Message from Head of Department

I feel deeply honoured to be appointed Head of Department for three years from July 1, 2017. Sincere thanks are due to my predecessors for laying a solid foundation for the Department, particularly the former Head Professor S.C. Wong and Deputy Head Professor Ben Young over the past six years. I would also like to thank the Associate Heads, Professor Thomas S.I. Ng (Administration and Development), Professor X.Y. Li (Research), and Professor Tong Zhang (Teaching and Learning) for their selfless and enthusiastic help. I look forward to the continued support from colleagues of the teaching, administrative and technical staff, students, alumni and other stakeholders in working together to scale new heights.

Departmental Events

Scholarship Presentation Ceremony

The Scholarship Presentation Ceremony for 2016-17 was held on April 24, 2017 in Senior Common Room, HKU and the event was attended by recipients, parents, donors and teaching staff. There were a total of 22 recipients including B.Eng. and M.Sc. students. The Guest of Honour, Ir Lam Tin Sing Enoch, Director of Water Supplies, delivered a speech and presented souvenirs to sponsors thanking them for their generosity in offering contributions to the cause of academic excellence. It was a chance not only for the students to thank their donors personally, but also for them to interact and exchange with prominent engineers from the industry.

The International Symposium on “Design of Steel & Composite Structures in accordance with Eurocodes”

The International Symposium on "Design of Steel & Composite Structures in accordance with Eurocodes" was successfully held at the Cordis Hotel, Mong Kok on August 25, 2017. The opening address of the symposium was delivered by Ir Edward Chan Sai-cheong, Chairman of the HKIE/JSCE Joint Structural Division, Hong Kong. Seven prominent overseas and local experts shared their experiences on the latest development and new technology in the field of steel and composite structures. The symposium was attended by over 140 participants that included engineers from various government departments, consulting firms and construction companies. The sponsorship from Wo Lee Steel Co. Ltd. & Wo Lee Green Solutions Ltd. for this symposium was gratefully acknowledged. The symposium chairman, Professor Ben Young, delivered the closing remarks.

Professor Zuyu Chen (陳祖煜院士), the HKU Centennial Distinguished Chinese Scholar, visited HKU from March 5 to 9, 2017

Under the nomination of Department of Civil Engineering, Professor Chen Zuyu was awarded the title of HKU Centennial Distinguished Chinese Scholar by HKU’s President, Professor Peter Mathieson in September 2016. Professor Chen is a member of the Technical Council of the China’s Ministry of Water Resources and has been a member of Chinese Academy of Sciences since 2005, one of the few members in water resources and hydropower and civil engineering of CAS’s Division of Technological Sciences with a total number of 137. He obtained his B.Eng. in 1966 from Tsinghua University. Over the last 50 years, Professor Chen has worked on hydropower dam engineering and landslide prevention and mitigation. He is the main authority of Mainland China in this field. In particular, he made recognized and key contributions to the design and construction of the Three Gorges Dam, Yixing, Tianshengqiao, Manwan, and Wuping hydropower dams.

Professor Chen undertook the official visit of HKU from March 5 to 9, 2017. During the visiting, Professor Chen had meetings with Professor Peter Mathieson (VC), Professor Andy Hor (PVC-research), Professor Sham Mai Har (Chairman of the HKU Centennial Distinguished Chinese Scholars Committee), and Professor Norman Tien (Dean of Engineering), and Professor S.C. Wong (Head of Department of Civil Engineering), respectively. The main subjects discussed during the meetings include the current status of the Three Gorges Project, the possibility of HKU’s engagement in the future gate-dam project at Poyang Lake, the possibility of establishing a state-key engineering laboratory at HKU, HKU’s opportunities in The Belt and Road Initiative, as well as research and development of landslide hazard prevention and mitigation in the region and around the world.

Professor Chen delivered the Public Lecture in the evening of March 7. The lecture title is “Performance of the Three Gorges Project During the Trial Impoundment Period: 2008-2016”. This public lecture was well attended by about 250 people from HKU and the community. Professor Chen also gave the Scientific Lecture entitled “Three-dimensional Slope Stability Analysis: Advances and Application” in the afternoon of March 8 at the Department of Civil Engineering. It was also well attended by HKU students and some engineers from the local industry.

Furthermore, Professor Chen had meetings with Professor C.F. Lee, Professor P.K.K. Lee and Ir W.K. Pun (Head of Geotechnical Engineering of HKSAR Government). Professor Chen also had meetings with some research students of the Department of Civil Engineering and gave advice on their studies.

