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News Letter

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Messages

From the Immediate Past President

Osamu Kusakabe

In April 2016, I succeeded the role of IPA President from Professor Malcolm Bolton of Cambridge University, the founding President of IPA, and have retired from the post in June this year. My successor is Prof. C F Leung, who is a distinguished geotechnical engineer, a Professor at the National University of Singapore, as well as a long-time good friend of mine since 1980s. I strongly believe that IPA continues to flourish under his leadership in coming years.

On this occasion, I would like to sincerely express my appreciation to all the members of IPA, Board members, Steering Committee members, Standing Committee members, Technical Committees members as well as all the members of Secretariat for their kind support during my 4 years term of Presidency. I would like to also record my special thanks to Dr. M Terashi, Director of IPA, who has provided me a piece of valuable advice on all aspects of IPA activities and management, and to Mr. Y Ishii, Secretary General, for his friendship and devoted work.

During my term, IPA has achieved various projects.

(1) Increase in membership: individual Membership increased from 512 to 647, Corporate membership from 30 to 54 and a newly created category, Student membership of 29, as of June 2020, totaling 730 memberships
(2) Strengthen the power of communication: Overall revision of IPA website, to make it more accessible, informative, and convenient for IPA members and the rest of the world. Regular publication of quarterly IPA Newsletter, more than 2500 copies have been distributed worldwide
(3) Global activation of technical dissemination: IPA Seminar on Press-in Technology, in Singapore, Kuala Lumpur, Bangkok, and Manila
(4) Promotion of documentation: Publications of Press-in retaining structure: a handbook in English and in Chinese, Case history volume, and Introductory book (under printing)
(5) Vitalization of research activity: Establishment of Technical Committees
TC1 on Application of cantilever type steel tubular pile wall embedded to stiff ground, TC2 on Estimation of Subsurface Information from Data Obtained during Press-in Piling, TC3 on Expansion of Applicability and Assessment of Seismic Performance of PFS Method, and TC4 on Vertical performance and construction management of sheet piles installed by the Press-in Method and tubular piles installed by Rotary Cutting Press-in Method
(6) Successful organization of International Conference on Press-in Engineering with more than 400 participants

(7) Improvement in effective management: Overall revision of Constitutions & bylaws, and related regulations. Establishment of IPA regional offices in four regions

All these achievements are outcomes of collective efforts by Board members, Steering committee members, Standing committee members, TC members as well as all members of Secretariat. More importantly supports from all the members of IPA.

Last not the least, I would like to thank Mr. A Kitamura, the President of GIKEN LTD., for his continuous support for IPA activities, including generous financial support. The achievements abovementioned would not have been possible without his support.

Messages
From the New President

Chun Fai Leung

Professor, Department of Civil Engineering
National University of Singapore

It is indeed a great honor for me to take over Prof. Osamu Kusakabe, a good friend of mine for the past 4 decades, as the incoming President of IPA. First let me begin to thank the great contributions under the leadership of Osamu for the past 4 years. Osamu has been dynamic, enthusiastic, and resourceful in shaping up the IPA as it is today. Under his leadership, the membership had grown significantly currently with over 600 members internationally. He spearheaded the highly successful inaugural International Press-in Piling Conference held in Kochi, Japan, in September 2018 which was graced by the presence of President and Secretary General of the International Society for Soil Mechanics and Geotechnical Engineering. The conference was attended by a large number of overseas participants involving practicing engineers, academics, and researchers from many corners of the world, in addition to a great number of delegates from all over Japan. For the Board of Directors of IPA, Osamu had strengthened the Board with new board members from the Americas, Australia, and Europe. He is indeed energetic by expanding the IPA technical committees in terms of number of committees, committee activities and meetings, and expansion of committee memberships globally. Last but not least, the significant contributions behind the scene by the IPA Secretariat in the Tokyo Headquarter must be duly acknowledged and greatly appreciated.

My goals as the incoming IPA President are to further consolidate what Osamu had strongly established for IPA for the past several years, to expand the participations of IPA activities globally, and to bring press-in technology particularly the heavy duty Gyro-pilers prominently into engineering practice in many countries worldwide. Unfortunately, many countries in the world are now struggling with Covid-19 situation. The planned IPA Seminars to be held in Taipei and Jakarta had to be postponed to a later date. In addition, the 2020 IPA Board meeting can only be held on correspondence mode, rather than face-to-face mode as in the past years. Although the Covid-19 situation should be over or minimized soon, the world would not be the same as before with social-distancing and other measures as well as opportunities to travel could be considerably reduced at least for this year. This makes achieving my above-mentioned goals to be more challenging and difficult. The conduct of IPA technical committees and events need to be revamped in view of the changing operating environment globally. In particular, the Second International Conference on Press-in Piling to be held in June 2021 may need to be revamped or modified regarding the organization and operation. I shall work closely with the conference organizing committee to ensure the success of the second IPA conference. Despite the above concerns, I am still confident that IPA can expand its activities and involvement worldwide, amid on a slower pace.

It is indeed fortunate that Osamu agrees to stay as an advisor for IPA. With his valuable experience and strong dedication, I am confident that IPA can achieve the goal for its next expansion phase and to bring press-in technology to be adopted more widely in the world for the advancement and benefits of mankind.

Messages
From outgoing Secretary General

Kazuyoshi Ishii

I have been a member of IPA since IPA was inaugurated in 2007, then my engagement to IPA has become proactive when I was elected as Auditor in 2013. Thereafter, IPA has welcomed Dr. Osamu Kusakabe as the second President in 2016 to succeed Prof. Malcolm Bolton, the founding President who had contributed lots of his expertise in Press-in Engineering to the initial decade of IPA. I am very pleased to have an opportunity to assist the both great IPA Presidents for seven years. I was appointed Secretary General by Dr. Kusakabe in 2017 and have dedicated to enhance IPA activities thereafter. A lot of remarkable and epoch-making IPA activities have been accomplished during my assignment with Dr. Kusakabe's strong and enthusiastic leadership.

I believe that IPA activity plan for 2020 is well deliberated and consolidated to the following five themes which was approved in the General Assembly last month.

1. Forming and developing the international network
2. Contribution to society by progressing researches and practices
3. Contribution to society with human resource development
4. Functional operation
5. Organizational operation

I recognize that each theme consists of many well-planned activities for 2020 and I am very confident that the IPA will accomplish the successful progress with harmonized effort among the members and all participants to activities, although COVID-19 pandemic has not been winding down yet. IPA is aiming for a further advanced stage to disseminate the Press-in Engineering as the beneficial technology to contribute to the society with human resource development. Even I withdraw from Secretary General this year but would like to keep my contribution to IPA as one of members.

