2020. 9. 1

Japan Society of Civil Engineers

International Activities Center

IAC News No.95

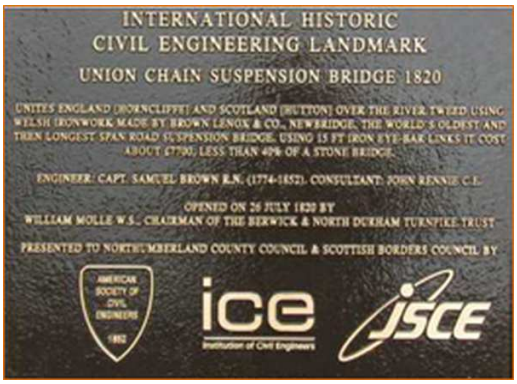
Plaque Presented to Commemorate the 200th Anniversary of the Construction of the World's Oldest Active Road Suspension Bridge in the U.K.

– Collaboration between the Society of Civil Engineers in Japan, the U.K., and the U.S. regarding Valuing Civil Engineering Heritage –

The Union Suspension Bridge, which is the world's oldest active road suspension bridge connecting the borders of Scotland and England in the United Kingdom, celebrated its 200th anniversary on Sunday, July 26, 2020, and an informal ceremony was held at the bridge to commemorate this fact. Originally, along with the bridge supervisors and local officials, it was planned that participants from the civil engineering societies of Japan, the U.K., and the U.S. would attend, and an International Historical Civil Engineering Landmark (IHCEL) plaque of the American Society of Civil Engineers (ASCE) would be presented as well as a commemorative symposium held to mark the anniversary.

The Union Suspension Bridge Marking Its 200th Anniversary (at 8:00 am on July 26, 2020) (photo provided by Edward Cawthorn)
The banner says, 'UNION BRIDGE BICENTENARY 1820 26th July 2020 The World's Oldest Road Suspension Bridge.

However, due to the COVID-19 epidemic, the scale of the event was reduced and it was held with only local people in attendance. At the ceremony, a commemorative plaque was presented to those in charge at Northumberland County Council and the Scottish Borders Council by American Society of Civil Engineers, Institution of Civil Engineers, and Japan Socity of Civil Engineers. The ceremony on the day possessed the meaning of commemorating the 200th anniversary of the construction as well as to mark the start of large-scale restoration work on the bridge. With support from the Civil Engineering Heritage Assessment Committee in collaboration with the Society of Civil Engineers of the three countries, and funding from the National Lottery Heritage Fund (NLHF), large-scale restoration work of the world's oldest road suspension bridge at a total cost of £10.5 million (about 1.4 billion yen) has started with the aim of completing the work in November 2021. The following articles were reported about the 200th anniversary of the Union Suspension Bridge.



The Presented International Historical Civil Engineering Landmark (IHCEL) Plaque

www.sundaypost.com/fp/union-chain-bridge-oldest-traffic.

www.highwaycivilengineering.co.uk/200-years-young-union-chain

A Panoramic View from the Upstream Side and the Union Suspension Bridge View of Scotland from England

【Reported by Hiroshi Isohata, Dr. Eng., IAC member, Vice Chair of the Committee of Conservation of Engineering Heritage, JSCE, A former professor of Nihon University】

Japanese Civil Engineers the Global Leaders Symposium Series No.16 - Lach Huyen International Port Construction Project in Vietnam -

On June 30, we held the said symposium in the 2nd floor auditorium of the JSCE Headquarters.
This project was planned and constructed by Japanese companies and it was the first time Official Development Assistance (ODA) undertook a public–private partnership (PPP) operation in the port sector. The project drew attention as an excellent example of overseas expansion in the port sector in terms of its scale and undertaking. For these reasons, it received the Japan Society of Civil Engineers' Technology Award for this fiscal year.