Five photographs showing the Public Lecture on March 7, 2017 are shown below:

Participants at the International Symposium on "Design of Steel & Composite Structures in accordance with Eurocodes"
William Mong Distinguished Lecture on Fault Strength and Seismic Rupture Mechanism by Professor Aiming Lin from Kyoto University

Professor Aiming Lin, Chairman of Department of Geophysics, Kyoto University gave the William Mong Distinguished Lecture on August 3, 2017 at HKU. His lecture was about the fault strength and seismic rupture mechanism. The strength of seismogenic faults is an important factor in understanding the rupture mechanisms of large earthquakes and the rheological properties of seismogenic fault. Geological and geophysical evidence suggests that some active faults are weak compared with the experimental measurements of frictional strength, but the fault strength is still a subject matter in dispute. Professor Lin addressed the three issues: i) the rupture mechanisms of seismogenic fault related with the fault strength, ii) formation processes of seismic fault rocks including Earthquake Fossil (pseudotachylite) and related earthquake materials that form within natural seismogenic fault zones and in high-speed frictional experiments, and iii) the fault zone model showing the seismic slip resulting from large earthquakes that nucleate in the lower portion of the brittle regime in the upper crust is able to propagate downward through the brittle-ductile transition zone to the plastic flow regime in the lower crust.

CICID Construction Productivity International Forums

The Centre for Innovation in Construction and Infrastructure Development (CICID), with special support from Development Bureau of the HKSAR Government, organised two international consultation forums together with the Construction Industry Council (CICID) at HKU on construction industry productivity. The first was entitled “Strategies for Enhancing Construction Industry Productivity” on March 21, 2017, and the second was entitled “Shaping a More Productive Construction Industry” on April 25, 2017. Each forum engaged over 250 professionals from government, industry, institutions and academia with a blend of speakers from government, industry and academia locally and internationally. The two forums aimed to explore strategies and measures, both locally and internationally, for improving construction industry productivity in five strategic areas, namely, policy formation; regulatory requirements; planning and design; project management and administration; and site construction. The first was focused on Hong Kong — Singapore sharing and learning, while the second on Hong Kong — UK sharing and learning.
Dr. J. Yang was selected as a recipient of the Distinguished Visiting Scholars Scheme of the College of Civil Engineering, Tongji University in Shanghai, China. Under this scheme, he visited Tongji University on August 20-27, 2017 and delivered a technical seminar on recent advances in the use of shear waves for soil characterization and liquefaction evaluation. He also met with related academics of Tongji University to explore opportunities for further collaboration.

Activities
Professor H.H.P. Fang (Emeritus) was invited to give a keynote speech at the annual Los Angeles Environmental Forum in the U.S. on August 28-29, 2017. Over 120 environmental specialists from southern California attended the event during which Professor Fang spoke on the subject of Environmental Anaerobic Technology and its Applications in China.

Dr. W. Pan delivered an invited speech entitled “A Possible Zero Carbon Building Policy for Hong Kong: Opportunities, Risks and Recommendations” at the PPR Funding Scheme Sharing Forum organized by the Central Policy Unit of the HKSAR Government at the Central Government Office on May 10, 2017.

Dr. W. Pan participated as an invited panelist in the RICS Hong Kong Annual Conference 2017 entitled “Asia’s Global Metropolis: Leading Hong Kong to a New Horizon” for the session “New Ways to Manage Construction Costs and Cash Flow” at Grand Hyatt Hong Kong on May 19, 2017.

Dr. W. Pan delivered a presentation entitled “Paradoxical Feasibility of High-rise Zero Carbon Buildings” at the World Sustainable Built Environment (WSBE) 2017 Conference in Hong Kong on June 7, 2017.

Dr. J. Yang was one of the invited speakers at the International Conference on Coastal & Offshore Geotechnics and on Geo-energy and Geo-environment held at Zhejiang University on July 5-7, 2017. His talk was entitled “Evaluation of in situ state of sand deposits: challenges and advances.” The invited talks at this joint event, including two repeated Rankine lectures and two repeated Terzaghi lectures, covered a range of cutting-edge topics on energy and the environment.

Dr. J. Yang was invited to the editorial board of Acta Geotechnica, a leading geotechnics journal published by Springer, in July 2017.

**Long Service Award**

Three of our staff received the HKU Long Service Award at the Presentation Ceremony held in Luke Yew Hall on June 6, 2017. Ms. Candice Fong and Mr. Tony Leung Wai Cheong have served the University for 25 years; and Professor T. Zhang for 15 years.