Lastly, I would like to express my sincere appreciation toward all IPA members, participants to activities, Directors and Secretariat staffs and those who make valuable contribution so far and from now on.

Messages
From New Secretary General

Hisanori Yaegashi

I am very honored to be appointed Secretary General of the International Press-in Association. I will do my best to facilitate the activities of IPA.

After joining GIKEN LTD. in 2012 I was promoting piling machines overseas, inter alia in Asian countries. It was a good memory to provide a whole set of Giken Reaction Base system to the government of Myanmar as a grant project of the Japanese government. Also, it is nice to see that there are now GIKEN customers in almost all ASEAN countries. It was a good experience to participate in the process of establishing the Japan Bosai Platform, an association of Japanese companies which are intent to provide natural disaster prevention technologies abroad. Before joining GIKEN LTD., I spent many years overseas as a professional diplomat. Communicating with people with different cultural and historical backgrounds is one of my strong points. I also have extensive experience of dealing with legal matters. I would like to contribute to smooth operation and development of IPA with this knowledge and experience.

The Press-in method is being used in a wider variety of countries compared to the time when IPA was established. The examples include the recent projects in Bangladesh, Egypt and Senegal. On the other hand, harsh natural disasters hit everyday lives of people in different corners of the world more frequently, where the application of the Press-in method is required for counter these disasters. I hope more and more people all over the world come to recognize the merits of the Press-in method and enjoy its benefits through the enlightening activities of IPA.

Messages
From Director

Jun Otani
Vice President and Professor of Geotechnical Engineering
Kumamoto University

I have done a series of the research on the steel sheet-pile method since 1988, which was a countermeasure method for the settlement of soft ground due to embankment construction. During this work, a new countermeasure method called "Partial Floating Sheet-pile (PFS) method" was developed in 2005. The sheet-pile has been constructed through the rigid base as an end bearing piles, but there is a problem on the cost and construction period when the depth of the soft ground is deep enough. To solve this problem, PFS method was developed which are not all bearing sheet-piles but some of them are floating types. This method is totally cost and construction effective due to the less volume of the steel sheet-piles.

Under this activity, I was selected as a chair of Technical Committee (TC) No.3 under IPA, which title is "Expansion of Applicability and Assessment of Seismic Performance of PFS Method". Although PFS method was originally developed as a countermeasure for the settlement in soft ground, it should be also applied to the issue of earthquake's measures and this was one of the key points on this technical committee. In fact, this TC was started in 2017 and now we are preparing the final report. International symposium was organized every year in Asia and those were held in Vietnam (2017), Malaysia (2018), and Thailand (2019) to introduce TC activities.

TC 3 Meeting

In addition to this activity, I was the President of Japanese Geotechnical Society (JGS) until June in 2020. Under this position, I have taken care of all the geotechnical issues including new technical developments and natural disaster preventions in Japan. We had very serious heavy rain in July of 2018 and JGS started a special technical committee to reduce and prevent ground disasters under heavy rains. Under this activity, JGS has published a recommendation for ground disasters due to heavy rains. Japan also often has earthquake and there are a lot of ground disasters. Under the activities of TC 3 in IPA, I hope that the results by TC3 can make the preventing and reducing the disasters possible.

I am now the Vice President of Kumamoto University and I am in charge of international affairs in our school. Most of my duties are to take care of international collaboration with other universities or institutions for both education and research. Under those missions, I often visit some of collaborative universities for not only in Asia but also around the world.

Finally, I hope that sheet-pile method is used more and more for not only new technologies but also the disaster prevention.

◆ A brief CV of Prof. Jun Otani

Jun Otani is a Vice President and Professor of Soil Mechanics and Geotechnical Engineering at Kumamoto University, Japan. He is also the President of Japanese Geotechnical Society from 2018 to 2020. He obtained his Ph.D. in Civil Engineering from the University of Houston, U.S.A. in 1990. He started his career as a research fellow at Scripps Institution of Oceanography in the University of California, San Diego in 1987. In 2001, he was promoted to be a full professor at Kumamoto University and he is now a Vice President of the university. He has established the worldwide research community on the application of X-ray CT for geomaterials.

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Special Contribution

Paradigm shift of disaster prevention and mitigation by city scale simulation

Atsushi Iizuka

Research Center for Urban Safety and Security, Professor
Kobe University

Numerical simulation for a whole city and its peripheral techniques are being developed at RIKEN Advanced Institute for Computational Science (AICS) and RIKEN Center for Computational Science (R-CCS). A whole city is constructed in a virtual space of a computer and how the ground, individual buildings, and infra-structures constituting the city behave is predicted when external disturbances such as earthquakes and tsunamis strike. This technique was originally developed as the IES (Integrated Earthquake Simulator) by a group led by Professor Hori of the Earthquake Research Institute, the University of Tokyo. IES aims at predicting disaster damages over a wide area with high resolution and also enables the simulation of people's behavior at the time of a disaster by combining an agent simulation with it. Many multi-scenario simulations using a super computer will lead to elimination of the 'unexpected'. Also, it is effective for grasping the disaster chain (compound disaster) that would occur for the city. Now, the social implementation of such simulation techniques is opening a new door for disaster prevention and mitigation.

Demonstration of IES

A trial simulation was performed at RIKEN Advanced Institute for Computational Science (AICS), in which not all the constituent elements of the city of Kobe, but at least 420,000 buildings, infra-structures and their foundations such as piles in Kobe were virtually reproduced. The water and sewer networks buried in the underground were also taken in the simulation, in which the ground model was constructed from 10,000 boring data. Thus, the whole city of Kobe was reproduced in a virtual space of the 'K' computer (Fig. 1). Once the whole city was reproduced in the computer, we can visually estimate what happens when various kinds of external disturbances such as the Nankai Trough earthquake impend. At present, the IES is being evolved at RIKEN Center for Computational Science (R-CCS), to extend its scope not only to earthquakes and tsunamis but also to heavy rainfall, floods, and landslides under the direction of Professor Oishi.