After the symposium was kicked off by Mr. Makio Shichijo, Acting Director of the International Activities Center, Mr. Yoshimoto Koyanagi (JICA) introduced the background to the project, such as the demand for containers in the northern part of Vietnam, and Mr. Ti Ha (Nippon Koei Co., Ltd.) gave a talk on the outline of the plan. After a break in proceedings, Mr. Yoshihiro Kuwabara (Penta-Ocean Construction Co., Ltd.), Mr. Kan Izawa (Toyo Construction Co., Ltd.), and Mr. Daisuke Matsukuma (TOA Corporation) presented an outline of the construction project and issues in implementing the project in Vietnam due to being Japanese companies. Furthermore, Mr. Takanori Hida (Mitsui O.S.K. Lines, Ltd.) announced the outline of the PPP operations, which is a feature of this project. Finally, Mr. Masatoki Nakanishi, General Manager of Oriental Consultants Global Co., Ltd., presented the challenges of human resource development in overseas projects, and Mr. Yoshiaki Higuchi, Deputy Director of the International Activities Center, gave a round up of the day's events.

On this occasion, as part of measures against COVID-19, the symposium was carried out entirely online. Initially, we had considered holding the symposium on a small scale or even postponing it, but given that the project received the Japan Society of Civil Engineers' Technology Award and attracted the attention of many people, we decided to hold the symposium online in consideration of the well-being of all attendees.

As a result of holding the symposium online, there were 123 attendees, and I realized that we can expect an increase in the number of attendees of the event (a maximum of 181 views were recorded on the day) and that it is possible to participate from a remote location regardless of whether the speakers or audience members are in Japan or overseas. Mr. Kuwabara of Penta-Ocean Construction Co., Ltd. and Mr. Matsukuma of TOA Corporation gave a lecture while remaining put in Vietnam because it was difficult for them to return home to Japan.

On the other hand, I could see the challenges of hosting the event online, such as the fact that the speaker had little sense of it being a live event and it was not possible to see the audience's reaction, and the Q&A required some innovation for it to work. That being said, however, on the day, there were no unexpected problems, and even after looking at the questionnaire after the event, I think that it went quite smoothly.

Before the event, many technical issues such as setting lighting, checking sound, ZOOM-related settings, PC installation, etc. were solved by the International Activities Center staff, and the speakers cooperated to carry out two rehearsals. I would like to take this opportunity to thank everyone who gave their all to making it possible to hold the event online without a hitch. I would also like to thank everyone who participated online. As a result, it seems that it was the first sympsium of the Japan Society of Civil Engineers, International Activities Center to be held completely online.

At this current point in time, the number of people infected with COVID-19 is on the rise again following the state of emergency declaration. In the future, as explained by Executive Officer Dr. Yukihiro Tsukada in the closing address, there may be more hybrid forms of events that combine both attendance online as well as in person. While giving consideration to the concept of 'Coexist with COVID-19', we would like to inform you all about what it is like for Japanese civil engineers working across the globe.

【Reported by Masaru Suzuki, Leader, Project Group, IAC】

Earthquake Engineering Committee
Recent Activities and Future Works

The "Seismic Engineering Committee" was first established in 1955 to carry out investigation and research related to seismic design issues. In 1996, it was reorganized as the "Earthquake Engineering Committee," integrated with relevant research fields such as seismology, structural engineering, and geotechnical engineering. The primary mission of the committee is to undertake research activities related to earthquake engineering with the aim of realizing a safe society against earthquakes. As of July 2020, five permanent subcommittees and thirteen research subcommittees are active to carry out the missions, including investigation of fundamental earthquake engineering issues and seismic standards, transmission of information regarding earthquake disasters, collection and dissemination of records and reconnaissance reports on major earthquake events, and survey of current research activities in Japan and overseas.