**Research Highlights**

**Plate-reinforced composite coupling beam from research to practice (by Dr. R.K.L. Su)**

Coupled shear walls and core walls are widely used as a lateral load resisting system in high-rise buildings. The beam used to couple wall panels together is called coupling beam. Designer often found that conventional concrete coupling beams fabricated with longitudinal flexural reinforcement and vertical shear reinforcement are not able to cope with extreme environmental loads. The major problems of these beams are the limited shear capacity when resisting wind loads and the possible brittle failure due to the formation of diagonal shear or sliding cracks under strong earthquake loads.

With the aim of providing the construction industry with a practical, effective and economical coupling beam to resist high shear force and large rotational demands from large wind and earthquake loads, in 2002, Dr. R.K.L. Su and Dr. H.J. Pam started to develop plate-reinforced composite (PRC) coupling beam.

A PRC coupling beam contains a vertically embedded steel plate that spans across the beam and frames into the wall piers for anchorage. Shear studs are welded on both vertical faces of the plate along the top and the bottom longitudinal reinforcement throughout the span to enhance the plate/RC composite action in taking both shear and flexure. Shear studs are also provided in the wall regions to increase the plate bearing strength. The embedded steel plate in a PRC coupling beam provides a continuous shear transfer medium far less affected by concrete cracking at the beam-wall interfaces during inelastic deformations, thus preventing brittle failure and increasing the rotational deformability of the beam. In addition, the steel plate is effective in taking both shear and bending forces for deep coupling beams. The design shear capacity of PRC coupling beams can reach 12 MPa.

PRC coupling beams are flexible in design and easy to construct. By using different amounts of longitudinal reinforcement and steel plate, the flexural capacity of the beam can be easily adjusted to suit different magnitudes of design moment. Unlike other approaches, such as embedding steel sections in coupling beams, the insertion of steel plate has the least disturbance to reinforcement details, so that vertical, lateral and longitudinal reinforcement from walls, slabs and coupling beams, respectively, can be harmoniously integrated together. The vertical arrangement of steel plate allows concrete to be placed and compacted easily, so honeycomb type of defects can be avoided. Furthermore, the cast-in steel plate can naturally be protected by the surrounding concrete against fire and lateral buckling. Small holes through the plate to accommodate pipes and conduits are also possible. As shear studs are welded on the plate to couple the concrete element and the steel plate, it is much simpler, faster and economical than fabricating compound steel sections.

The effectiveness and efficiency of this new form of beams were demonstrated by extensive experimental study and non-linear finite
Updates on Project Mingde

Project Mingde was established by the Department of Civil Engineering in 2004. It provides an open platform for nurturing our students to acquire not only hard skills, but also to possess soft skills, such as the sense of social responsibility, by participating in real-world on-going civil engineering projects in remote impoverished regions in China and other Asian countries. We have a slogan “We grow as we build” and that is the core value of Project Mingde. Project Mingde attracts not only Civil Engineering students, but also students from other disciplines and institutions to participate in this meaningful programme. We hope that students would have personal growth through this experiential learning opportunity and participation in various real-life projects, and also education in impoverished localities in China could be provided. For more information about Project Mingde, please visit our official website at http://www.civil.hku.hk/mingde/.

Alumni are welcome to join Project Mingde and if you are interested to be part of us, please contact Dr. C.P. Wong at cpwryan@hku.hk (for projects) or Dr. K.H. Law at adalaw@hku.hk (for communications).

Teacher Quarter of Daping Primary School

Professor Nicolas S.Y. Yeung and Professor L.G. Tham led 11 engineering students to visit Daping Primary School on April 14-17, 2017. The third floor of the teacher quarter was completed and the roof was under construction. The students checked the size and quality of the structural members according to the contract drawings, and they also discussed with the contractor about the unfinished items, such as parapets of rooftop and balconies, windows and doors. The construction work would be completed by September. A handover and opening ceremony is scheduled on October 1, 2017. The local government officials, our donor and Project Architects from Shanghai, the contractor, teachers and students of Project Mingde, the principal and teachers of the school, and the local villagers will be invited to attend the ceremony.

Restoration of Tengcun Bridge

A meeting was arranged with the contractor and the local government officials about restoration of the broken Tengcun Bridge in Mid-April 2017. The students had prepared three proposals to rebuild the bridge in either reinforced concrete or structural steel with different span lengths. Several factors were discussed in the meeting, such as the costs of materials and labour, the availabilities of skilled workers and machines, and the ease to access the site. The local government officials and villagers preferred

restoring the bridge in reinforced concrete based on the original outlook but with better foundations. Professor Tham suggested linking up the three foundations to form a strip footing in order to enhance the bearing capacity to resist heavy water flow in rainy season. The students will provide a detailed design accordingly, and a follow-up trip will be arranged soon.