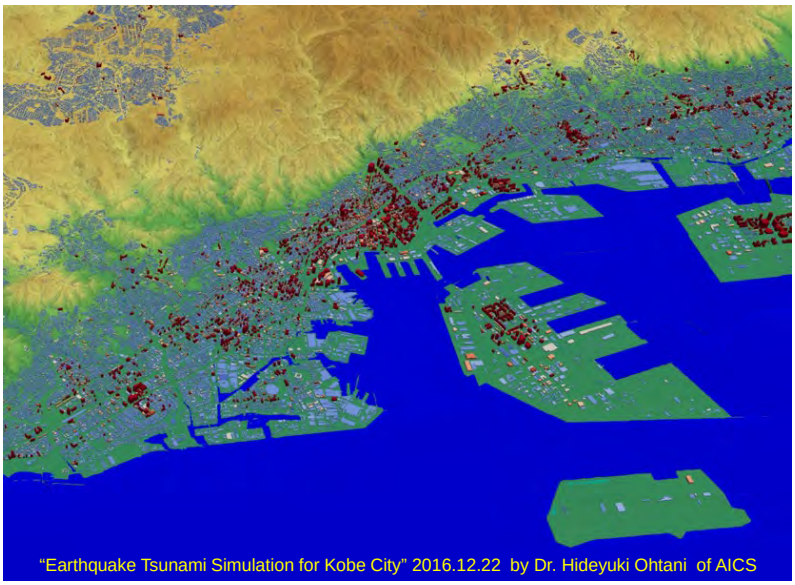

Fig. 1. A whole city of Kobe virtually reproduced in the 'K' computer

If we input all of the 10,000 or so earthquake scenarios which are expected in the case of the Nankai Trough earthquake, we will be able to know the effect and utility of disaster prevention and mitigation measures in a concrete manner. Furthermore, the behavior of a structure can be quantified as a probability, which may bring about a great change to the conventional seismic design method. Also, it makes it possible to clarify where, from where, and how to approach depending on the importance of the structure from the point of strengthening urban resilience.

However, there still remains challenges in such simulations. It is the reliability of a city model reproduced in the virtual space of a computer. An accurate reflection of the geometry, stiffness, and strength of each structure, as well as its geotechnical properties, should be achieved in the city model. In the simulation of the entire Kobe area, a computer scanned the asset ledger and automatically composed approximately 420,000 3D structures, and adjustments was made

again automatically using the 3D map information from Zenrin. The stiffness and strength of the building are estimated, assuming compliance with the building code. In order to ensure the reliability of the city models constructed in this way, research and development in two directions are currently underway. One of them is the development of a technique to automatically construct metadata enabling quick retrieval of various data such as asset ledgers, design CAD data and boring data, which are the backbone of city models, to provide primary information to the simulation. It is an object-oriented, data-driven system development. The other is the refinement of the ground model of the city. In the case of the whole Kobe simulation, for example, the dynamic characteristics of the ground from the seismic base to the soft ground near the surface, including the presence of faults, should be accurately taken into the ground model. And also, it is not easy to determine the parameters needed in the advanced dynamic analyses such as elasto-plastic soil water coupled FE simulations from general boring data. It is desirable to develop a method to rationally identify the parameters required for such advanced dynamic analyses. A way to adjust the parameters needed in the advanced dynamic analysis by using past earthquake records and ground deformation monitored at that time is expected. In the future, coupled with the penetration of digital twins linked to monitoring, the reliability of city models and simulations will be improved. And it will become a core technology for a smart city.

IES, From Integrated Earthquake Simulator to Integrated Engineering System

The role of the IES has been changed significantly by the development of automatic data conversion technique that reads the primary information from a wide variety of big data and reconstructs it into the required form (Fig. 2). Such automatic data conversion techniques have been generalized as DPP (Data Processing Platform) in RIKEN and other institutes, and are being developed as universalized techniques with a wide range of applications. With this DPP, IES is transforming itself from a disaster simulator to an automatic data conversion platform that is responsible for various simulations and data supply. In other words, the same IES has changed from Integrated Earthquake Simulator to Integrated Engineering System. It is now a platform that can be used for a variety of large-scale, wide-area, high-resolution, multiple-scenario simulations, not limited to earthquakes, tsunamis, ground liquefaction, and the movement of people and objects. In conjunction with the development of the IDP (Infra-Data Platform), which is an extension of the i-con policy promoted by the Ministry of Land, Infrastructure, Transport and Tourism, Japan, the IES will become an IT infrastructure which can create a new market for the construction industry.

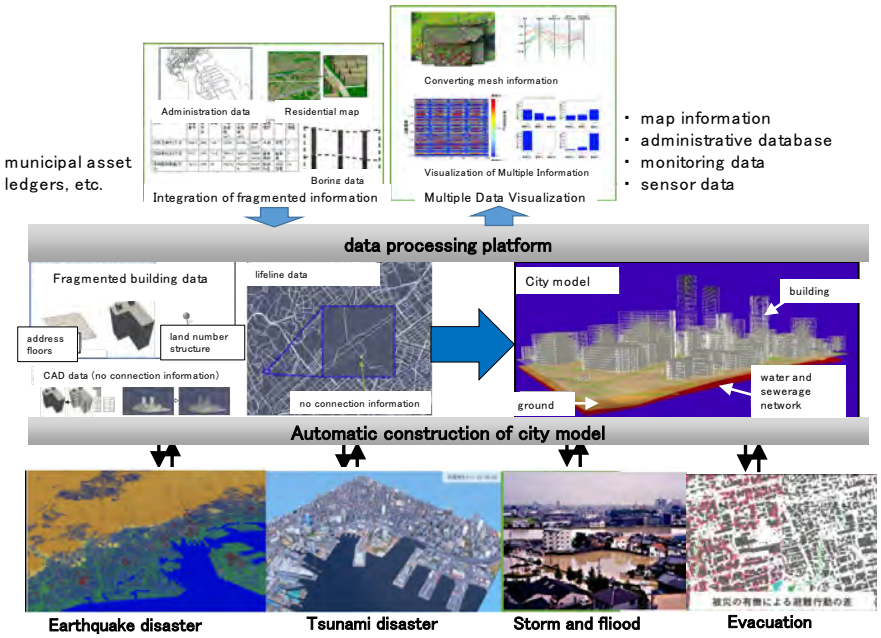

Fig. 2. Outline of IES

Proposal of "Kobe model"

The whole Kobe simulation by IES was picked up by a local TV station and its contents can be seen on Youtube[1)]. It has become possible to perform such simulations anywhere, due to the spread of cloud computing services for supercomputers and the high performance of GPGPUs. IES is also evolving into an automated data transformation platform that can construct the data required for simulation from a wide variety of big data. Then, the momentum to implement this technology in society increased, and in August 2019, the "City-Whole Simulation" Technical Research Association was established with the headquarters at Kobe University. As of September 2019, 15 companies, mainly from the construction industry, have participated in this project. We are going to implement IES and its associated techniques to these private companies within the next five years. When the companies use public data such as IDPs, they are required to convert the data to be used as input for their applications. It would be costly for each company to develop its own data

conversion technique. Therefore, we aim to generalize the required data conversion techniques as much as possible and construct a data conversion system that can be used widely.