Prof. Kimiro Meguro
(The Chair of the Earthquake Engineering Committee)

Furthermore, the committee has been disseminating the knowledge gained through the aforementioned activities, to promote cooperation with academic societies in Japan and overseas. For example, based on continued information exchange through joint workshop series and other activities in the past years, the committee organized a session and invited four experienced engineers and researchers from overseas (Korea, Turkey, USA, Chile) in the 8th Civil Engineering Conference in the Asian Region "Resilient Infrastructures in Seamless Asia" (CECAR8) held in Tokyo in April 2019. The participants engaged in discussion on the agenda such as ISO design code/standards and resilience against natural hazard with researchers and engineers from industry, government and academia in Asia. On the previous day of the organized session, a special workshop was also organized by the committee to have a discussion between the invited researchers and the committee members on the current seismic standards, inherent problems, and their future directions. Through these activities, the committee aims to facilitate to establish international network, thereby promoting the internationalization and dissemination of Japanese seismic design.

In recent years, our community has been exposed to multiple complex hazards including seismic disaster, floods and so on. In order to overcome such difficulties, cross-cutting efforts that are not confined to conventional academic and technical fields are indispensable. Based on this vision, the Earthquake Engineering Committee has taken an initiative to establish a new research division in the Japanese Society of Civil Engineers (JSCE) as a fundamental platform for cooperating with relevant committees. In a near future, this new division shall promote cross-disciplinary research and education in cooperation with the members to cope with various issues raised by the society.

The 17th World Conference on Earthquake Engineering (17WCEE), which was postponed due to ongoing concerns of COVID-19, is scheduled to be held in Sendai, Japan in 2021, welcoming many researchers and engineers from all over the world. The Earthquake Engineering Committee will continue every effort to prepare toward a successful conference and enhance the presence of the Japanese seismic engineering community.

【Reported by Prof. Kimiro Meguro, The Chair of the Earthquake Engineering Committee】

First Shield Machine Type Underground Tunnel Connection Work in Taiwan

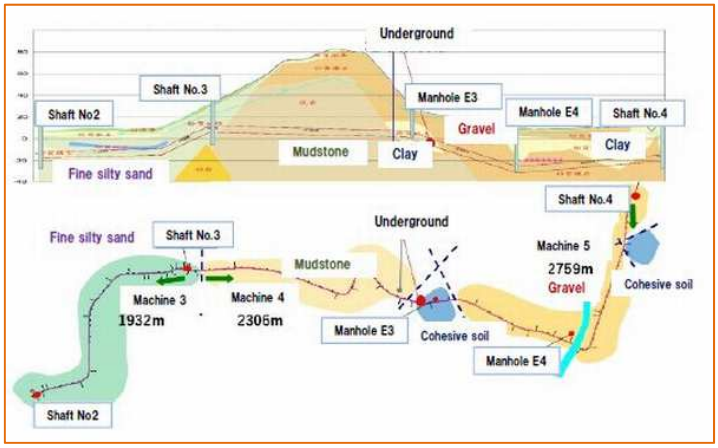
(Taipower: Work on Dalin-Gaogang Cable Tunnel Construction Zone No. 2)

Takashi Mitsui
(Kajima Corporation)

In Kaohsiung City, Taiwan, of the 12 km extension work to construct an electric power trunk line linking the ultra-high voltage/high voltage substations undertaken by Taiwan Power Company, we will construct a shield tunnel with an extension of 7 km (outer diameter φ6,250 mm, 3 shield machines), 2 vertical shafts (caisson press-fitting), 2 intermediate manholes, and a line 12 km in total for auxiliary electrical equipment.

The features of this construction are that it is the first time the (1) equally divided one-pass segment and (2) mechanical underground tunnel connection method will be used in Taiwan. All three shield machines are of a mud pressure type, and as machines No. 3 and No. 4 are a

sediment pumping system and machine No. 5 supports complex earth, it was the first time a mud circulation system (also known as a mud and muddy water system) was adopted in Taiwan.



