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News Letter

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Messages
from the Director

Kenneth Gavin

Professor, Department of Geoscience and Engineering
Delft University of Technology

I am pleased to write a message for this issue of IPA Newsletter. I have been involved in the IPA for many years. In 2011 I was one of the winners of 3rd IPA Research Grant Award. In this research I analyzed the effect of installation process and soil state on the axial capacity of piles in sand. The work was performed at a geotechnical test bed site that I developed at Blessington in Ireland. I am currently working with the Port of Rotterdam in the Netherlands to developed a Dutch National pile test site. I was elected IPA director at the General Assembly in 2017, and I chaired a session for "Pile performance" in the First International Conference on Press-in Engineering 2018, Kochi (ICPE2018).

My research is focused on two main areas, foundations systems and the resilience of aging infrastructure. In the area of foundation systems, I have worked extensively on developing design procedures for a range of foundation types, from shallow to deep foundations. Much of this work focusses on correlating foundation resistance and settlement response to site investigation test data. A key output has been in the development and improvement of design codes. An example is the Pile Soil Analysis - PISA project (with the University of Oxford and Imperial College) in which large-scale field tests and numerical analyses were performed to develop a new design method for offshore mono pile foundations. Recent research has focused on (i) the impact of aging on the axial capacity of driven piles, (ii) foundation installation effects, (iii) the impact of cyclic loading and (iv) load interaction effects.

I also work in the area of climate change effects on transport infrastructure networks. I have coordinated a number of European Union collaborative research projects investigating the effect of natural hazards on rail infrastructure, these include the EU FP7 project SMARTRAIL and the Horizon 2020 projects DESTINATION RAIL and GoSAFE RAIL. Specific highlights include the development of vibration based monitoring for predicting foundation scour and the use of probabilistic models to determine the reliability of earthworks.

I am looking forward to working closely with colleagues in the IPA to develop close links between research and practice. I envisage that Press-in technology can be used to solve many emerging problems in the Netherlands and throughout Europe such as reinforcement of existing flood defense systems, improving the resilience of aging infrastructure and as an environmentally friendly alternative to displacement piling for both onshore and offshore projects.

◆A brief CV of Prof. Kenneth Gavin

Prof. Ken Gavin graduated with a First Class Honours degree in Civil Engineering from Queens University Belfast in 1994, he obtained a PhD in Geotechnical Engineering from Trinity College Dublin in 1998. He worked as a senior geotechnical engineer for Arup for 3 years before joining University College Dublin (UCD) as an academic in September 2001. In April 2016 he moved to TU Delft as Professor of Subsurface Engineering in the Section of Geo-Engineering where he is responsible for research on foundations and underground space.

Message from the Director

Rodrigo Salgado

Charles Pankow Professor, Lyles School of Civil Engineering
Purdue University

In contrast to what is observed in many engineering disciplines (notably in mechanical engineering, electrical and computer engineering and chemical engineering), the connection between research in the field of geotechnical engineering and industrial activity is not as strong or frequent as would be desirable for the health of the discipline. It would be to the advantage of geotechnical engineers and the companies for which they work for this connection to be strengthened, for it is the science and related technological progress that add the most value to a field of knowledge and make it most attractive to bright students, who have grown attached to mobile phones, video games, drones and self-driving cars. Nowhere is this gap clearer and more impactful than in the United States, where only a small percentage of research funding in geotechnical engineering comes from the industry. Industry benefits from the graduate education of its geotechnical engineers at U.S. universities, and education more often than not funded through research grants. Should geotechnical and civil engineering research funding drop in future years, a possibility that cannot be discounted, how will industry find the solidly-trained engineers that it needs? Admittedly, in many other countries, the way graduate education is handled and funded is different, and the situation is more favorable, but the fundamental fact that industry and academic and research institutions need to work closer together remains.

It is in this context that associations such as IPA operate. GIKEN's long-lasting collaboration with and funding of research at Cambridge University is commendable and an example to the industry, and IPA's research grants are an excellent step in the direction of connecting the pressed-in pile industry with researchers capable of delivering valuable knowledge back to the industry. IPA should strive to strengthen efforts in this area. Deepening participation in and funding of research that has relevance to the industry is a way not only to strengthen the industry represented by the association but also a way to contribute to the broad field of geotechnical engineering and its future. In this light, I would highlight engineering analysis and design as a major focus to be pursued in any such efforts. The industry has done well in developing new methods of construction, and the development of the required machinery does not require primarily geotechnical engineering knowledge; in contrast, design methods have lagged the progress in pile installation technology, and progress in this area, with incorporation of scientific progress into design and analysis, is something that the industry should support in order to make its products more attractive and to strengthen the connection between industry and research in the field of foundation and geotechnical engineering. Additionally, such efforts and the fruit they bear should be disseminated and publicized, hopefully providing the example that is needed for more to follow.

◆A brief CV of Prof. Rodrigo Salgado

Prof. Rodrigo Salgado is the Charles Pankow Professor in Civil Engineering at Purdue University and co-Director of the Center for Offshore, Foundation and Energy Engineering (COFFEE). He holds a Ph.D. and an M.S. degree from the University of California, Berkeley, and a civil engineering undergraduate degree from the Federal University of Rio Grande do Sul (UFRGS). Prof. Salgado received the prestigious 2015 *Geotechnical Research Medal* of the Institution of Civil Engineers of the U.K. for work on the challenging problem of deep penetration of probes of various types and geometry into soil, which has widespread application in geotechnical engineering. For his theoretical work on analysis of piles loaded in various manners. Prof. Salgado has received a lot of awards. For example, the International Association for Computer Methods and Advances in Geomechanics *Excellent Contributions Award* (2008). He has also been an invited participant of the U.S. and U.S.-China editions of the National Academy of Engineering Frontiers of Engineering Symposium. He is a Fellow of ASCE and has been inducted into the GeoAcademy. His service to the computational geomechanics community has recently been recognized through the *Outstanding Reviewer Award* from Computers and Geotechnics (2015 and 2017), the leading journal in computational geomechanics. He is an editor and the incoming Editor-In-Chief of the *Journal of Geotechnical and Geoenvironmental Engineering* of the American Society of Civil Engineers and serves in editorial capacities or on the board of several other journals, including *Geotechnique*.

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Special Contribution

Current practice of piling works in Bangkok subsoils 1) Design and practice

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1. INTRODUCTION

The foundation in Thailand, especially in Bangkok Clay, is the pile foundation. The soil condition consists of thick soft to medium clay and encountered with stiff to very stiff clay before reaching the first dense silty sand layer. The hard clay is encountered below the first silty sand and followed by the second very dense silty sand layer. The piling work consists of driven pile and jack-in pile for low rise buildings with pile tip penetrated in the first dense sand layer. The high-rise buildings in Bangkok and elevated expressways, elevated train and MRT subway stations normally use long and large bored pile as well as barrette piles with the tip penetrated in the second dense silty sand layer. This paper presents the current practice of all piling work using in Bangkok.

2. SOIL CONDITION

The Bangkok subsoils consists of 13-16 m. thick of soft to medium clay and followed by a stiff clay layer to about 21-28 m. deep. The first dense silty sand layer is encountered below stiff to hard silty clay. The very stiff silty clay is alternated with the second dense silty sand layer at about 45-55 m. deep. Generally, pile foundations of superstructure are penetrated in this second very dense sand layer. The piezometric level or phreatic surface of Bangkok aquifer is drawdown from -23.0 m. below ground surface in 1995 and increased to -13.0 m. in 2016. Figure 1 presents the geological condition of Bangkok subsoils.