When the integrated simulations of wide-area, high-resolution and multiple scenarios are operated by private companies in the construction industry, not only the estimate of the direct disaster damage but also the impacts on local communities and economies associated with the development of infrastructures will be widely assessed. For example, liquefaction of the ground will be evaluated as quantitative risk at each point and will be essential information for logistics control and land asset management. Since almost all assets in Japan are concentrated on soft ground such as the alluvial plain, people will clearly understand that these assets are equally exposed to the risk of liquefaction (Fig. 3). Therefore, it would become a common perception that asset values will be maintained or increased by implementing appropriate liquefaction measures, rather than worrying that liquefaction risk will reduce asset values. The widespread use of quantification of liquefaction risk over a wide area is bound to encourage such a change in perception.

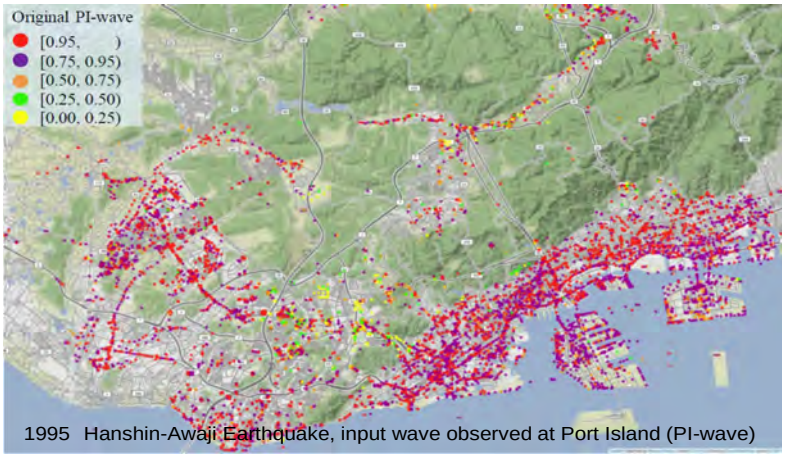

Fig. 3. An example of liquefaction risk at Kobe area[2)]

In this way, the construction industry is expected to obtain and exert the ability to quantify risk under wide-area, high-resolution, and multiple scenarios and open up the business of problem-solving "proposals" for clients in the financial, investment, non-life insurance, and logistics industries, rather than passive "orders" (Fig. 4). This will create a new market and will lead to a vibrant activation of the construction industry.

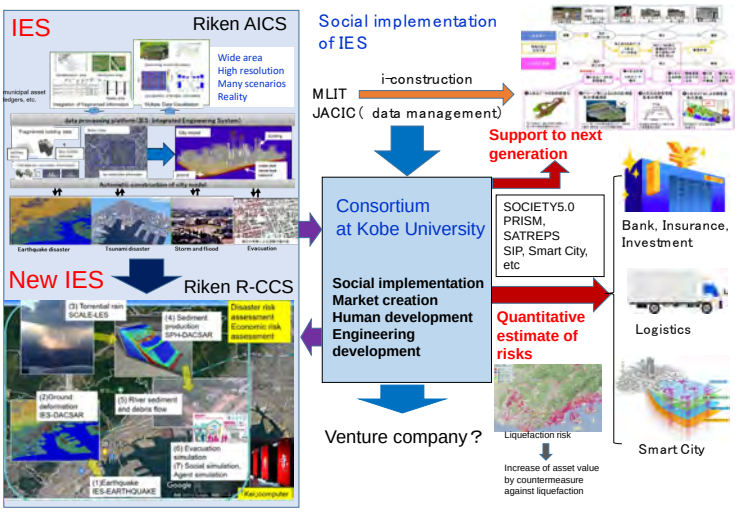

Fig. 4. Social implementation of IES

Paradigm shift of disaster prevention and mitigation

If private investment decisions are made along with the quantification of risks such as disasters, this should automatically lead to enhanced resilience of people's living spaces. If the reduction of risks such as disasters is clearly recognized to be the benefit of private investment, then a path can be shown that the economic activities of the private sector will lead to strengthening the resilience of a country against risks such as disasters. We do not know how much private investment will contribute to national resilience, but at least public burdens imposed to the national and local governments will be somewhat replaced by private investment. This should lead to an acceleration of national resilience against exogenous risks such as disasters. In other words, disaster prevention and mitigation can create an active market that is driven by private economic activities rather than remaining as a passive defense offered by the public sectors. The development of such a market will lead to the active development of disaster prevention and mitigation, which is nothing else but a paradigm shift of disaster prevention and mitigation.

In addition, if the city-scale simulation technology, which can be implemented in wide-area, high-resolution and multiple scenarios, is operated as a digital twin linked to monitoring and sensor technology while utilizing IDPs, it can be used as an infrastructure diagnosis chart that can grasp (predict) the soundness and vulnerability of the urban infrastructure at each location. This is expected to innovatively streamline the maintenance of urban infrastructures. Also, the integration with deep learning and AI technologies, which are currently making remarkable progress, will improve the accuracy and reliability of future predictions by the city-scale simulations, and will greatly assist in determining infrastructure development policies. In other words, simulation technology for a whole city is expected to contribute to the realization

of a smart city not only in urgent times of disaster but also in normal times.
Finally, we hope that such social implementation of the 'Kobe model' will lead to the realization of "protecting people's lives and communities". The implementation of the 'Kobe model' in society has been started at Kobe University under the support of the Ministry of Land, Infrastructure, Transport and Tourism and the Japan Construction Information Center (JACIC) in collaboration with the University of Tokyo, the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and the RIKEN Center for Computational Science (R-CCS). It is also positioned as one of the projects in the Multidisciplinary Integration for Resilience and Innovation (MIRAI), Kobe University, which tries to draw a grand design for the future society.

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Appendix

RIKEN (Institute of Physical and Chemical Research, Japan): a comprehensive research institution in a diverse range of scientific disciplines, founded in 1917.
'K' computer: nickname of a super computer established and operated from 2012 to 2019 at the RIKEN Advanced Institute for Computational Science (AICS) and RIKEN Center for Computational Science (R-CCS)
GPGPU (General-Purpose computing on Graphics Processing Unit): a technology that applies the computing resources of the Graphics Processing Unit to purposes other than image processing

◆ A brief CV of Prof. Atsushi Iizuka

Atsushi Iizuka is a Professor of Research Center for Urban Safety and Security and Civil Engineering Department, Kobe University. He received his Bachelor's Degree in 1981, his Master's degree in 1983 and his Doctorate in 1988 from Kyoto University. He began his career at the Department of Civil Engineering, Kyoto University in 1986. He moved to Kanazawa University in 1988 and settled at Kobe University in 1997. His major field is Geotechnical Engineering, particularly he has interest in the theoretical approach to interpret the mechanical behavior of soil structures. Recently, his intention in the academic activities is turned toward applying the theoretical geomechanics to the field of disaster prevention and mitigation.