Geological Profile & Ground Plan Connection with Machines No. 5 & No. 4

Underground Tunnel

Geologically, shield No. 3 was for the layer of fine silty sand, shield No. 4 was for the mudstone layer, and shield No. 5, with the exception of the excavation of the clay layer in some sections, was for excavation of the cobblestone gravel layer. As the bedrock strength and maximum gravel diameter vary greatly from shield to shield, we had to design and construct a shield machine and various equipment that could meet these conditions. Especially for machine No. 5, because the shield-passing soil layer contained a large amount of quartz powder, the screw conveyor was worn and damaged when the excavation reached about 1000 m, and thus the screw and mantle were replaced. For this reason, machine No. 4 was extended by 300 m longer than planned to minimize process-related losses in excavation. Also, during the underground tunnel connection work, the freezing tube built into the skin plate at the tip of machine No. 5 was damaged due to wear to the skin plate, and so chemical solution infusion was also used before successfully completing the first mechanical underground tunnel connection in Taiwan. Although it had a complex linear shape, the connection was made with an accuracy of 19 mm horizontally and 9 mm vertically. Executives from both Taiwan Power Company and the contractors attended the Underground Tunnel Connection Penetration Ceremony to mark the first mechanical underground connection in Taiwan.

Finally, I would like to express my sincere gratitude to all organizations and personnel involved in this project, including Taiwan Power Company, for their guidance and support in completing this construction.

Underground Tunnel Connection Penetration

Company Executives Observe Tunnel No. 5

【Reported by Takashi Mitsui (Kajima Corporation)】

The “Talking about 'working in the field of civil engineering in Japan' from various perspectives”（1/3）

The “Talking about 'working in the field of civil engineering in Japan' from various perspectives” feature from the November 2019 issue of the Japan Society of Civil Engineers Magazine brought together civil engineers and researchers from overseas that work in Japan to talk about the topic of working in Japan. The feature sees those involved talk about their own experiences while discussing the Japanese civil engineering industry from each of their perspectives, initiatives to make it more international, and what is necessary going forward for those taking on individuals from overseas. The contents of this feature will be introduced over three parts by IAC News.

The first installment will introduce the participants and why they chose to work in Japan. We will then turn our attention to anecdotes and views from the participants on topics such as their experience and skills gained through working in Japan, characteristics of Japanese companies, and education and support for foreign engineers.

【Discussion Members】

Mr. Sanghun Lee

Regular member of Japan Society of Civil Engineers; Professor in the Faculty of Engineering at Tohoku Gakuin University

Mr. Lee is originally from South Korea. He graduated Kyungpook National University in 1987. He worked at a civil engineering design company in South Korea until starting his master's degree at Nagoya University in 1999. Mr. Lee completed his doctoral course at Nagoya University in 2004 (research on the structure and vibration of concrete), and then worked as an assistant for one year. In 2005, he transferred to Tohoku Gakuin University as a lecturer, worked as an associate professor, and assumed his current position in April 2013.

Mr. Van Binh Luong

Toyo Engineering Corporation, Civil Engineering Department

Mr. Luong is originally from Vietnam. He joined Toyo Engineering Corporation in April 2008. Mr. Luong belongs to the Civil and Architecture Engineering Division of Toyo Engineering Corporation and is engaged in projects in Japan, the United States, Venezuela, Indonesia, India and Brazil, and is in charge of civil engineering and architectural design of chemical plants. Since 2016, he has been lead engineer overseeing Toyo Engineering Corporation’s civil engineering technology.

Ms. Phuong Ha Nguyen

Regular member of Japan Society of Civil Engineers; Central Nippon Expressway Company Limited, Fuji Preservation and Service Center (currently Hadano Construction Office)

Ms. Nguyen is originally from Vietnam. She joined Central Nippon Expressway Company Limited in 2017. Since the time Ms. Nguyen joined Central Nippon Expressway Company Limited to the present day, she has been assigned to the Preservation and Planning Section of the Fuji Preservation and Service Center at the Tokyo Branch, and here she is engaged in preservation management work as a job to ensure the safety of Japan’s main expressway routes in the form of the Tomei Expressway and Shin-Tomei Expressway 24 hours a day, 365 days a year.