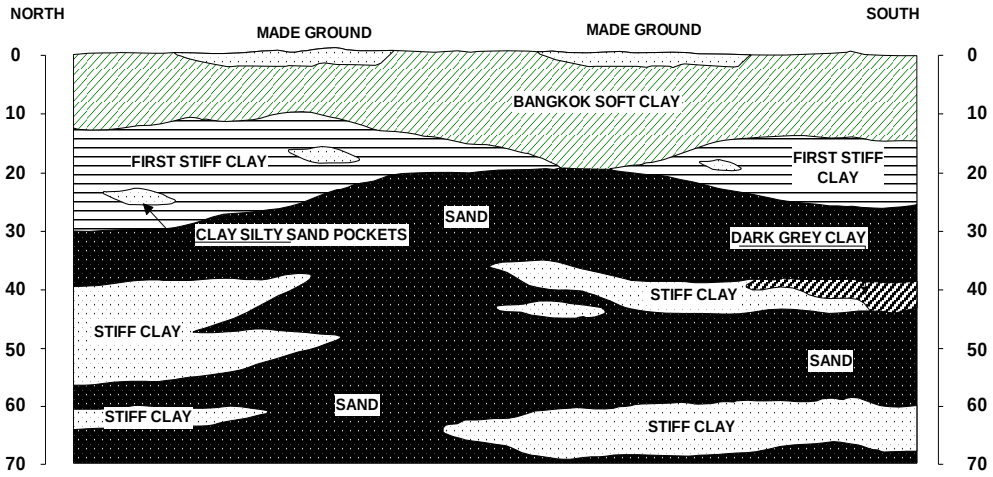

Fig. 1. Bangkok geological condition

3. SHAFT FRICTION AND END BEARING BEHAVIOR OF PILE FOUNDATION

The ultimate pile capacity (Q_{ult}) generally consists of ultimate shaft capacity (Q_f) and ultimate end bearing (Q_b) as follows:

$$Q_{ult} = Q_f + Q_b$$
$$= \Sigma f_s \Delta L P + q_b A_x$$

where
f_s = Unit pile shaft friction (kN/m^2)
ΔL = Thickness of soil layer (m)
P = Pile perimeter (m)
q_b = Unit end bearing (kN/m^2)
A_x = Cross section area of pile (m^2)

The unit skin friction (f_s) can be estimated from the following equations

$$f_s = \alpha S_u \text{ (for clay layer) and } f_s = \beta \sigma'_v \text{ (for sand layer)}$$

where	f_s	=	Unit pile shaft friction (kN/m^2)
	S_u	=	Undrained shear strength of clay (kN/m^2)
	σ'_v	=	Effective overburden pressure in drawdown condition (kN/m^2)
	α	=	Adhesion factor for clay
	β	=	Friction factor for sand

The α and β values can be determined from load transfer curve derived from instrumented test piles.

The unit end bearing capacity of pile (q_b) with pile tip penetrated in the silty sand layer is generally derived from the same approach as follows;

$$q_b = N_q \sigma'_v$$

where	q_b	=	Unit end bearing (kN/m^2)
	Nq	=	End bearing coefficient
	σ'_v	=	Effective overburden pressure in drawdown condition (kN/m^2)

The parameters for estimation of pile capacity are α-value, β-value and Nq parameter. These three parameters are depended on pile type and pile length as well as construction method.

4. PILING WORK IN BANGKOK SUBSOILS

Piling work or pile type used in Bangkok subsoils or in Thailand are generally divided into 3 groups as follows;

- Driven Pile
- Bored Pile and Barrette Pile
- Jack-in Pile

4.1. Driven Pile

The driven pile can be divided into 3 subtypes depended on the construction method as follows;

4.1.1 Pure drive.

This is the pile driven by hammer from the beginning until pile tip penetrated or driven into the first dense silty sand layer at the depth between 23-28 m. depended on depth of sand layer.

4.1.2 Auger press with final drive.

This pile is applied to the spun pile with technique of auger and press technique until the pile tip penetrated in the very stiff silty clay layer and stop above the first silty sand layer. The pile is finally driven with hammer until the tip of driven pile penetrated into the first dense silty sand layer as the same layer as pure drive technique.

4.1.3 Auger press with base grouting.

The technique is the same as auger press with final drive state in 4.1.2. but the pile is auger press until the pile tip penetrated into the first dense silty sand layer. The excess pore pressure in the sand layer would increase and rebound. Therefore, base grouting is applied to increase the end bearing capacity. Photo 1 presents the photograph of augering in sand layer. The schematic concept of these all driven piles is presented in Fig. 2.

Photo 1. Photo of augering in sand layer

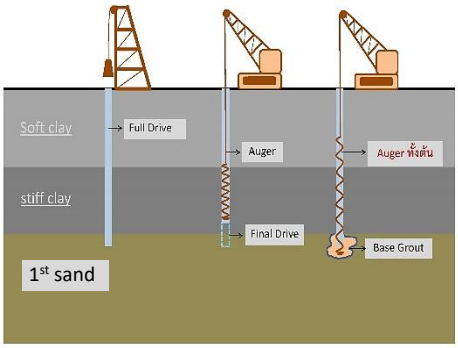

Fig. 2. Schematic concept of all driven piles

4.2. Bored Pile and Barrette Pile

The bored pile is divided into 2 types as wet process bored pile (large and long pile) as well as barrette pile and dry process bored pile (short pile).

4.2.1. Wet process bored pile and barrette pile

Wet process bored pile is the large and long bored pile constructed with polymer base slurry. The construction sequence starts with driving the steel casing to prevent collapse of soft clay. The pile is bored with auger in soft to medium clay until stiff clay layer where bucket technique with polymer base slurry is used as shown in Photo 2. Fig. 3 shows schematic illustration of wet process bored pile. This type of pile is normally used for high-rise building, elevated expressway, elevated train and MRT station.

Photo 2. Photo of wet process bored pile

The barrette pile is the rectangular shape of wet process bored pile which is constructed by excavating grab with bentonite slurry as shown in Photo 3. The capacity of barrette pile is normally larger than the wet process bored pile because of larger size. The research on wet process bored pile and barrette pile is very advanced in order to gain larger pile capacity.

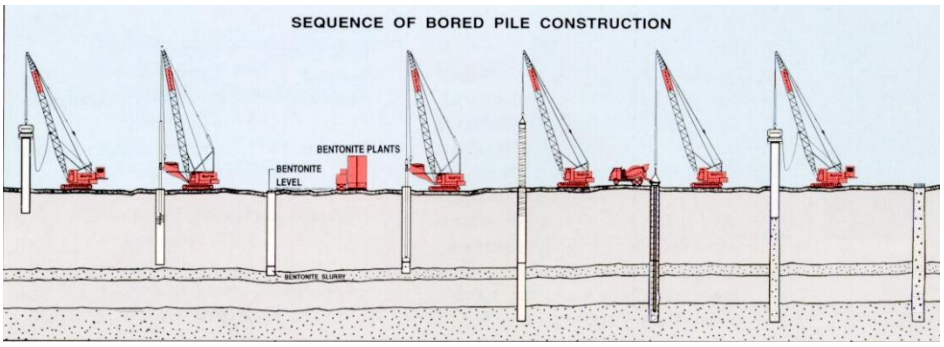

Fig. 3. Schematic illustration of wet process bored pile

Photo 3. Photo during constructing barrette

Photo 4. The schematic technique of dry process bored pile (continued)

Photo 4. The schematic technique of dry process bored pile

4.2.2. Dry process Bored Pile

The dry process bored pile is the small size pile up to 0.60 m. in diameter. The pile tip must stop above the first silty sand layer. The pile length normally varies between 17-20 m. depth. The schematic technique of dry process bored pile is presented in Photo 4. The dry process bored pile is excavated by bucket method.

4.3 Jack-in Pile

Jack-in pile is the pile using pressed in pile technique by pressing the pile with hydraulic jack. This is one of the non-vibrating piling impacts. It can be applied to various pile sizes up to 600 mm. in diameter. It can be penetrated into the first dense sand layer. Photo 5 shows the photograph of jack-in pile machine.