Kindergarten in Duling Primary School, Guigang

After the previous two visit trips to Guigang in October and February 2017, Ms. Elisabeth Lee (Project Architect) and Project Mingde student members from the Faculty of Architecture prepared an architectural design of the proposed kindergarten based on architectural features of surrounding buildings, local culture, religion, and weather condition. Professor Nicolas Yeung and Dr. R.K.L. Su led a team to visit the school and liaise with the School Principal and the local villagers on June 2-3, 2017. They gave us some constructive comments and suggestions on the design during the face-to-face discussion. Furthermore, about the renovation of the existing teaching block to repair the structural cracks and resolve the rainwater leakage from rooftop, Dr. Su proposed an improvement measures by providing an additional structural steel frame to support the building, and an additional metal roof to divert the rainwater. The students will prepare the associated drawings for cost estimation.

Meeting with the School Principal, the local government officials and the contractor.

Identifying the structural cracks, and discussing the improvement measures.

Daping Summer Camp

A five-day four-night summer camp was organized on June 11-15, 2017. 20 undergraduate students from various faculties (e.g., Engineering, Medicine, Science, Arts, Social Sciences and Education) joined the trip and visited Guangxi. They spent most of their time in Daping Primary School for voluntary teaching and providing health care services in
addition, they evaluated the construction progress and helped prepare as built drawings of the new teacher quarter. It was an extraordinary experience for the participants to sleep at the school in a remote village without electricity at night and hot water supply, and now they have a better understanding on the poor living condition of local villagers in impoverished regions.

**Library in Trung Dung Primary School, Vietnam**

In the summer, 7 Civil Engineering students, 10 Social Sciences students and 2 Comparative Literature students participated in a construction project in Vietnam for 7 weeks. They supervised and helped the local contractor to build a national standard library for Trung Dung Primary School. The library is a typical Vietnamese-style one-storey building, which consists of a library room (of about 45m²), and a computer room (for about 20m²). Other than the library construction, the students shared core living values with the local school children and conducted surveys about their reading habits, living environment, and potential hazards in households, etc. In this cross-disciplinary experiential learning programme, the students exchanged their skills and talents among themselves from different disciplines. They learnt the specific engineering knowledge as well as the social aspects of the construction work.

![Students were building the brick walls of the library.](image)

**Visit South China University of Technology**

Ms. Anila Ma led 7 undergraduate and 5 Ph.D. students in Civil Engineering to visit South China University of Technology (SCUT) on June 19-21, 2017. During this study trip, lectures and sharing sessions were delivered by professors in SCUT about construction codes and practices in Mainland China, and recent research in various Civil Engineering disciplines. Postgraduate students from SCUT and HKU shared their research ideas and explored the possibilities of collaboration. Our students visited SCUT university campus and their laboratories, as well as the construction site of Humen Second Bridge with the guidance from Dr. Li Jing and on-site professional engineers.

![The local structural engineer explained the design concept to the students.](image)

**Name of students joined the site visits for various projects:**

**April 14-17, 2017 (Tengcun and Daping):**
CHAN Chun Hong, CHAN Wing Chun, LEUNG Shun Hei, LI Tsz Yau, LO Kwun Yu (Mechanical), MOK Kwan Yin, NG Ka Wing, SHIU Ho Kit (Engineering), TAI Ho Tung, WONG Chun Kit, YU Chung Yin

**June 2-3, 2017 (Guigang Duling Primary School):**
TSE Hoi Yan Vicky

**June 11-15, 2017 (Daping Summer Camp):**
CHAN Chau Woen Andy, TSE Hoi Yan Vicky, CHONG Mei Yin, WONG Chun Yip Martin, NG Cheuk Yin Martin (Mechanical), TSE Ho Yin (Engineering), WONG Chun Hei (Engineering), YAU Hoi Yan (Engineering), CHAK Wai Shun (Medicine), CHAN Hang Yin Bianca (Medicine), LEE Chun On (Medicine), LI Hang Long (Medicine), HO Constance Wun Kiu (Arts and Education), JEONG Hye Joo (Arts and Education), MIAO Ziyan (Science), YIP Hiu Yan (Science), ZHAO Ziwei (Science), YU Yan Kiu Yanki (Arts), WONG Ho Ting Beatrice (Nursing), LEUNG Wai Ki (Journalism)