Mr. Eakarat Witchukreangkrai

Regular member of Japan Society of Civil Engineers; Metropolitan Expressway Company Limited, Technical Consulting Department, Overseas Business Promotion Section

Mr. Witchukreangkrai is originally from Thailand. He came to Japan in 1998 and has 8 years of experience researching bridges at Saitama University and 5 years as a bridge design and construction engineer at a major general contractor. Mr. Witchukreangkrai joined Metropolitan Expressway Company Limited in 2011, and is currently engaged in contributing to the international community and offering domestic and overseas technical consulting services (particularly in Thailand). He is involved in planning site visits from overseas and local seminars.

■ Reasons for Choosing Japan as a Place to Work

Lee: For me, the main reason for choosing Japan is the high level of civil engineering technology here and the comfortable living environment due to Japan's logical social system. When I first came here, Japan's civil engineering technology was the best in the world right up there with the United States, etc.

Binh: I was attracted by the high level of the technology here. Japanese civil engineering technology has always been a world-leader, and they were able to quickly solve various challenges that they have been facing. It was a natural progression for me to think about working in Japan because I had studied in Japanese up to graduate school and my network of friends and so on had expanded during the 6 years I had studied abroad.

Ha: Vietnam has a lot of infrastructure built by Japanese companies. I naturally began to hold Japan in high esteem, and so I wanted to find a job in Japan and learn about the country's advanced technology.

Eakarat: At first I wasn't interested in Japan. When I was in my third year of university, a friend of mine encouraged me to take an examination for studying abroad and I passed it. It was then on the advice of my academic advisor at the time that I decided to study abroad. After coming to Japan, my values changed.

The main reasons why those engineers and researchers from overseas study abroad in Japan and find employment here is probably down to the 'high level of civil engineering in Japan' and 'having a strong interest in Japanese culture'. Since they joined universities and companies, they have been advancing their professional careers as well as gaining experiences in and outside their schools and companies. It is useful to learn about their views and opinions which they have gained after they came to Japan. The next installments introduce their further discussions.

Updates

◆2020 JSCE Annual Meeting Online
http://www.jsce.or.jp/taikai2020/

◆The 2020 International Conference on Sustainable and Innovative Infrastructure (ICSII 2020)
https://www.icsii.net/

◆ASCE Lifelines Conference 2021
https://samueli.ucla.edu/lifelines2021

◆The Second International Conference on Press-in Engineering (ICPE) 2021, Kochi: https://icpe-ipa.org/

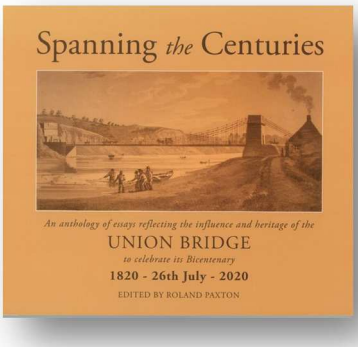
◆jhappy - JICA's Grant Aid Cooperation -
Facebook: https://www.facebook.com/jhappy20161110/
Twitter: https://twitter.com/jhappy_official

◆The International Infrastructure Archives
– A Compilation of Japan's Greatest Projects in Transfer of Civil Engineering Technology in Service –
http://www.jsce.or.jp/e/archive/

◆IAC "News Pick Up!!" on the JSCE Japanese website
http://committees.jsce.or.jp/kokusai/iac_dayori_2020

◆Summary of featured articles in JSCE Magazine Vol. 105, No.9, September 2020
http://www.jsce-int.org/pub/magazine

◆Journal of JSCE：https://www.jstage.jst.go.jp/browse/journalofjsce



Spanning the Centuries
It is published in commemoration of the 200th anniversary of Union Chain Bridge.

§ IAC News Subscription §

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§ IAC Facebook §

Recent activity of International Activities Center is introduced on this Facebook. Please see this home page. (https://www.facebook.com/JSCE.en)

Comments and Questions

Please send us your feedback and comments to help us improve the IAC news. We look forward to hearing from you.
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