Apart from the above-mentioned driven pile and bored pile, recently, a small type of driven pile (diameter 0.20-0.25 m.) with small driven hammer so-called “micro spun pile” is widely used for remedial work. The driven rig and hammer is small and can be driven in the narrow area with little clearance. Micro spun pile is normally driven every 1-1.5 m. long and is connected with steel collar. Photo 6 shows the photograph of micro spun pile

Photo 5. Photo of jack-in pile machine

Photo 6. Piling work of micro spun pile

5. ADHESION AND FRICTION FACTOR FOR PILE CAPACITY ESTIMATION

The research on wet process large bored pile is very advance and there are many factors to be concerned. The following factors are the example of pile parameters. The adhesion factor for estimating wet process bored pile in Bangkok clay is presented in Fig. 4 (Teparaksa, 2000; Teparaksa, 2008). The friction factor for estimating shaft friction in sand layer with bentonite and polymer slurry is presented in Fig. 5 (Teparaksa, 2015).

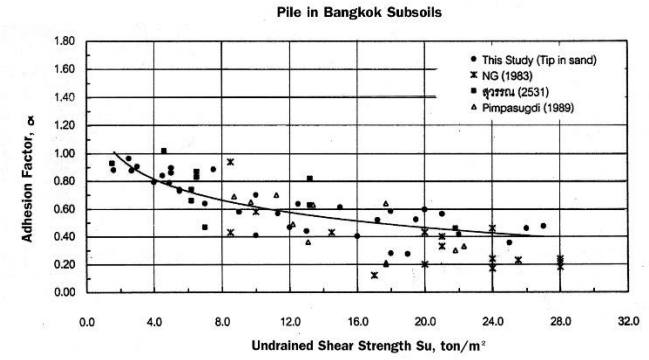

Fig. 4. The adhesion factor for estimating wet process bored pile in Bangkok clay

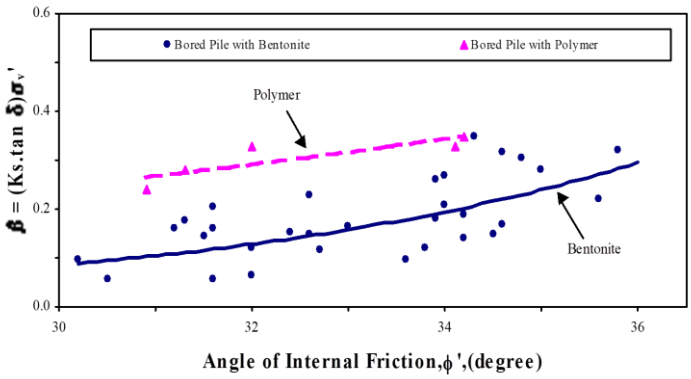

Fig. 5. The friction factor for estimating shaft friction in sand layer with bentonite and polymer slurry

6. REFERENCES

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2. Teparaksa W. (2008): Polymer base bored pile in Bangkok subsoils, Key Note Lecture, National Conference of Korean Geotechnical Society, October, Daejeon, Korea.
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2) Application examples of Press-in Piling

Visanu Vivatanaprasert

Managing Director, Altemtech Co., Ltd.

Photo 1 Vibro hammer technique

Nowadays, Thailand has being planned to construct many infrastructure development projects especially in the capital city, Bangkok. Bangkok city is located in the lower region of the central part and close to the Gulf of Thailand. The city is covered with thick soft clay deposit (Bangkok soft clay) and it has low bearing capacity. The soft to very soft clay layer is underlain by the medium and stiff clay layer. The first sand layer is located under the above series of clay layers. The bearing capacity of the foundation, the stability of the excavation work and excessive settlement of the earth structure are the problems caused by thick and soft of Bangkok clay.

In urban area, there are inevitable interactions between existing structures and new construction in a congested space. The working space, vibration and pollution become concerned issues to be considered during construction. Sheet pile has been used as retaining wall for underground construction. Vibro hammer technique (Photo 1) is very famous to install sheet pile in Thailand due to budget and quick mobilization. However, this conventional method creates vibration and loud noise. The adverse effect can be minimized by applying press-in technology. Altemtech is one of the frontline companies where it has experience in many projects using Silent Piler.

Saranrom palace project

One of interesting projects to show the great advantage of press-in technology is renovation of old palace, Saranrom palace. Saranrom palace (Photo 3) is more than 120 years old and it is located on Bangkok soft clay. The palace is a two-storey brick building. The condition of construction site is very sensitive to vibration and noise. In addition, the working area is very narrow where it could not be applied by conventional technique. The narrowest distance between sheet pile alignment and existing palace's wall is 80 cm. (Photo 4). Top of sheet pile needed to be elevated due to existing footing which could not be demolished.

Photo 2 Sheet pile was driven around existing palace

Photo 3 Saranrom Palace after renovation

Photo 4 Silent Piler (AT90 model) and existing of Saranrom palace wall

Aira one project (New building next to infrastructure and neighborhood area)

There is a high rise building where it is located in the central part of Bangkok. This building is called Aira One and it has 27 floors with two basements. The sky-train (BTS Rajthevi station) and Muslim community are located next to the construction site (Fig. 1). Contractor needs to provide space for evacuation from sky-train station. As a result, the sheet pile wall alignment will be very close to the construction fence (Photo 5). In addition, Muslim community has many old buildings with bricks and concrete. The area is concerned with the vibration and loud noise. Press-in machine is suitable with this situation. A tentative sketch building is shown in Fig. 2 and it will start operation in 2019.

Photo 5 Sheet pile alignment and site fence

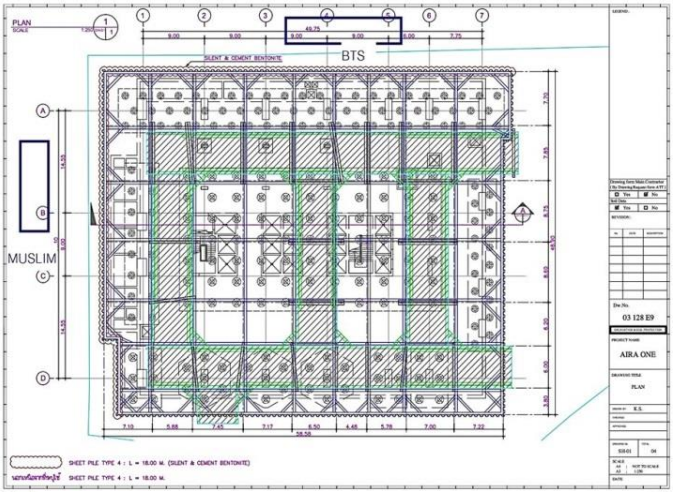

Fig. 1. Sheet pile plan for Aira One project

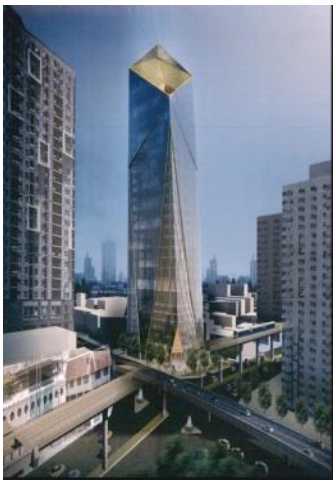

Fig. 2. A tentative sketch of Aira One building

Pathum Thani brewery flood protection project

In 2011, severe flooding occurred in Thailand. The floods spreaded through the provinces from northern to central part of Thailand along the Mekong and Chao Phraya river basins. 46.5 US billion has been estimated in economic damages and losses due to flooding. Pathum Thani brewery is one of the manufacturing facilities that was inundated during that time. As a result, flood protection wall has been proposed to construct around the factory. Total distance of sheet pile wall is 1,125 m (Fig. 3). The working area is very limited and close to many existing structures (Photo 6). It was very difficult and time consuming if conventional method was selected to install sheet pile wall. In addition, the manufacturing process can be continued during construction.

In summary, Press-in technology has been successfully introduced to construction society in Thailand since it could be applied in difficult conditions in urban area. This technique will be an alternative solution in underground construction.