Serial Report: Reports from USA (Part 5)

Improving Florida's Drainage Channels with Pressed-in Sheet Piles

Takefumi Takuma
Giken LTD., c/o Giken America Corp.
Shigeru Kambe
Blue Iron Foundations and Shoring LLC

INTRODUCTION

Drainage is becoming a more pressing matter, especially in low-lying urban areas in many parts of the world due to the steadily rising sea level. For example, major streets of the City of Jacksonville Beach, which is located on the Atlantic coast of northeastern Florida, have been inundated often enough to need a comprehensive upgrade. The agency in charge of Florida's state highways (Florida Department of Transportation) is improving State Road A1A (3rd Street), which runs through the city from north to south, and its drainage system in the northern part of the city. The entire city was originally built on a large sandbar and marshes and therefore, the area's drainage has been heavily relying on a system of drainage channels. The State Road A1A (3rd Street) Drainage Project is to widen and to improve a part of the existing drainage channel in the densely populated residential neighborhood of the city.

PROJECT'S SCOPE OF WORK AND SELECTION OF PRESSED-IN SHEET PILE WALLS

The channel improvement involves the following work items.

- Tree and vegetation clearing and removal
- Steel sheet pile installation
- Dewatering
- Excavation and removal of roots, stumps, debris, and soil
- Placement of bedding stone and rip raps
- Placement of concrete capping on top of the new sheet piles walls
- New fencing and sod placement after regrading
- Replacement of 5 roadway bridges

See Fig. 1 for the typical conditions of the channel prior to construction. The project is being worked on in Phases 1 through 7 including 5A and 5B to minimize the road closures and their associated detours. The work area is very narrow between rows of houses, limiting the size of new structures and the space available for construction activities. Therefore, the self-standing vertical steel sheet pile walls were selected for the drainage improvement for the majority of the locations. The project's plan specified "Non-vibratory Press-in Method Required" for most of the sheet pile installation because the drainage channel runs directly behind densely built homes and a high school campus where piling related noise and vibration would be minimized with press-in piling (White et al. 2002). Some sections have a sheet pile wall just on one side while the other sections have them on both sides as Fig. 2 depicts. The project is designed by the Jacksonville, Florida office of Parsons Transportation Group.

Fig. 1. Typical Conditions of the Drainage Channel before Construction

SOIL CONDITIONS AND SHEET PILE LENGTHS

The project's typical soil conditions are predominantly fine sand with N-values varing between 3 and around 30 to 35. There are stiffer sand layers at some locations with N-values up to 47 at the depths of 7.6 to 8.5m, which are at near the pile tip elevations. The goundwater level is about 0.9 to 1.5m below the grade. The design sheet pile lengths are between 6.1 and 13.1m. Fig. 3 shows the vertical location of the project's longest sheet pile in the corresponding soil conditions.

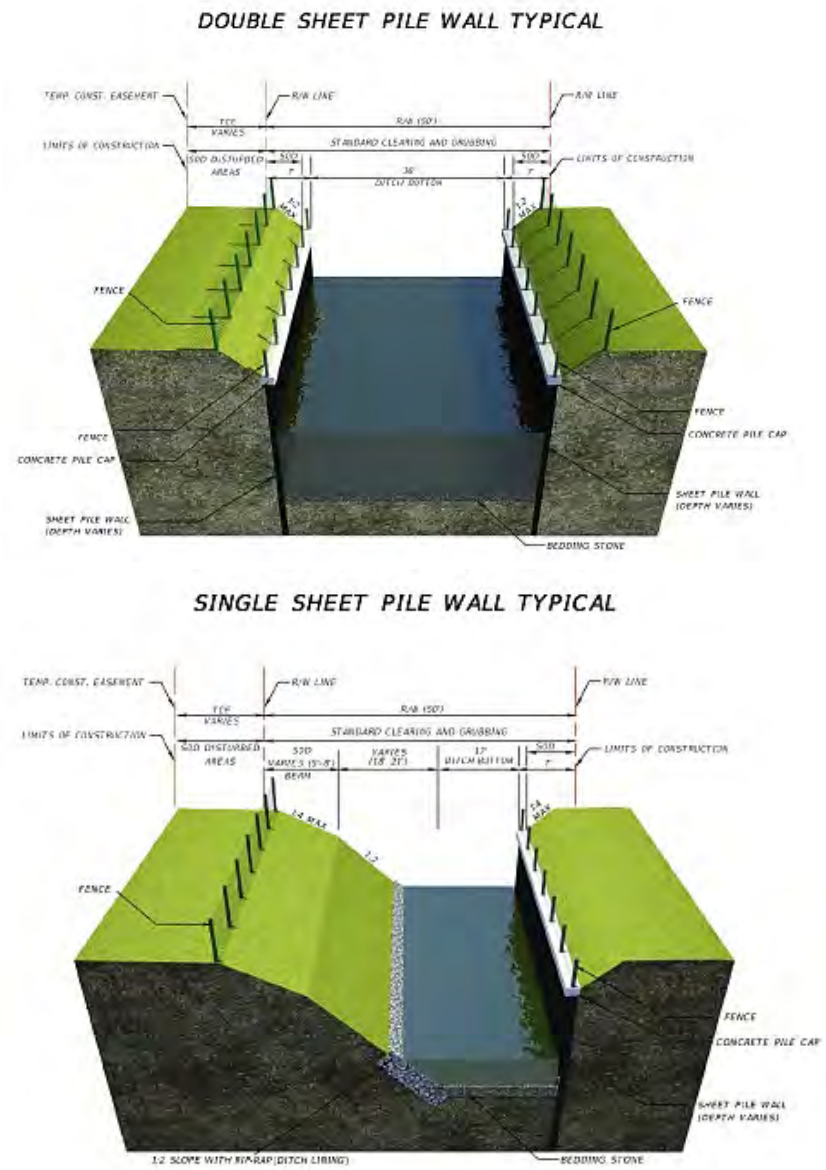

Fig. 2. Typical Single and Double Sheet Pile Wall Configurations (Source: http://nflroads.com/ProjectFiles/5057/Sheet_Pile.pdf)

