



Japan Society of Civil Engineers

International Activities Center

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Messages from JSCE UK Section

JSCE has eight regional chapters and one international chapter. The international chapter was established to support JSCE's international activity and to take a leadership of international sections under its leadership in 2000. The chair of international chapter holds the position of JSCE International Strategy Committee chair as well. Under the chair's leadership, the international sections build communication and cooperation with local civil engineering societies.

The first international section was opened in Taiwan in April 2000, and after that, eight sections were opened in Europe and Asian countries one after another. Now that JSCE nine sections overseas.

Among those sections, UK Section was opened as the third section in October 2001. The UK Section stemmed from "the Society of Japanese Professional Civil Engineers in UK." That society was formed by the efforts of 16 JSCE members to create the opportunity to exchange ideas and opinions among civil engineering professionals in January 2000.※

The UK Section organizes activities to support the members to network with each other and with local civil engineering organizations, to develop professional skills and knowledge, and to strengthen technical exchanges and cooperation between Japan and UK. The section holds annual meeting, and the members reunite, enjoy discussions and deepen their friendship there.

This special issue introduces three unique essays contributed by the UK members.

※Ref. Kunihiro Kondo. “英国に土木技術者会（学会英国支部？）発足”，土木学会誌（JSCE magazine Civil Engineering）85（2000）：50-51.

JSCE UK section is one of JSCE's overseas local branches, consisting of approximately 10 Japanese civil engineers who are based in the UK. I am currently acting as a chairperson of the JSCE UK section; I have been informed that the UK section was launched in order to assist Japanese firms with providing information and intelligence for their international business development.

I worked for a Japanese engineering consultancy firm for three and half years. Following my studies at a UK university, I have been working for a global engineering consultancy firm based in the UK as a bridge and infrastructure designer for the last 9 years. Even now, the difference in business practice between the UK and Japan always surprises me. I feel that the UK is generally more advanced compared to Japan in the following areas: Information and data sharing using IT platforms, diversity, variety of the contractual forms, the maintenance of infrastructure assets, and international market share in the engineering consultancy industry. In my opinion Japan is superior to other

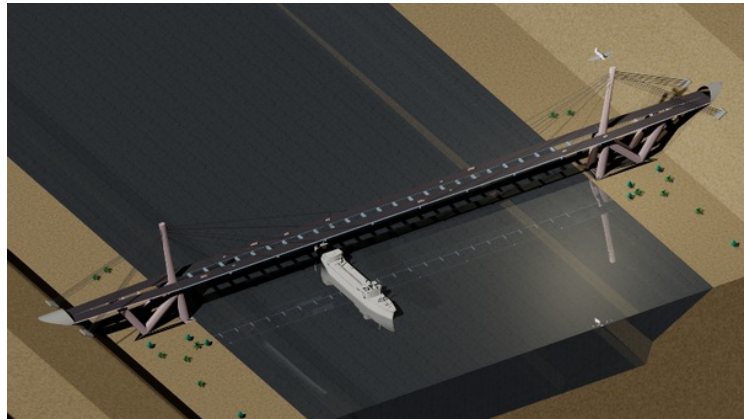


Dr. Daisuke Saito
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(Senior Bridge Engineer)

countries in the following areas: technical capability, work ethic, collaboration, and engineering and design coordination, which often makes me proud to be a Japanese engineer. For example, there was an internal bridge design competition organised within the firm I work for, and the team I belonged to won the competition. The proposed design was based on a number of Japanese bridge engineering technologies; I feel that the potential for the application of Japanese bridge engineering technologies has successfully been demonstrated in the competitive international market.

This may come as a surprise, but the competitiveness of UK engineering firms does not stem from their technical capabilities, their competitiveness instead results from the international network they have established in the multidisciplinary area resulting from their international Mergers and acquisitions (M&A) activities; in addition to this the contractual process of many countries is based on the UK system. Since UK firms, including contractors and public organisations, do not spend a large budget on research and development, their technical capabilities tends to be based on conventional technologies, which may be viewed as obsolete by those familiar with Japanese civil engineering technologies. This is where, I believe, Japanese firms are easily able to find a gap in the international infrastructure business market. If I may say so, Japan is 20 years ahead of the UK in various engineering technologies associated with heavy civil infrastructure such as tunnels and bridges. I also feel that in order to achieve the technology transfer from Japan, it is important for Japanese firms to get their technologies known by UK engineering firms that already have an established international network.

The current issue of the newsletter includes articles on Mr Nakada's secondment experience at a major UK engineering consultancy firm and the track record of Giken Europe which have been successfully operating in the UK and western European countries for a number of years. I trust these articles are informative for those who are involved in international infrastructure business in Japan. We as the JSCE UK section would like to keep providing intelligence and information for Japanese firms in order to support their international infrastructure business.



Bridge design proposed for the design competition



Some technologies adopted for the Awa Shirasagi Ohashi Bridge has been transferred to the design proposed for the competition.