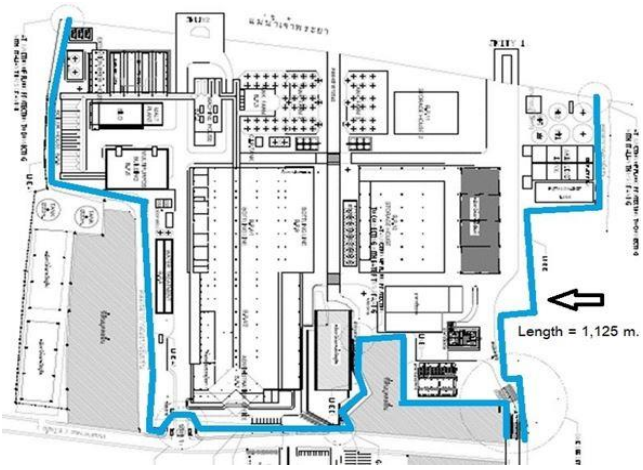

Fig. 3. Flood wall protection plan or Pathum Thani brewery project

Photo 6 Available working space

A brief CV of Dr. Wanchai Teparaksa

Dr. Wanchai Teparaksa is an Associate Professor of Chulalongkorn University. He graduated from Kasetsart University with Bachelor in Civil Engineering 1st Class Hons. Degree in 1979 and obtained his master degree from Asian Institute of Technology in 1981 and PhD degree from Kyoto University in 1987. He is the former director of Geotechnical group and committee at Civil Engineering Department of Chulalongkorn University. His research area is FEM, Instrumentation and Tunnel.

A brief CV of Mr. Visanu Vivatanaprasert

Mr. Visanu Vivatanaprasert is the managing director of Altemtech Co., Ltd. He graduated from Chulalongkorn University with Bachelor in Civil Engineering. His company is an expert in Press-in technology and he has a lot of experience in underground construction with Press-in machine. Altemtech combines the best knowledge and practice of one of the most well-established local contractors in the industry, with the team building and quality assurance approach of professional management.

Serial Report: Reports from USA (Part 1)

How is Florida Dealing with the Rising Sea Level?

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Note: This paper was originally prepared for the ASCE (American Society of Civil Engineers) Florida Section's 2015 Annual Conference and is reproduced herewith with its permission.

ABSTRACT: The rising sea level confronts many low-lying metropolitan areas of the world including the coastal regions of Florida. Hurricanes and tropical storms, which land there frequently, further heighten the sea level as they approach; exacerbating local flooding. This paper is to review the ways the sea level is being monitored and how some of Florida's densely populated coastal communities are dealing with the rising sea level.

INTRODUCTION

Florida has 8,426 miles of tidal shoreline with approximately 75% of its population residing in coastal counties.

Is the sea level really rising and, if so, why? According to the geological study, the world's sea level has been fluctuating over time primarily due to the changing amount of trapped ice on land. For example, during the last glacial period some 20,000 years ago, the sea level was as much as 100 to 120 meters lower than the current level with glaciers covering the continents. In contrast, other geological evidence suggests that the sea level was 4 to 6 meters higher than the current level during the last interglacial period 125,000 years ago. It is believed that we are currently in a warm interglacial period starting about 12,000 years ago.

If so, what is the estimated amount of sea level rise for the near future, if any, and at what rate? The estimate varies among researchers depending on the historical data they use and the methods of their analyses. For example, the U.S. Army Corps of Engineers (2009) has compiled tide gauge records taken at the U.S. tidal stations by NOAA (National Oceanic and Atmospheric Administration) to determine the mean sea level. Most of the record-taking locations showed the mean sea level rise of 0 to 2 feet per century except the stations in Alaska, where a falling trend was observed most likely due to the strong seismic and tectonic activities reported. With different parameters for future change predictions, the Corps of Engineers' report estimates the rise of the global sea level to be between 0.5 and 1.0 meter by the year 2100 (@1.7 mm per year). Speaking of the local sea level record in Florida, tidal data taken at Virginia Key, which is just south of Miami Beach and east of downtown Miami, is showing something more alarming. The tidal data collected there since 1996 indicates 0.27 inches (6.9 mm)/year of a high tide level increase over the last 15 years and 0.97 inches (24.6 mm)/year over the last 5 years. The sea level has been rising at an accelerating rate in south Florida recently.

IMPACT OF SEA LEVEL RISE TO FLORIDA

Florida is very vulnerable to the sea level rise due to the obvious reasons. The Miami metropolitan area is one of the most affected regions in the world by the sea level rise in terms of the exposed financial assets and the size of its population combined according to various analyses including the 2007 OECD report (Nicholls et al., 2007). Other populous coastal cities like Jacksonville and Tampa will also be greatly impacted.

What will happen if the sea level keeps rising? First obvious outcome would be coastal erosion and more frequent flooding, resulting in loss of coastal property, infrastructure, and habitats. The ground water quality will deteriorate due to saltwater intrusion. Agriculture and aquaculture will be negatively impacted. Tourism and recreational activities will be drastically reduced, resulting in huge monetary loss in places like south Florida.

(1) Tidal Flooding

As the mean sea level rises in conjunction with storm surge and/or seasonal high tide, such as king tide, the sea water not only blocks the storm water discharge from the land, but it also flows backward onto land and floods the low-lying areas. Unless sewer and storm water discharge systems are equipped with more robust pumps with backflow prevention and the elevation of the outfalls is reconfigured as necessary, the situation will get worse as the sea level rises. Porous limestone layers, which are very common in Florida, also allow sea water to seep through them to inundate low land areas.

(2) Saltwater Intrusion

Since freshwater is lighter than seawater, the former is normally "floating" on top of the latter in the ground while rain and nearby rivers constantly replenish groundwater. As the sea level rises, so does the interface between the freshwater and seawater in the ground, making the layer of freshwater thinner and thinner. Eventually, freshwater will no longer

exist along the coast line. When the well pumps draw freshwater from an aquifer, it lowers the water table and pulls the brackish water (mixture of freshwater and saltwater) and saltwater up higher and more inland (see Fig. 1). This is the case with the shallow Biscayne Aquifer; the primary fresh water source for the Keys, Miami, and the lower east coast of Florida. The aquifer is recharged primarily by the Everglades' freshwater. As the sea level rises, part of the Everglades will be contaminated by saltwater intrusion. (The Everglades is a huge "river of grass", an extensive area of continuous meadows with flowing fresh water from central to south Florida and one of National Parks)

(3) Coastal Erosion

Many beautiful coastal beaches in Florida are suffering from erosion due to hurricanes, tropical storms, wave actions, longshore currents, and, of course, the rising sea level. Human activities, such as building structures on or near the beach, may disrupt natural movement of sand, therefore, resulting in sand accumulation at some locations and deficiency at other locations. It is both environmentally and economically crucial for the state and its residents to keep the beaches from being eroded and washed away. Fig. 2 shows an eroded beach on Singer Island in 2006.

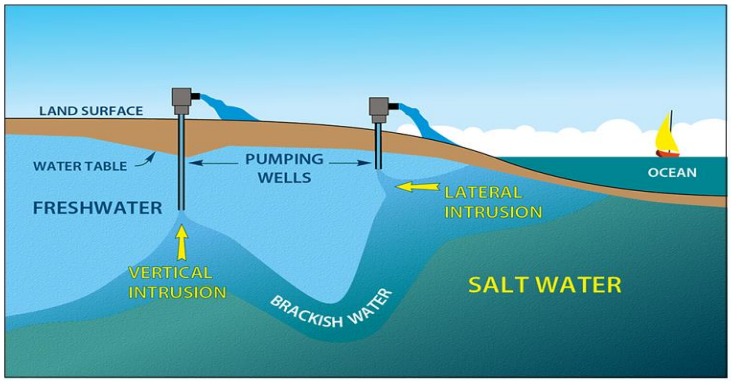


Fig. 1. Saltwater Intrusion (courtesy of www.floridaswater.com)

Fig. 2. Beach Erosion at Singer Island, Florida (2006)

How is Florida Fighting Back?