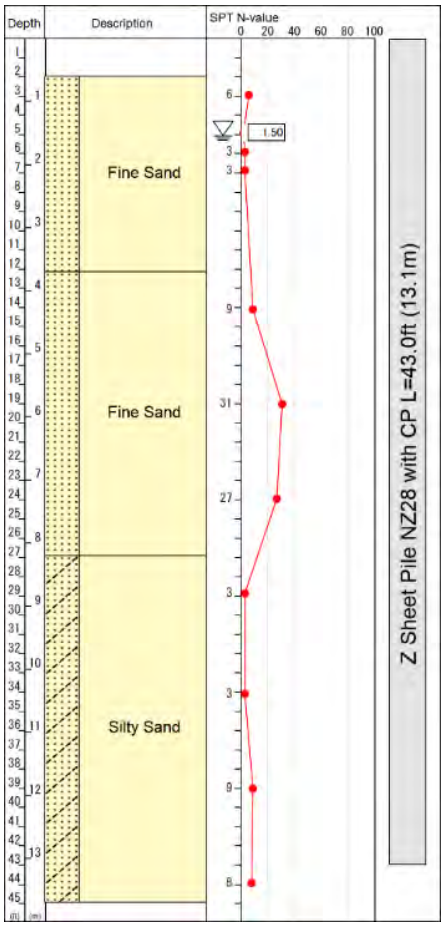

Fig. 3. Typical Soil Conditions and Vertical Location of Sheet Pile

SHEET PILE WALL INSTALLATION

Although the soil's N-values were above 35 at certain locations, the piling subcontractor (Blue Iron Foundations and Shoring LLC) was able to complete all the piling work without use of a water jetting or auger attachment, which would be essential for sheet pile installation in denser granular or other types of hard soil (Roesner et al. 2006 and Takuma et al. 2018). The press-in piling quantity was approximately 23,100m^2 (2,458m of wall length) with NZ19, NZ26, NZ28 sheet piles and NZ28 with plates welded on its flanges. Fig. 4 shows the section of a coupled NZ28 sheet piles with welded plates as an example. All the surface of the sheet piles was treated with a zinc primer plus a tar-epoxy coating on the exposed area on the water's side for corrosion protection.

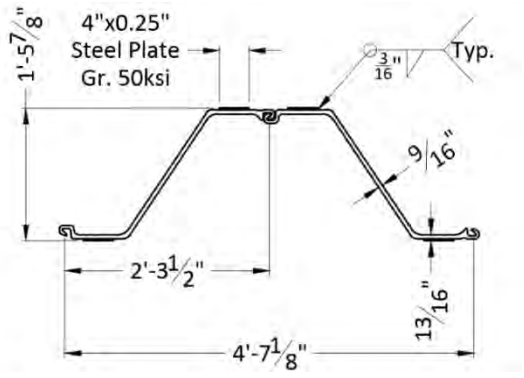

Fig. 4. Section of NZ28 Sheet Piles with Steel Plates (Source: Nucor Skyline)

Fig. 5 shows a Giken ECO1400S press-in piling machine installing a pair of sheet piles in a very narrow work area. The piling contractor utilized a movable working deck which straddled between finished

sheet pile walls on both shores for keeping the piling machine's power unit safe and dry. Fig. 6 shows two sets of piling machines side by side; one extracting the old sheet pile wall with the other simultaneously installing a new wall where the channel's unsupported slope was kept minimal to avoid a potential collapse of residential properties behind it. The fact that two sets of press-in piling machines could work in tight working space was also essential for the section behind the high school, which needed the piling work finished during its summer break with two machines working simultaneously.

Fig. 5. Press-in Piling of Sheet Piles

Fig. 6. Extraction of Old Sheet Piles (Left) and Installation of New Ones (Right)

Once sheet piles were installed, capping concrete and fencing were placed on top as shown in Fig. 7. The sheet pile walls' top elevations were designed to meet the existing grade, therefore, the capping concrete's top surface also undulates over the longitudinal distance according to the surrounding grade. The press-in piling work was started in July 2018 and safely completed in late May 2020 with an 8-month break due to the work of the general contractor (The de Moya Group Inc.).

Fig. 7. New Sheet Pile Walls with Capping Concrete

CONCLUSIONS

Pressed-in sheet piles can make highly reliable and space saving drainage channel improvements safer even in densely populated areas with very confined working space as exemplified by the case study project. There appear to be more of these types of channel and levee improvement projects in line not only in coastal Florida but also in low-lying communities in the rest of the world; possibly due to climate change and oncoming sea level rise.

ACKNOWLEDGMENTS

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Report

From IPA's Europe Regional Office

Toshifumi Shiomi

General Manager, Giken Europe B.V.

The IPA Regional Office in Europe is in Giken Europe B.V., the subsidiary of GIKEN LTD. in Japan who is an IPA corporate member. Giken Europe B.V. is currently in the midst of the construction of a new office and factory in order to strengthen its abilities of promotions and total customer support. The completion is scheduled for August 2020 which will allow the activities of the IPA regional office in the region to be boosted along with the completion. In recent years, countermeasures such as reconstruction, reinforcement, and rehabilitation of existing infrastructure have been taken around the world due to rise of the sea level caused by climate change. In the Netherlands, in order to protect the country from the rise of its sea level and flooding, the National Flood Control Program (Delta Program) and bank rehabilitation projects (countermeasures against aging) under the jurisdiction of each local government have been in progress for rivers and canals.

In recent times, reinforcing those earth retaining dykes that are structurally fragile have become an urgent need to prevent natural disasters. There are various reinforcement methods in construction, but steel sheet pile walls are also introduced as a common method. (See Fig. 1). However, due to the rapid urbanization in modern times in the Netherlands, an enormous amount of time is required for construction planning, assessments of various environmental impacts, and consensus forming with neighborhoods and other related procedures before the actual construction works begin if the reinforcement works are planned by conventional structural design and construction methods. This is especially for cases such as dykes that are used as traffic road on their tops, congested areas with housing, and historical buildings. In addition, environmental protection directives under EU law should be considered in actual construction sequences. Various approaches including R.F.P. (Request for Proposals) for a breakthrough solution against the current problems are being examined.

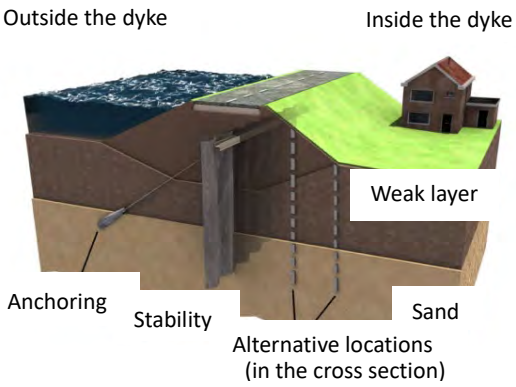


Fig. 1. Steel Sheet Pile Wall

Source:https://www.betonvereniging.nl/media/16090/eemdijkproef-arny-lengkeek.pdf

A new initiative called "Innovation Partnership" was called for tender by the Municipality of Amsterdam in 2018. The municipality owns and manages a 400-year-old network bridges and quays which are vulnerable due to advanced age. Erosion & scouring of wooden piles has led to a number of concerns of dyke stability in recent years and urgent repair is required to keep the city functioning and safe. The municipality, moving away from traditional approaches put a call out for innovations which could shorten construction times and minimize environmental impacts while protecting the cityscape. The Gyropress™ method and GRB™System that was proposed by "G-Kracht Partners" including Giken Europe B.V. have been won high praise and the partners officially awarded the project on 13th May 2020 with highest rating of all the tenderers.

