) Scholarship

The AGS (HK) offers merit-based scholarships to the outstanding students who pursue postgraduate studies in the geotechnical and geoenvironmental fields at the universities in Hong Kong. A HK\$10,000 scholarship for 2009-2010 was awarded to **Mr Yung, Siu-hung Eric** of the University of Hong Kong (HKU) and a further HK\$10,000 scholarship was shared between **Mr Guo Ning** and **Mr Lau, Yun-man Oscar** of the Hong Kong University of Science and Technology (HKUST). The awardees shared with us a few words about themselves here.

### Mr Yung, Siu-hung Eric

It is my honour to be awarded the AGS (HK) Geotechnical Award on 2010. I would like to take this opportunity to express my deepest gratitude to the AGS (HK) which recognized my effort and achievement in my study for the programme of Master of Science in Geotechnical Engineering in HKU. It gives me the great encouragement to the study and work in the area of geotechnical engineering.

Having studied for the programme of Master of Science in Geotechnical Engineering, I have gained technical knowledge and appreciated the practical experience in various topics in geotechnical engineering. The teaching of the instructors of different courses provided me with knowledge in advanced engineering theories and their practical experience in the industry. Different topics in geotechnical engineering such as slopes, ground improvement, tunnelling, rock and soil mechanics have been covered in the Master Programme. This has equipped me with the theoretical and practical knowledge which is very useful for me at work and deepened my understanding in various subjects in geotechnical engineering. I would also like to take this opportunity to thank Dr Alan Kwong and Dr Ryan Yan for their guidance and support in my research project on numerical investigation of the construction of embankment on clayey material. They have provided valuable suggestions and support in my project.

### Mr Guo Ning

It is a great honor for me to be awarded the AGS (HK) Scholarship during my Ph D. study in Department of Civil and Environmental Engineering at HKUST. I would like to take this opportunity to express my sincere gratitude to the AGS (HK), my supervisor, and all the professors at HKUST. Now I am focusing on the microscopic characteristics of geotechnical materials, which I enjoy very much. I think it

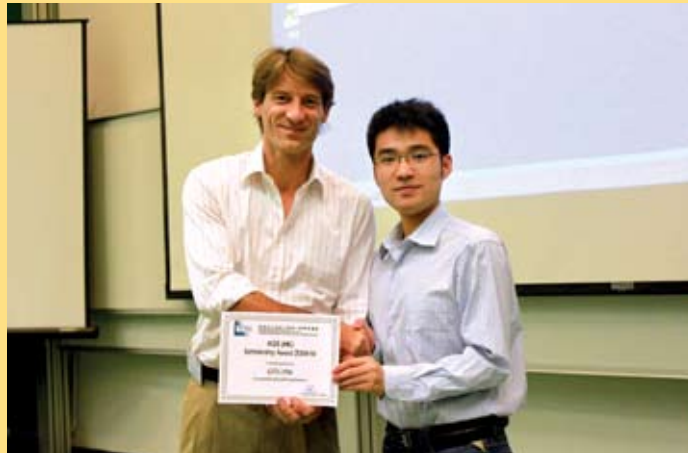
will be the most wonderful experience for study and doing researches in Hong Kong. Thanks again for your generous support for my work.

#### Mr Lau Yun-man Oscar

I feel so fortunate to have been chosen as a recipient of the AGS (HK) Geotechnical Award, and I am writing this letter to express my sincere thanks to your association for awarding me this scholarship. Now, I am a 2<sup>nd</sup> year M.Phil. student working on the Numerical Simulation on Creep and Pile Setup under the supervision of Prof. Yu-Hsing Wang at HKUST. Rolling Resistance in Discrete Element Method is also my focus. Finally, I would like to thank the AGS (HK), HKUST CIVL DEPT, my supervisor and my family for their enormous support to my work. Receiving this scholarship motivates me to continue my research and to strive for excellence.



Dr Angus Maxwell (right) presented a HK\$10,000 AGS (HK) scholarship to Mr Yung Siu-hung Eric for his research at HKU



Dr Angus Maxwell (left) presented a HK\$5,000 AGS (HK) scholarship to Mr Guo Ning for his research at HKUST



Dr Angus Maxwell (right) presented a HK\$5,000 AGS (HK) scholarship to Mr Lau, Yun-man Oscar towards his research for the M. Phil. degree at HKUST

## Diary Dates

(Information on upcoming events is updated regularly on our website at [www.ags-hk.org](http://www.ags-hk.org))

### 1. Conference, ground forum, site visit and technical seminar

Event	Date	Time	Venue	Contact / Registration
Site Visit to HATS Stage 2A	19 Feb 2011 (Sat)	09:30 to 12:30	North Point	<b>Mr Lee, Tse-hung</b> Tsehung.lee@gammonconstruction.com
Ground Forum on Geotechnical Centrifuge Modeling	28 Feb 2011 (Mon)	18:30 to 20:00	Mariners' Club	<b>Prof Wang, Yu-hsing</b> ceyhwang@ust.hk
Seminar on Fault Zones and their Influence on Construction	19 Mar 2011 (Sat)	09:00 to 17:30	The University of Hong Kong	<b>Dr Angus Maxwell or</b> asm@maxwellgeosystems.com <b>Dr Samuel Ng</b> samuelkng@cedd.gov.hk
Site Visit to Widening of Tolo / Fanling Highway	26 Mar 2011 (Sat)	09:30 to 12:30	Tai Wo	<b>Mr Eddie Chan</b> Eddie.Chan@arup.com
Site Visit to Hong Kong West Drainage Tunnel	30 Apr 2011 (Sat)	09:30 to 12:30	Cyberport	<b>Mr Eddie Chan</b> Eddie.Chan@arup.com
Conference on Tunnel Design & Construction Asia 2011	21-24 Jun 2011	-	Amara Sanctuary Resort, Sentosa, Singapore	<b>Dr Angus Maxwell or</b> asm@maxwellgeosystems.com <b>Mr Lee, Tse-hung</b> Tsehung.lee@gammonconstruction.com

### 2. Publication

Publication	Time	Contact
Ground Investigation Guideline on Natural Terrain Mitigation Works	April 2011 (tentative)	<b>Mr Eddie Chan or</b> Eddie.Chan@arup.com <b>Mr Lee, Tse-hung</b> Tsehung.lee@gammonconstruction.com
Ground Investigation Guideline on Horizontal Directional Coring	May 2011 (tentative)	<b>Mr Barry Sum or</b> Barry.Sum@aecom.com <b>Mr Lee, Tse-hung</b> Tsehung.lee@gammonconstruction.com