Coastal Florida is confronted by ever more frequent tidal flooding, increasing salinity in drinking water wells, and wide spread beach erosion. Will Florida be able to successfully fight back and adapt to the rising sea level and how? Let us look at some of the front line activities against the rising sea in Florida.

(1) Southeast Florida Regional Climate Compact

Four counties (Broward, Miami-Dade, Palm Beach, and Monroe) in southeast Florida have established a group called Southeast Regional Climate Compact (2009) to unify the efforts on assessing the amount of sea level rise and its impacts in addition to planning ways to deal with such impacts. The counties within the Compact are cooperatively working to have the Florida legislature recognize the "Adaptation Action Areas" where the sea level rise and storm surges pose a risk to local infrastructure. In October 2012, the "Southeast Florida Regional Climate Change Action Plan" was finalized with 110 action items with these counties adopting them in spring of 2014. Various workshops have been held to implement these action plans since then.

(2) Southwest Florida Regional Planning Council, Charlotte Harbor National Estuary Program, and City of Punta Gorda

The Southwest Florida Regional Planning Council (an inter-county organization made of 6 counties in southwest Florida) and Charlotte Harbor National Estuary Program (partnership of citizens, elected officials, resource managers, and commercial and recreational users working to improve the water quality and ecological integrity of the greater Charlotte Harbor watershed) prepared "The Comprehensive Southwest Florida/Charlotte Harbor Climate Change Vulnerability Assessment" in 2009. This report examined 5 different climate change scenarios through the year 2200 and identified 246 climate change management adaptations for the region.

Having been heavily hit by Hurricane Charley back in 2004, the City of Punta Gorda, as one of the southwest region cities, has been working towards a higher degree of preparedness. The aforementioned Southwest Florida Regional Planning Council and Charlotte Harbor National Estuary Program prepared the "City of Punta Gorda Adaptation Plan" in 2009 to identify the impact of sea level rise and to lay out the goals for the city and its residents to effectively deal with this issue. The report's Executive Summary states that the city has taken a variety of affirmation adaptation actions such as "elevation of structure and improvements of drainage systems, relocation of the public works facility to a location of lower hazard from natural disasters and coastal flooding, adoption of a transfer of development rights program to protect historical and natural resource areas, and a completed local mitigation strategy for natural disasters".

(3) Miami Beach and Key West's Fight Against Local Flooding

•The City of Miami Beach is installing 50 plus new pump stations in addition to 20 or so already-installed stations for storm discharge ($300 million project by 2020) along with more than 100 backflow preventers. It also plans to raise some of the city's lowest streets by 1.5 to 2 feet (45 to 60cm).

•The City of Key West is installing new pumps and improving the storm drain system in downtown. A new ordinance is requiring a new building to be built at least a foot and a half (45cm) higher than the flood plain.

(4) Restoration of the Everglades and Protection of Biscayne Aquifer

The state, Miami-Dade County, the South Florida Water Management District, and the U.S. Army Corps of Engineers are working together to reduce the negative impact of saltwater intrusions against the Biscayne Aquifer. The Army Corps' Jacksonville District is in charge of restoration projects in south Florida including the Comprehensive Everglades Restoration Plan, which is to increase the freshwater flow to the southern Everglades. The water agency has been monitoring the water table depth at certain locations to assess the saltwater intrusion to protect the aquifer.

(5) Protection Against Coastal Erosion

The sea level rise and hurricanes/storms in addition to natural migration of sand and construction/maintenance of navigational channels are causing beach erosion. Of Florida's 825 miles of sandy beaches, 495 miles of them (60%) are eroded (critically and non-critically combined). Beach nourishment is the most common way to replenish the "lost" sand on the beach by means of bringing in and reshaping the sand from offshore sources. This practice quickly restores the lost sand on beaches and habitats for shore birds and sea turtles. However, it is a perpetual process that has resulted in millions of dollars in expense each time since 1969 at Treasure Island, Florida which is known as the first federal beach nourishment project. For example, Miami Beach has spent approximately $140 million in today's dollars to bring in 12.3 million cubic yards of sand to its beaches over the years. The program is administered by the U.S. Army Corps of Engineers with 60% of federal funding along with 20% funding from the state and the remaining 20% from each involved county collectively. The state of Florida's annual budget for beach nourishment is approximately $30 million.

Critical erosion is defined by the state as "a level of erosion which threatens substantial development, recreational, cultural, or environmental interests". Once this occurs, the beach will need to be repaired promptly in order to protect "substantial development, recreational, cultural, or environmentally significant" assets. One way to mitigate this type of situation is to build a seawall in the most environmentally friendly manner. For example, the Town of Lantana suffered from severe beach erosion that threatened the structures on and near a beach in the fall of 2008. Fig. 3 shows an emergency seawall constructed to stop further erosion of the beach in 2009 by using steel sheet piles. They were driven by the press-in piling method, which was practically vibration free with very low noise. The construction did not disturb guests or residents at nearby condominiums, beach houses, and a high end hotel. This method has been utilized also on other beach restoration and sea wall projects in Florida in harmony with the local residents and animals.

Fig. 3. Lantana Emergency Seawall Construction with Pressed-in Sheet Piles

Conclusion

The sea level is rising and will most likely continue to rise. Identifying and prioritizing adaptation options and executing them effectively require political will. South Florida is more keenly aware of the risk of the sea level rise and is getting more prepared for its impact than the rest of the state. It is imperative that all of Florida's coastal regions integrate the adaptation options and effective tools against the rising sea level in their regional planning and start implementing them for the state's sustainable future.

References

Nicholls, R.J., et al, OECD (2007), Ranking of the World's Cities Most Exposed to Coastal Flooding Today and in the Future (Executive Summary)

Southwest Florida Regional Planning Council and Charlotte Harbor National Estuary Program (2009), "Comprehensive Southwest Florida/Charlotte Harbor Climate Change Vulnerability Assessment", Technical Report 09-3

Southwest Florida Regional Planning Council and Charlotte Harbor National Estuary Program (2009), "City of Punta Gorda Adaptation Plan", Technical Report 09-4

United States, Army Corps of Engineers (2009), "Water Resource Policies and Authorities Incorporating Sea-level Change Considerations in Civil Works Programs", CECW-CE, Circular No. 1165-2-211

Serial Report

Terminologies in Press-in Engineering (Part 4)

IPA Editorial Committee

Following Terminologies Press-in Engineering (Part 3) in Volume 3, Issue 3, Part 4 presents “Press-in system” as follows:

Press-in system

Press-in system	general term for pile/sheet pile installation procedures by static load and systemized machines specially devised to reduce noise and ground vibration and also to cope with spatial construction constraints at a construction site, such as narrow space, headroom restriction and construction in the close proximity of adjacent structures
Narrow space clear system	A press-in system to overcome spatial constraints on the site. A system suitable for narrow spaces in dense urban areas, and narrow areas where a crane cannot be brought in.
Headroom restriction clear system	A press-in system to overcome spatial construction constraints. The piles/sheet piles installation can be carried out by "Clear Piler" under headroom restrictions.
Adjacent press-in system to railway	a press-in system to be used for areas adjacent to railway track without disrupting train service
Ultra-adjacent press-in system	a press-in system to be used for areas very close to adjacent building(s)/structure(s), even with zero clearance
Skip lock system	system to install steel tubular piles with a constant center-to-center spacing of 2.5 times the pile diameter
Gyropress Method	Press-in Method with rotary press-in with cutting bits to install steel tubular piles using the Gyro Piler
Gyro Piler	one of Silent Piler variations to install steel tubular piles with rotary cutting
Rotary press-in with cutting bits	Torque and axial force are applied simultaneously to install tubular piles by rotating them into the ground. This method is used for the hard ground with gravels, boulders, rocks, and even for existing concrete structures.
Non-staging system	a press-in system that enables all the piling machineries necessary for the press-in operation to move by itself (self-walking) on the previously installed piles/sheet piles
Self-walking	forward movement or reaction of Silent Piler during the installation of continuous wall/structure without the use of crane, made possible by a sequence of gripping a new pile, installing the pile to sufficient depth, releasing clams, lifting and sliding the Silent Piler a new location
Self-walking backward	backward movement of Silent Piler on the continuous wall/structure without the use of crane, made possible by the use of special attachment for self-walking backward
Water lubrication system	The system to discharge a small amount of water at the toe of steel tubular pile to reduce frictional resistance between a pile and the ground. It does not use a large volume of water as compared to a water jetting system.