Reference: Giken Ltd Awarded First Place in City of Amsterdam Innovation Partnership Quay Wall Project

The aforementioned case introduced will expand the opportunities for IPA to disseminate press-in engineering, discover new technical issues, and clarify research issues. It is necessary to grow the presence of the IPA in this region with the support of its directors and members and build a common understanding of press-in engineering and its superiorities in the construction industry. In addition, it is expected that more academia and researchers will participate in the IPA which will boost the promotion of press-in engineering, strengthen the dissemination of technical information, and expand the opportunities for research outcomes and case studies in this region.

Young Members Column

Exploring Press-in Technology through Japanese Language Class

Syahri Fuddin bin Kamaruddin

First Year Undergraduate Student, Faculty of Mechanical and Manufacturing Engineering
Universiti Tun Hussein Onn Malaysia (UTHM)

I am Syahri Fuddin bin Kamaruddin, a first-year student of Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia (UTHM).

Technology is one of the most interesting topics to be discussed. It is not exaggerating to say that the first thing popped out in my mind when discussing about this 'techno' topic, is Japan, one of the most technologically advanced countries in history. International language is one of the core subjects in University Tun Hussein Onn Malaysia (UTHM), and I chose to take Japanese language more than just curiosity and passion. We have learnt a lot including the International Press-In Association (IPA), an organization that has been one of the university's international partners.

The fact that we have been introduced to IPA excites me more than I ever imagined. Through this exposure, we had the opportunity to learn about "Press-In Technologies", which is one of the best eco-friendly technologies in my opinion. More interesting facts about this technology is that it potentially provides an innovative solution against floods, pollutions and even Tsunamis. To think that such solution can be possible is quite surprising and the introduction to this kind of technology piqued my interests and curiosity.

For the International Language Exhibition in the university, we have been directed to create two replicas of tidal and tsunami defense system using straws and polystyrenes. In that exhibition, we had the chance to introduce this revolutionary technology of 'Silent Piling' applications from GIKEN Limited Company to our visitors and fellow students. It is a great experience to share a lot of things which seem impossible for our mind to handle at first, but to think that it is actually a great idea to come up with this kind of technology, makes me more than just amazed. Japanese engineers are trying to apply this technology not just in construction applications, but also in disaster countermeasures.

Fig. 1. Photo session at our booth
(the author is the second from left)

Fig. 2. Describing tsunami protection wall concept

There is a lot of things we can learn from the company and its philosophy, depending on how we put our perspectives onto it. “仕事に銘を打て”, which is also means “To Leave One’s Mark” can put a positive impact in everyone’s life. It encourages someone to realize his or her responsibility clearly and completely to set a task with definite goals and objectives, directly allows them to have the capability to inscribe a signature or mark in his or her work.

This philosophy brought a positive impact in myself as well, motivates me to be more confident with everything I will do or done. I still have a lot of things to learn as an engineer. I will continue to be dedicated to my study at university for my future work.

I would like to take this opportunity, and express my gratitude to my lecturer, Madam Hiyama Junko/Hiyama sensei for giving us the opportunity and exposures to this technology, company and philosophy. We learnt a lot not just in class, but also at the exhibition as well. For a student that have a huge interest in Japan and its culture, including its animation, it is a great pleasure to deeply understand the thing that we learnt throughout this semester so far.

Fig. 3. Photo with my fellow friends after Press-in concept presentation

Fig. 4. Explaining the concept of tsunami protection wall to Dr. Nor Azizi

Announcements

Ordinary General Assembly 2020

The IPA Ordinary General Assembly 2020 was held from 13 to 22 May, 2020. The total votes have achieved the quorum and all the presented Agendas were resolved in accordance with Article 22 of Constitution.

- Period: 13 May to 22 May 2020
- Meeting place: IPA Website （On-line voting through the Members Site）
- Agendas: https://www.press-in.org/en/page/general_assemblies
- Number of eligible members: 708（Individual Members:654, Corporate Members: 54）
- Quorum: 355 （a majority of members）
- Total votes: **426 [achieved quorum]**（Turnout 60%）

Votes on each Agenda:

Agendas		Affirmative votes	Dissenting votes	Results
Agenda 1	Activity Report for FY 2019	424	2	Approved
Agenda 2	Income & Expenditure Statement for FY 2019	425	1	Approved
Agenda 3	Activity Plan for FY 2020	425	1	Approved
Agenda 4	Budget for FY 2020	425	1	Approved
Agenda 5	Election of Directors for the term 2020–2021	425	1	Approved
Agenda 6	Amendments to Constitution	424	2	Approved

The list blow shows the incoming and outgoing members of IPA Directors. Thanks to the outgoing directors for their great contributions during the terms and very welcome the new directors.

Incoming Directors

Prof. Junichi Koseki
Professor
The University of Tokyo
Japan

Prof. Barry Michael Lehane
Professor
The University of Western Australia
Australia

Dr. Ramin Motamed
Associate Professor
University of Nevada Reno
United States of America

Dr. Vu Anh Tuan
Lecture
Le Quy Don Technical University
Viet Nam

Outgoing Directors

Prof. Koichi Maekawa

Dr. Dang Dang Tung

Extended Deadline for the Submission of Abstracts to ICPE2021

With regard to the deadline of submission of abstracts to the second International Conference on Press-in Engineering 2021, Kochi (ICPE2021), the ICPE2021 Organizing Committee decided to extend its various deadlines as below, especially considering most universities and research facilities in the world are currently closed due to COVID-19 restrictions.

- Submission of abstract ~~26 Apr. 2020~~ → **28 Jun. 2020**
- Notice of acceptance of abstracts ~~31 May 2020~~ → **15 Jul. 2020**
- Submission of full paper ~~30 Sep. 2020~~ → **15 Nov. 2020**
- Submission of revised full paper ~~15 Jan. 2021~~ → **28 Feb. 2021**

For more information, please visit the ICPE2021 website:

ICPE 2021 Website: : https://icpe-ipa.org/

We are keeping on praying for your safety and looking forward to meeting you in Kochi, Japan, in 2021.