**“Make use of good assets as long as they are in good condition”
– Touch the idea of the United Kingdom –**

I heard an interesting statement at an evening lecture organised by the Institution of Civil Engineers (ICE): “The infrastructure development for London had already been completed in the 19th century and we have been using these assets for a long time”. The talk was given by Prof. Brian Collins of UCL. The infrastructure in London was widely developed during the Victorian era from 1837 and 150-year-old structures are still in use such as bridges over the River Thames and the London sewage system. In residential areas, many people live in houses built 100 to 150 years ago. I am currently living



House in London



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in a house which was built 50 years ago. These houses are, surprisingly, considered relatively new by the locals.

I attended a site visit tour organised by the Institution of Engineering and Technology (IET). We visited the construction site of the London Bridge Redevelopment Project. London Bridge Station, one of the terminal stations in London, is currently being upgraded to accommodate more passengers and train networks. According to the plan, the existing 15 platforms on the ground level will be relocated to an upper level and the ground level will be redeveloped to build a concourse and retail shops. The relocated platforms will be supported by newly constructed pier structures, whereas the existing brick arches which were built in the Victorian era will be used for support in a certain area. Prior to the construction of the new platforms, these Victorian arches were tested to ensure that they have sufficient capacity to resist the increased load. Only one arch failed the tests out of more than the 200 arches, which was a pleasant surprise to the project members. I was surprised by the condition of the existing structures. I also earned the important concept for planning and development: “Make use of good assets as long as they are in good condition.”

A significant number of assessment works for existing structures are undertaken by the engineering consultancy firm ATKINS, where I am currently being seconded to. Half of the total work is related to the structural assessment work, which is undertaken using computational analysis and strain gauge monitoring techniques. In addition to the assessment, the company is also committed to developing new structural monitoring techniques such as a new stress and strain monitoring system based on Digital



London Bridge Redevelopment Project

Image Correlation (DIC). Japanese engineers will need to tackle the infrastructure asset management more and more, and are therefore required to develop the new technology to facilitate the management. I would like to gain knowledge and skills in this area through the seminars and events in addition to my day-to-day work at ATKINS.

Events organized by local institutions are a very good opportunity for overseas engineers to learn the country. I hope that the JSCE will disseminate information on Japanese Civil engineering technology and the trend of the Japanese construction industry to both Japan and overseas countries.

An introduction to Japanese piling technology currently in use in the UK

My name is Masumi Yamaguchi of GIKEN Europe B.V. GIKEN Europe is one local subsidiary of GIKEN Ltd. in Japan and has been operating in the UK since our London office was established in 1990.

GIKEN Ltd in Japan developed the GIKEN Press-in method in 1975 with the world's first 'reaction based' hydraulic sheet pile jacking machine 'the Silent Piler' which can achieve noise and vibration-free piling work. This year, 2017, marks our company's 50 year anniversary.

Since our establishment we have been undergoing a "Construction Revolution" and have been following "The five construction principals" as our guide. In addition, we have suggested Press-in piling methods based on our unique technique, and high modulus wall 'Implant structures' built by utilising Press-in piling technology. As a result of these suggestions, we have successfully achieved many construction works. Currently, our technology is being widely utilised all over the world. I would, therefore, like to introduce a couple of case studies conducted in the UK in this report.

Firstly, I would like to introduce one past project in which the tubular pile cofferdam was built (see Photo 1). The cofferdam was formed with interlocked steel tubular piles to enable water retention at a depth of 10 metres and facilitated the construction of the station box in the canal in London. The working space on water was close to office-buildings and the piles had to be installed into a very stiff layer of "London clay." The challenging working conditions of this site were the reasons our technology was adopted as a piling method.



Photo 1: Tubular pile cofferdam was built to enable water retention at a depth of 10 meters.



Mr. Masafumi Yamaguchi
GIKEN Europe B.V.

Due to the fact that our method is vibration and noise-free, there were no negative impacts on the neighbouring office buildings during the construction duration. Furthermore, no temporary platform was

necessary and the system equipment was light weight and compact due to ‘Press-in principals’ which function by gripping previously installed piles in the ground to install a following pile. Photo 2 shows the inside of the cofferdam after discharging water from it. Under difficult conditions, we were able to build the high modulus and watertight wall shown in the photograph within the required construction period, which was highly regarded.

Subsequently, the twin Double Z sheet pile cofferdam project at the Thames is shown in Photo 3. It is important to note that U and Hat shapes are mainstream in Japan whilst Z shapes are utilised alongside them in Europe. Additionally, there is an installation method called “Double piles” in Europe, which is the method to simultaneously install two piles after crimping them. This “Double pile” technique reduces the construction period.

GIKEN piling rigs can also be applicable for the method. The famous Tower Bridge and several buildings in the City of London can be seen in the image. In fact, regulations regarding noise and vibration levels are very strict in the central London area and our methods are often utilised for construction works there.

I would like to thank you most sincerely for your attention to this introduction. It gives me great pleasure to inform you about the Japanese piling technology developed by GIKEN which is currently in operation in the UK as well as around the world. Should you have any questions, please do not hesitate to contact us.



Photo 2: Inside of the cofferdam after discharging water



Photo 3: The twin Double Z sheet pile cofferdam project at the Thames

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