(to be continued on Part 5)

Event Reports (1)

IPA Seminar on Press-in Technology in Vietnam

Nguyen Thi Tuyet Trinh

Committee Member
Dean of International Education Faculty, Head of Urban Transport and Coastal Engineering Division, UTC

On December 6, 2018, the IPA Seminar on Press-in Technology was successfully held in the University of Transport and Communications, Ha Noi, Viet Nam. The Seminar was jointly organized by International Press-in Association (IPA), University of Transport and Communications (UTC), and Vietnam Association of Soil Mechanics and Geotechnical Engineering (VSSMGE). Especially, the Seminar was sponsored by GIKEN LTD., JFE Steel Corporation, NIPPON STEEL & SUMITOMO METAL CORPORATION, and Takenaka Corporation. Further, it received a strong support from Faculty of International Education (INED) and Vietnam-Japan Development Research Center (VJARD) in UTC.

IPA SEMINAR

Date: Thursday 6th December, 2018 [9:00-16:00]
Venue: Auditorium, University of Transport and Communications (UTC)
Address: No.3 Cau Giay Street, Lang Thuong Ward, Dong Da District, Hanoi, Vietnam
Participants: 227

LOCAL ORGANIZING COMMITTEE (LOC) Members:

Dr. Phung Duc Long
President,
Vietnam Association of Soil Mechanics and Geotechnical Engineering (VSSMGE)
Co-chairman

Prof. Tatsunori Matsumoto
Director of IPA,
Kanazawa University
Chairman

Prof. Dr. Nguyen Ngoc Long
Rector,
University of Transport and Communications (UTC)
Co-chairman

The Seminar was commenced with the opening address by Prof. Dr. Nguyen Ngoc Long, President of UTC followed by the greeting from Dr. Phung Duc Long, President of Vietnamese Society for Soil Mechanics and Geotechnical Engineering. After that, ten (10) meaningful presentations from various fields were presented successfully as follows:

IPA PROGRAM:

09:50 – 10:20	**Presentation 1**	Current practice of piling works in Vietnam	
		Dr. Phung Duc Long	President, VSSMGE
		Mr. Nguyen Quoc Khanh	FECON
10:20 – 10:50	**Presentation 2**	**Press-in Retaining Structures: A handbook (Construction)**	
		Mr. Tomotaka Hirose	GIKEN SEISAKUSHO ASIA PTE., LTD.
11:00 – 11:30	**Presentation 3**	Sheet pile wall design – Case studies in Hanoi	
		Dr. Nguyen Chau Lan	Deputy head of Geotechnical Engineering Lab., UTC
		Dr. Do Tuan Nghia	Lecturer, TLU
11:30 – 12:00	**Presentation 4**	**Press-in Retaining Structures: A handbook (Design)**	
		Prof. Tatsunori Matsumoto	International Press-in Association Director / Prof. at Kanazawa University
12:00 – 12:30	**Presentation 5**	CDM walls for basements of high-rise buildings in soft soil conditions	
		Mr. Dao Trieu Kim Cuong	President, TELICO
		Dr. Le Thiet Trung	Head of Geotechnical Department, NUCE
13:30 – 13:45	**Presentation 6**	Verification of reduction factor of sectional properties of Steel Sheet Pile due to lack of interlock integrity	
	Sponsor Presentation	Mr. Tomoya Tominaga	Senior Manager, NIPPON STEEL & SUMITOMO METAL VIETNAM CO., LTD
13:45 – 14:00	**Presentation 7**	Mechanical joint "JFE High-Mecha-Neji™" for steel pipe piles and steel pipe sheet piles	
	Sponsor Presentation	Mr. Shunsuke Usami	JFE Steel Corporation
14:00 – 14:15	**Presentation 8**	Soil-cement walls with H-shaped steel piles supporting high-rise buildings	
	Sponsor Presentation	Mr. Junji Hamada	Takenaka Corporation
14:15 – 14:30	**Presentation 9**	GIKEN G.R.B. System	
	Sponsor Presentation	Mr. Masafumi Yamaguchi	GIKEN LTD.
14:30 – 15:00	**Presentation 10**	E-site visit (Introduction of the Press-in applications)	
		Mr. Yuta Kitano	GIKEN LTD.

Many participants attended the IPA Seminar including local scientists and lecturers, representative of Science and Technology Department of Ministry of Transport, geotechnical engineering practitioners, consultants and contractors and members of the IPA. Graduated students and senior undergraduate students from several Vietnamese universities also participated in the event. After all the presentations, an open forum was conducted to further discuss the advantages of using press-in technology and feasibility of applying in Viet Nam. Many questions were raised by the audiences related to the construction and cost aspects of the Press-in technology. Questions raised by the audiences were comprehensibly answered by the presenters for clear understanding.

Prof. Tatsunori Matsumoto - IPA Director – presented a guidance on the use of the “Press-in Retaining Structures: A handbook (First Edition 2016). IPA hopes that this opportunity will enhance the understanding on the practical use of the Press-in Method for the research, design and implementation of future projects in Viet Nam.

Prof. Tatsunori Matsumoto delivered the concluding remarks of the event, expressing his appreciation to all participants, organizers and sponsors. He determined that the application of Press-in Technology in Viet Nam is timely and IPA is

looking forward to more collaborations in the near future.

Photo 1. Presenters and invited guests of the IPA Seminar on Press-in Technology in Viet Nam

Photo 2. Many graduate and undergraduate students of UTC attended the Seminar

Event Reports (2)

IPA-TC3 Steel Sheet-pile Symposium in UTHM, Malaysia, on December 6, 2018

Nor Azizi Yusoff

Research Center for Soft Soils, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia

"Steel Sheet-pile Symposium "was organized by Technical Committee 3, International Press in Association and RECESS, UTHM on 6th December 2018 at Al-Jazari Auditorium, Tunku Tun Aminah Library, Universiti Tun Hussein Onn Malaysia (UTHM), Parit Raja, Batu Pahat, Malaysia.

Close to 100 participants joined this symposium. They consisted of university and collage lecturers and students from Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Teknologi Malaysia (UTM), Universiti Malaysia Pahang (UMP), Kolej Komuniti Batu Pahat, Kolej Kemahiran Tinggi MARA Sri Gading and RECESS. Several local companies also participated in this symposium.

The program of the symposium was as follows:

- Opening speech, presented by Prof. Jun Otani (Kumamoto University / Chair of IPA-TC3)
- Introduction of IPA and TC, presented by Mr. Yukihiro Ishihara (Giken Ltd. / Member of IPA-TC3)
- Introduction of IPA-TC3 and PFS (Partially floating sheet-pile) method with some research outcomes, presented by Prof. Jun Otani (Kumamoto University / Chair of IPA-TC3)
- Centrifuge tests on PFS method, presented by Prof. Katsutoshi Ueno (Tokushima University / Member of IPA-TC3)
- Sulawesi Earthquake and liquefaction, presented by Prof. Ramli Nazir (Universiti Teknologi Malaysia)
- Topics on R&D activities related to Press-in method, presented by Mr. Yukihiro Ishihara (Giken Ltd. / Member of IPA-TC3)
- Q&A session and closing speech, presented by Dr. Nor Azizi Yusoff (Universiti Tun Hussein Onn Malaysia)

Discussions were made regarding the effectiveness of PFS method, fundamental issues of centrifuge testing techniques including the use of clays or peats in the test, and the press-in piling technique using water jetting and the stability of sheet pile retaining wall under a high water table level. Significant lateral flow of liquefied soil observed in Sulawesi, although the slope angle was only 2-3%, attracted the attention of the participants. One reason was suggested as the collapse of small canals that may trigger the lateral movement of the ground.