Publications

1. Design and Construction Guideline for Press-in Piling 2020 (the Japanese version)

“Design and Construction Guideline for Press-in Piling” (the Japanese version) was first published in June 2015 (called Design and Construction Guideline 2015), and more than 4,500 copies have been sold over these five years. The guideline has been widely referred to in piling industry, both in design and construction in Japan. As the results, the number of construction projects adopting press-in piling have increased.

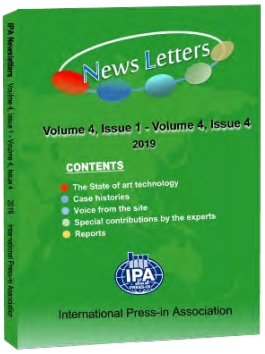
The IPA Administration Committee, responsible for maintaining IPA guidelines/codes, considered necessary to revise the guideline for various reasons, including (1) to be consistent with Japanese major design codes, such as “Specifications for Highway Bridges”, and “Technical Standards and Commentaries for Port and Harbor Facilities” in Japan, which were recently revised, (2) to be consistent with “Press-in retaining structures: a handbook published in 2016”, (3) to reflect the mechanical developments and research results over the last five years, and (4) to gather recent case histories for usability of the guideline to readers by classifying the case histories in a systematic categorization. The revised version also aimed to add the descriptions on design methods commonly used in the field of building foundation, which was not included in the Design and Construction Guideline 2015.

For this purpose, the editorial committee was established in March 2019, consisting of 16 experts from institutions, which are responsible for issuing and maintaining respective design codes/standards related to foundation and geotechnical structures in Japan. After one-year effort, the revised Design and Construction Guideline for Press-in Piling was published in two volumes in March 2020 (called Design and Construction Guideline 2020). The revised version will be also of use as a vital source of reference for designers and contractors for piling projects.

Currently, the revision process of "Press-in retaining structures: a handbook published in 2016", is under way, to reflect the revisions made in Design and Construction Guideline 2020 and the revised version of the handbook is planned to publish within the fiscal year of 2020.

2. IPA Newsletters (Volume 4, Issue 1 - Volume 4, Issue 4 2019)

This is the third bind up version of IPA Newsletter which contains all the articles in Vol.4, No.1, 2, 3 and 4 issued in 2019. It contains 8 technical reports showing cases of construction projects, as well as new challenging techniques to improve the quality and usefulness of Press-in Technology. It is meaningful to share such valuable information among the IPA members. 6 Special Contributions from prominent experts on hot topics, 4 serial reports from USA, 3 event reports as well as the young members column have been also included which are highly appreciated.



IPA Newsletter has been quarterly published 14 issues in total since September 2016 and distributed to 2,500 readers in the world, not only our members but also all the participants of ICPE 2018, seminars and so on. The editorial board planned the new content entitled "Young Members Column" to increase young engineer readers since Vol.4, No. 3 and will add "Technical Committee (TC) Corner" from 2020. Please feel free to contact the editorial board members below with email address or IPA Secretariat (tokyo@press-in.org) for your clarification or suggestions.

New Members (April – May 2020)

Members who joined IPA from April to May as follows.

- **New Individual Members (5)**

  Akitomo Wada (Japan) Takahiro Kurokawa (Japan) Lei Yang (China) Junichi Koseki (Japan)
  Vu Anh Tuan (Viet Nam)

- **New Student Members (3)**

  Tahir Iqbal (Japan) Naho Ohnishi (Japan) Lua Hoang (Japan)

- **Numbers of members as of 31st May 2020**

  Individual Members: 647
  Students Members: 29
  Corporate Members: 54

Event Diary

Title	Date	Venue
■ **IPA Events** https://www.press-in.org/en/event		
The Second International Conference on Press-in Engineering, Kochi (ICPE 2021)	June 19-21, 2021	Kochi, Japan
International Society for Soil Mechanics and Geotechnical Engineering http://www.issmge.org/events		
GEE2020 International Conference on Geotechnical Engineering Education	June 24-25, 2020	Athens, Greece
ICGE-Colombo-2020 (3rd International Conference on Geotechnical Engineering)	August 10-11, 2020	Colombo, Sri Lanka
4th International Symposium on Frontiers in Offshore Geotechnics	August 16-19, 2020	Austin, USA
4th International Conference on Transportation Geotechnics (ICTG)	August 30-September 2, 2020	Chicago, USA
GEOAMERICA 2020	October 26-29. 2020	Rio de Janeiro, Brazil
■ **Deep Foundations Institute** http://www.dfi.org/dfievents.asp		
SuperPile '20	June 18-19, 2020	Virtual Event
45th Annual Conference on Deep Foundations	August 13-16, 2020	National Harbor, Maryland, USA
■ **International Geosynthetics Society** http://www.geosyntheticssociety.org/calendar/		
10th Chinese National Conference on Geosynthetics	May 27-31, 2020	Chengdu, China
EuroGeo 7 7th European Geosynthetics Congress	September 6-9, 2020	Warsaw, Poland
■ **Construction Machinery Events**		
2nd International Conference on Infrastructure and Construction https://www.scientificfederation.com/infrastructure-construction-2020/	October 15-16, 2020	Lisbon, Portugal

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Editorial Remarks

The coronavirus (COVID-19) outbreak is causing major economic disruption, both national and global. This situation is causes for uncertainty, anxiety and turmoil across all sectors. Public construction has been one of the few activities that has been maintained. In Bangkok Thailand, for example, the activity will likely continue because the lockdown has not been total. However, works may expect to halt soon as supply chains are disrupted by a shortage of materials and subcontractors. In addition, public agencies begin to terminate contracts to control expenses.

Therefore, it becomes our responsibility to find strategy plans as engineer, manufacturer and academic researcher. How can we maintain the safety of own people? and how can we use technology to gain operational leverage? How can we adjust our strategy to the new normal of much online working condition with efficient results? We could consider the crisis as an opportunity to unite together to overcome this difficult situation.

The editorial Board is pleased to publish Volume 5, No.2 issue on schedule. This issue presents messages from the immediate past president, Prof. Osamu Kusakabe and the messages from the incoming president, Prof. ChunFai Leung. This issue also contains messages from IPA Directors, Prof. Otani Jun. The special contribution titled "Paradigm shift of disaster prevention and mitigation by city scale simulation" written by Prof. Atsushi Iizuka and Serial report from USA are also shown in this issue.

This issue also includes the report from IPA's Europe regional office. In addition, Young members column, Exploring Press-in Technology through Japanese Language Class, is also presented.

Please feel free to contact the Editorial board members below with email address or IPA Secretariat (ipa.news@press-in.org) for your clarifications and/or suggestion.

Pastsakorn Kitiyodom