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Messages From the Director

Jiro Takemura

Associate professor, Tokyo Institute of Technology



Ten years before in 2014, I started a research, which eventually attracted me to the field of press-in technology. I was consulted about a possible use of centrifuge modeling on cantilever steel tubular pile retaining walls embedded in soft rock from engineers of Nippon Steel Corp. The aim of the centrifuge tests was very clear, i.e., demonstrating the performance of the wall with large flexural rigidity equivalent to 2.5m diameter steel tubular pile wall retaining 12m height backfill soil covering from an allowable limit state under an ordinary design load to an ultimate limit by

an extraordinary load. Thanks to rotary press-in method, like GYRO PILER, large diameter steel tubular piles can be installed into a hard ground, enabling a large height embedded cantilever retaining wall as a permanent structure (see Figure below). But limited records on the behaviour were available about this type of structure, especially for the effects of embedment depth on the performance. In the beginning of the research, I just enjoyed in making the physical models and doing the experiments for the given mission as a centrifuge modeler with the collaborators. We were satisfied with the outcome of the research, which was published in 1st ICPE, 2018. However, the more we studied and more we knew about this type wall, the more we found the challenges for the further development of this type of structure. After this research, the first technical Committee TC1 on "Application of cantilever type steel tubular pile wall embedded to stiff ground" was formed in IPA Research Committee, and I served as the chair of TC1. Again, I enjoyed the research activity of TC1 with the members and we were happy to produce many technical papers and a summary (SOA) report in 2nd ICPE, 2021) from the TC1 activity.



Figure. Baba Interchange, Yokohama Ring Highway. Left: retaining wall construction by Gyropier, right: completed wall with Dr. Takemura

Beside the research activities, I have joined several IPA Seminars on Press-in Technology in various places around the worlds, such as, Bangkok in Thailand, Manila in the Philippines, Sao Paulo and Rio de Janeiro in Brazil, and Taipei in Taiwan, giving a promotional presentation including the TC1 research activity. Though this promotional talk of IPA seminar is one of my duties as a chair of Development Committee, an IPA Standing Committees, I could confirm the value of seminar from the strong interests of the audience on press-in technology and the demands especially from construction industries. As for the application of the press-in technology, we can know its huge potential for various types of construction under very severe working conditions from Press-in Piling Case History volumes published by IPA. In Japan not only from these publications, but also we can see the applications of the press-in piling in our daily activities, e.g., when driving a car or walking along a road or river under upgrading works. The photos attached were taken by myself near my home. I'm very happy to witness these applications and consider about main reasons and challenges of the application assuming unseen conditions, such as the subsoil condition, which may give me a confidence about the application and hints for the further development.

As mentioned above, I have been delighted in doing researches and promoting the press-in technology with IPA members and friends from around the world. I very much look forward to more chances to collaborate with my current friends and new friends for the further development of press-in pining technology.

◆ A brief CV of Dr. Jiro Takemura

Dr. Takemura is Associate Professor, Dept of Civil and Environment Engineering, School of Environment and Society, Tokyo Institute of Technology (Tokyo Tech). After getting master degree in Tokyo Tech in 1983, he worked at Japan Sewage Works Agency for two years and joined Geoech lab in Tokyo Tech as a research associate in 1985. He received his Doctor of Engineering from Tokyo Tech in 1991 and became an assosiate professor. Since 1981 at his master student time, he has been involved in various centrifuge model studies, and also worked for centrifuge communities, such as a member of ISSMGE TC104 (former TC2) on Physical Modelling, and an editorial board member of IJPMG, including Editor-in-Chief from 2006-2009. From May 2001 to June 2003, he taught in Asian Institute of Technology as a JICA Seconded Associate Professor. His research interests are covering Foundation Engineering, Underground Construction, Geo-disaster Prevention, Soil Characterrization, and Geo-environmental Engineering. He has published more than 200 technical papers in international journals and conferences with several awards such as Best Paper Awards, Japan Geotechnical Society, 1st ICPE Best Paper Award, and Telford Premium (International Journal of Physical Modelling in Geotechnics) Award.