Future of geotechnical engineering was discussed in the last part of the symposium. The attractiveness of soils, having unique stress-strain relationships unlike artificial materials with well-known physical properties, were suggested by Prof. Otani, while the importance of challenging was insisted by Prof. Nazir.

Fig. 1. A group photo of the participants after the symposium

Photos during the symposium…

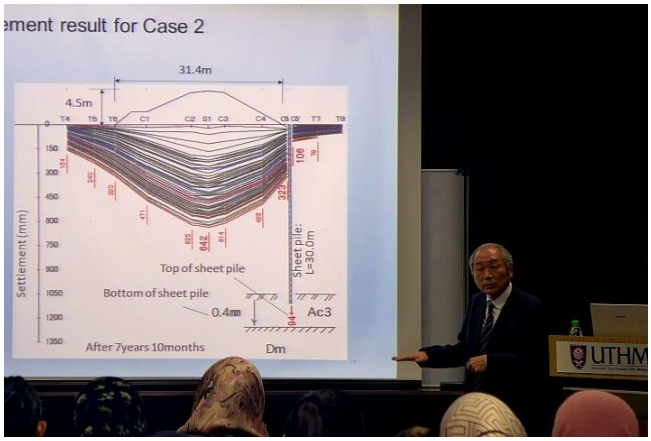


Fig. 2. Prof. Jun Otani introducing partially floating sheet-pile concept

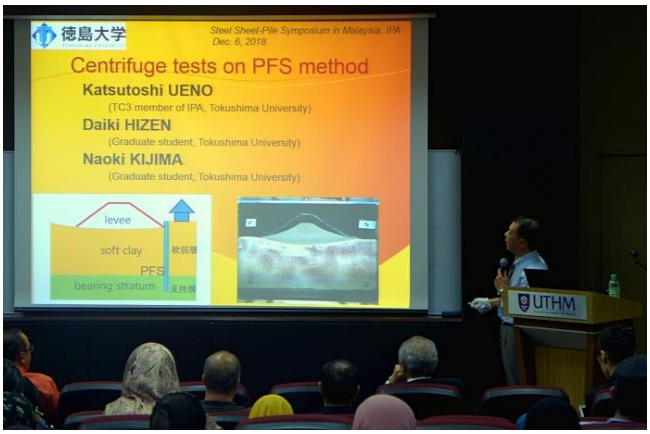


Fig. 3. Prof. Katsutoshi Ueno sharing his experience on centrifuge tests

Fig. 4. Mr. Yukihiro Ishihara presented the innovative Press-in method to the participants

Fig. 5. Prof. Ramli sharing his experience on Sulawesi earthquake and tsunami

Fig. 6. Dr. Nor Azizi wrap up the symposium with his closing speech

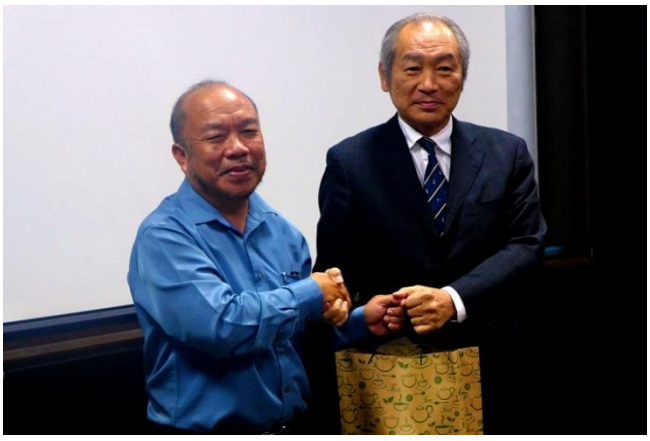


Fig. 7. Prof. Abu Khari presented UTHM's momento to Prof. Jun Otani

Report

Lecture Tour in Brazil

Osamu Kusakabe
Jiro Takemura
Takefumi Takuma

South America is one of the blank areas where Press-in Technology has not been implemented in construction projects yet, as is shown in gray color, in Fig. 1. IPA organized a team of lecture tour in Brazil in November, 2018. The team consisted of IPA President, O. Kusakabe, an IPA Director, Prof. J. Takemura and the in-coming Deputy Secretary General, Mr. T. Takuma to disseminate the Press-in Technology and to gather pieces of information on piling practice in the country.

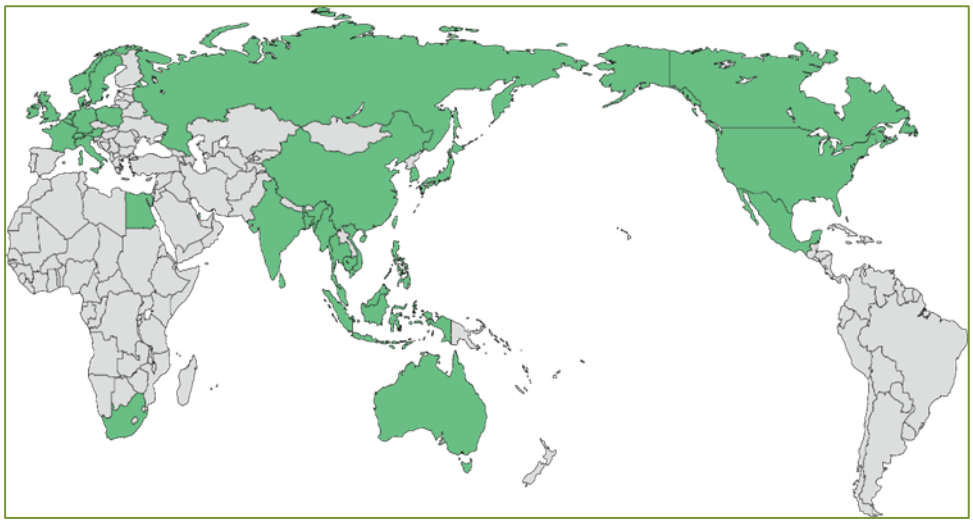


Fig. 1. Expansion of Press-in Method

The IPA team visited Sao Paulo, and Rio de Janeiro during the period of from Nov.23 to Nov.30, 2018. The two internationally well-known geotechnical engineers, Dr. S. Niyama (second from right in Photo 1), the Past President of Brazilian Geotechnical Society, and Prof. M. Almeida (second from left in Photo 2), a Professor of the Federal University of Rio de Janeiro had given the team great supports to arrange the lecture tour and a series of meeting with academia, contractors, consultants, construction machinery agents and steel makers, including Prof. N. Aoki, a Professor Emeritus of the Sao Paulo University, Prof. W. Hachich, a Professor of the Sao Paulo University as well as the former Vice President for South America of International Society for Soil Mechanics and Geotechnical Engineering, Mr. A. Negro, the Past President of Brazilian Geotechnical Society, Prof. E. Watanabe, Director of COPPE (Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering) at the Federal University of Rio de Janeiro, Prof. E. Lopes and Prof. F. Danziger also of COPPE and many other eminent academia.

Photo 1. Group photo at Alianca Cultural Brasil-Japao

The lectures were given at four occasions, including those for the members of the Sao Paulo Branch of the Brazilian Geotechnical Society, and for professors and students of COPPE at the Federal University of Rio de Janeiro. The presentations were also given at GERDAU, the large steel maker in the South America region and for the Board members of SindusCon, Constructors Association in Sao Paulo. At these occasions, the IPA team got a strong impression that the audience showed a great interest in the Press-in Technology by asking many questions and even discussing a possibility of adopting the Press-in Technology in a real construction project that they were currently dealing with. The team was also given an opportunity to visit the site of a sheet piling operation in the suburb of Rio de Janeiro.