**June 7 – July 17, 2017 (Vietnam Internship Training):**
LAU Chak Ming, LAM Man Sum Nicole, LAM Tak Po, MOA Ka Wa, NG Wing Fung, WONG Cheuk Him, YIU Tsz Kiu Grace (Engineering), SHIN Dongjun (Social Sciences), TANG Tseng Man (Social Sciences), KO Long Fai (Social Sciences), YIP Chun Ting (Social Sciences), GIU Guolin (Social Sciences), TANG Yue Hin (Social Sciences), KONG Hoi Ho (Social Sciences), YIP Fu Ki (Social Sciences), ZHAI Xinge (Social Sciences), CHAN Sue Ying (Social Sciences), SHEK Ho Yi (Comparative Literature), LAM Yin Man (Comparative Literature)

**June 19-21, 2017 (South China University of Technology):**
WONG Wai Kit Adrian, AU Wai Fung, CHENG Tze Hong Kenneth, WONG Chun Yip Martin, LAM Cheuk Ting, CHU Shing Yip Thomas, NG Ka Wing Hammie, WU Xiaoliang, YANG Yifan, XU Pengpeng, CHU Shaohua Anderson, HUANG Peng

**August 14-16, 2017 (Rongshui):**
MOK Ming Fai Jimmy

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Student Awards/News

Awards

Mr. Lee Chun Ngai (CivE 2 2016-17) was awarded the Endeavour Merit Award under the HKSAR Government Scholarship Fund 2016-17.

Ms. Lau Kwok Kwan (CivE 4 2016-17) was awarded the Hui Yin Hing Fellowship 2017-18.

- Mr. Liu Yingxiao and Mr. Wong Ho Ching (CivE 4 2016-17) were awarded the Hui Yin Hing Scholarship 2016-17.
- Miss Chan Joyce Yee Jing (CivE 2 2016-17), Mr. Jim Holman (CivE 3 2016-17), Miss Lai Wai Yan (CivE 2 2016-17), and Mr. Mok Chi Hang (CivE 3 2016-17) were awarded the Reaching Out Award under the HKSAR Government Scholarship Fund 2016-17.
- Mr. Siu Ho Kit (CivE 2 2016-17) was awarded the Chun Wo Foundation Scholarship 2016-17.

Awardees of the Departmental Outstanding Teaching Assistant Award for 2016-17:
- Mr. Li Hailing, Year 4 Ph.D. Student of Professor Ben Young
- Mr. Loo Ting-Wei Daniel, Year 4 Ph.D. Student of Dr. R.K.L. Su
- Mr. Wong Wai, Year 4 Ph.D. Student of Professor S.C. Wong

News from Alumni

Professor Hong Liu, 2003 Ph.D. graduate of our Department (under the supervision of Professor H.H.P. Fang), was recently promoted to Professor of Biological and Ecological Engineering at Oregon State University of U.S.A. She is an expert in bioenergy production and wastewater treatment publishing over 70 journal papers with over 8,000 citations. She received the highly prestigious Career award of National Science Foundation (U.S.) in 2010, and has served on the Editorial Boards of two international journals.

Letter to the Editor

In the back page of Newsletter (September 2016 - March 2017), Mr. Chu Sau Kong, Clifford, a 1965 graduate’s statement, “Professor Sean Mackey (Tai Kok Professor) established the course recognised by the Institution of Civil Engineers (UK)” needs amendments.

Please refer to the Book, “ENGINEERING AT HKU A CENTURY OF EXCELLENCE”; Page 18, paragraph 2 reads

“... the Faculty decided to completely re-organise the curriculum under Professor Redmond, who had returned to HKU as Dean in 1948 after receiving an urgent request from the University to help re-establish the Department of Civil Engineering and the Faculty of Engineering. The new curriculum offered introductory subjects only in the first year and broadened the range of professional subjects taught in the later years. It was approved by the University in 1950 and from 1951 was phased in over four years. The intention was to lay the path towards ICE recognition.”

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“... in July 1955, only three months after the government request was made, the ICE accorded recognition to the Civil Engineering degree.”

The course was very strenuous, and with very stringent screening, only a few out of a very large class in 1951 could get through straight through. I was one of them. The Dean was Dr. S.Y. King at that time. Professor S. Mackey came in 1957, 2 years after recognition.

Chow Che King, B.Sc.Eng. (Hons. 1st) 1955