Photo 2. Group photo at COPPE

The IPA team has learned a lot about the piling practice in the country by the series of the meetings as well as the site visit. The team feels that the lecture tour in Brazil was very meaningful and successful, greatly thanks to the careful and thoughtful arrangements prepared by Dr. S. Niyama and Prof. M. Almeida. IPA very much appreciates their effort.

The following is the summary of contents of each lecture given during the lecture tour and a few snapshots.

➢ Summary of Kusakabe's Presentation

Although the contents of the four lectures given varied according to the audience, the purpose of the lectures remained the same, consisting of two parts: the introduciton of Press-in Technology and of the International Press-in Association (IPA). In the first part, Kusakabe explained the hisotrical development of Silent Piler and unique machinery features of the Piler, such as how this unique piler operates and how versatile the Silent Piler is. The presentation was followed by application examples in piling projects in North America as well as in Japan. In the second part, Kusakabe presented the concept of IPA which has dual functions as a learned society and as an industrial association. He introduced current main activities, including resaerch activities, publications, Newsletter and Seminars & International conference as efforts of dessiminating the Press-in Technology across the world.

Photo 3. Presentation by Dr. Kusakabe

➢ Summary of Takemura's Presentation

A research activity of IPA TC1 "Application of cantilever type steel tubular pile wall embedded to stiff ground " was introduced in this presentation. Thanks to the innovative pile installation method by Press-in technology, Gyropress method in particular, the applicability of self retaining tubular pile walls has increased significantly, such as large diameter pile wall in very hard ground. However, the design method of the new application has not been well established due to limited data on the critical performances, which should be rationally examined for the safe and economical design. Takemura presented results of centrifuge model tests, in which the performance of wall embedded in soft rock can be modeled from the serviceability to extreme load conditions, namely failure of the wall. He suggested the advantages and concerns of the wall confirmed from the model tests, which will be taken into account for the new design method.

Tubular steel pile wall

Failure of model wall

Fig. 2. Photos from Takemura's presentation

➢ Summary of Takuma's Presentation

Takefumi presented the following case studies, highlighting the advantages of the Press-in Piling Method utilized in densely populated urban areas or in physically tight project conditions in North America as well as in Japan.

1. Sandalwood Canal Improvement (Jacksonville, Florida, U.S.A.)
2. West Toronto Diamond Grade Separation (Toronto, Ontario, Canada)
3. Myoshoji River Restoration (Tokyo, Japan)
4. Route 134 Seawall Restoration (Kamakura, Kanagawa, Japan)
5. Foundation Reinforcement of San Juan de Ulua Fortress (Veracruz, Mexico)
6. Trabuco Creek Channel Protection Phase 7 (Orange County, California, U.S.A.)
7. Kumakami River Railway Bridge Foundation Repair (Ukiha, Fukuoka, Japan)

Announcements

1) Strengthening the function of IPA Secretariat

Osamu Kusakabe

President, IPA

In line with the worldwide expansion of IPA activities, the IPA Headquarters has decided to establish regeonal offices of the IPA Secretariat to strengthening the function of the IPA Secretariat in some regions, based on the discussion at the Board of Director Meeting on September 18, 2018.

At each branch office, an IPA individual member will be appointed as a corresponding member and the followings are expected roles of the corresponding members:

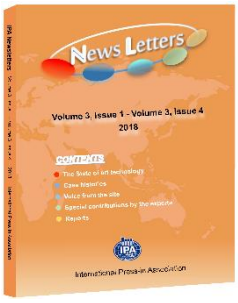
(1) to support the Vice President who represents each region to disseminate the Press-in Technology
(2) to organize a seminar in the region with close coordination with the IPA Development Committee
(3) to regularly contribute articles of IPA Newsletter by gathering pieces of information on piling practice in the region
(4) to enhance the IPA activities such as to encourage to form Technical committees
(5) to support the Standing Committee on various activities in the region

Outline of the regional offices and corresponding members are listed in Table below.

Region	**Regional office location** (Country / city)	**Corresponding member (IPA individual member)**	**Current Vice President in the region**
South East Asia	Singapore	(TBA)	Prof. Leung Chun Fai
Europe	Netherlands	(TBA)	Prof. David White
America	New York	(TBA)	Prof. Kenichi Soga
Japan	Kochi/Tokyo	(TBA)	Prof. Yoshiaki Kikuchi

2) IPA Newsletters (Vol. 3,1, - Vol. 3,4) published

IPA Secretariat



This is the second bind up version of IPA Newsletter which contains all the articles in Vol.3, No.1 through Vol.3, No.4 issued in 2018 with totaling 128 pages. It features interesting updated information on various aspects of Press-in Technology, such as messages from IPA Board members, case histories, current piling practice in various countries, research activities and outcomes, event reports, on-site interviews from piling operators as well as special contributions from prominent figures on hot topics. The Vol. 3, No.4 is the special edition for ICPE 2018 (The First International Conference on Press-in Engineering 2018) which was held on 19 and 20 September 2018 in Kochi, Japan.

IPA Newsletter has been quarterly published 10 issues in total since 2016 and the editorial board has spent numerous efforts on editing process by configuring pictures and tables to ensure the all readers for easier understanding of the articles. The Editorial board believes that the bind up version provides you valuable information in handy to designers, engineers, practitioners as well as academia in the world-wide community of the Press-in technology.

For more details: https://www.press-in.org/en/publication/index/1

Event Diary

Title	Date	Venue
■ IPA Events https://www.press-in.org/en/event		
11th IPA Press-in Seminar 2019 in Tokyo	TBD	Tokyo, Japan
International Society for Soil Mechanics and Geotechnical Engineering http://www.issmge.org/events		
13th Australia New Zealand Conference on Geomechanics 2019	April 1-3, 2019	Perth, Western Australia
2ND INTERNATIONAL INTELLIGENT CONSTRUCTION TECHNOLOGIES GROUP CONFERENCE	April 23-25, 2019	Beijing, China
Prague Geotechnical Days 2019	May 13-15, 2019	Prague, Czech Republic
4TH INTERNATIONAL CONFERENCE "TRANSPORTATION SOIL ENGINEERING IN COLD REGIONS"	May 20 -23, 2019	St. Petersburg, Russia
7 ICEGE 2019 - INTERNATIONAL CONFERENCE ON EARTHQUAKE GEOTECHNICAL ENGINEERING	June 17 -20, 2019	Roma, Italy
■ Deep Foundations Institute http://www.dfi.org/dfievents.asp		
SuperPile '19	May 1-3, 2019	Washington, United States
DFI-COPRI 2019 New York City Ports and Marine Engineering Seminar	March 18, 2019	New York, United States
■ Construction Machinery Events		
Baumag 2019 https://www.baumaschinen-messe.ch/htm/home.htm	February 7-10, 2019	Messe Luzern AG , Switzerland
Bauma 2019 https://www.bauma.de/index-2.html	April 8-14, 2019	Munich, Germany
■ International Geosynthetics Society http://www.geosyntheticssociety.org/calendar/		
Geosynthetics Conference 2019	February 10-13, 2019	Houston, United States
■ Others		
CECAR8 (Civil Engineering Conference in the Asian Region) http://www.cecar8.jp/	April 16-19, 2019	Tokyo, Japan

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Editorial Remarks

The Editorial Board is pleased to publish Volume 4, No.1 issue on schedule. This issue contains messages from IPA Directors, Prof. Gavin and Prof. Salgado. The special contribution titled "Current practice of piling works in Bangkok subsoils" written by Dr. Teparaksa and Mr. Vivatanaprasert, and from this issue a serial report from USA will be continued during this year.

This issue also includes two event reports, one is Hanoi seminar which was held in December 2018 and another is TC3 symposium which was held in Malaysia. A report for lecture tour in Brazil and announcements for strengthening the function of IPA Secretariat and published the combined Newsletter (Volume 3, No. 1 – Volume 3, No. 4) were included.

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