



**Japan Society of Civil Engineers**

*International Activities Center*

## IAC News No.81

### Report on the 1st JSCE-ASCE International Symposium on Infrastructure Resilience

#### Overview

From May 22 to 23, 2019, the Japan Society of Civil Engineers (JSCE, President: Kiyoshi Kobayashi) hosted an international symposium at JSCE Auditorium in collaboration with the American Society of Civil Engineers (ASCE) as part of the FY2018 JSCE Special Presidential Project.

Recent years have seen the frequent occurrence of natural disasters, especially in Asia. The severe damage from such events affects people's daily life and society's functions. With the aim of mitigating the risk and damage and promptly recovering from a disaster, we have started examining various ways of planning and constructing highly resilient infrastructure and related measures.

A joint research group on infrastructure resilience was established by JSCE and ASCE to formulate an infrastructure resilience framework and develop a method of assessing policies based on the framework. At this symposium, we presented the infrastructure resilience framework as a report on the achievements made during the year under the Special Presidential Project, and discussed the general principles and specific practices for considering various measures for improving infrastructure resilience.



**Dr. Kiyoshi Kobayashi, JSCE President Delivers the Keynote Lecture**

#### Program

##### Keynote Lecture

Bilal Ayyub

(Professor, University of Maryland; Former Director, Infrastructure Resilience Subcommittee, ASCE)

Kiyoshi Kobayashi (President, JSCE; Specially Appointed Professor, Kyoto University)

Craig Davis (First Director, Infrastructure Resilience Subcommittee, ASCE)

##### Session 1: Earthquake and Structures

###### **Chairperson and Panel**

Riki Honda (Professor, University of Tokyo)

###### **Panel**

John van de Lindt  
(Professor, Colorado State University)

Ryosuke Uzuoka (Professor, Kyoto University)

Yoshikazu Takahashi  
(Professor, Kyoto University)

##### Session 2: Climate, Hydrological, and Ground Risk

###### **Chairperson**

Toshio Koike (Director, ICHARM)

###### **Panel**

Tomohito Yamada  
(Associate Professor, Hokkaido University)

Shinji Egashira (ICHARM)

Miho Ohara (ICHARM)

Sue McNeil (Professor, University of Delaware)

Tatsuya Nagayama (MLIT)

Akira Morimoto (MLIT)

### **Session 3: System Resilience and Impact on Economy**

#### **Chairperson and Panel**

Hirokazu Tatano  
(Professor, Disaster Prevention Research Institute,  
Kyoto University)

#### **Panel**

Yoshio Kajitani (Professor, Kagawa University)  
Nobuoto Nojima (Professor, Gifu University)

### **Session 4: Governance and Disaster Response**

#### **Chairperson and Panel**

Masamitsu Onishi  
(Associate Professor, Disaster Prevention Research  
Institute, Kyoto University)

#### **Panel**

Akimasa Fujiwara (Professor, Hiroshima University)  
Toshio Okazumi (MLIT)  
Yasuo Morita (MLIT)  
Ellis Stanley  
(President, International Association of Emergency  
Managers)

#### **Outlook**

This project is financially supported by the Japan Foundation Center for Global Partnership. Academic exchange between JSCE and ASCE continues and we will be making further efforts, such as proposals contributing to enhanced resilience and new design methods.

For details on the symposium presentations, please refer to: <http://www.jsce-int.org/node/596> .



**Panel Discussion by the Speakers**

【Reported by Masamitsu Onishi (Disaster Prevention Research Institute, Kyoto University)】

## **Introduction of the 21<sup>st</sup> International Summer Symposium**

International Student Network Group of IAC organizes the 21<sup>st</sup> Summer Symposium for young engineers and students in conjunction with the 74<sup>th</sup> JSCE annual meeting at Kagawa University, on September 3-5, 2019.

The Summer Symposium will be carried out in English. One of the main events is presentations of academic findings and results. It is organized as the International Session in the annual meeting and about 40 presentations are scheduled. The paper submissions to that session are mainly from international students who are studying in Japan. The session provides them an opportunity to discuss the research results they are working on.



**Participants of the Last Year's Workshop**

Another event is the International Workshop for Young Civil Engineers. There are about 40 participants every year. This year, we will hold a workshop "When a Mega Disaster Strikes... - How would you respond if you were a mayor? -" which is the same as last year's theme, aiming for training leaders to deal with disaster response. Participants are divided into groups and play the mayor of the city damaged by a mega earthquake or tsunami. (1) Using meeting materials in the disaster response headquarters and newspaper articles, participants simulate the current situation and what kind of situation would happen in a week. (2) Participants discuss and decide corresponding policies in what situation the city should be in a week. (3) At the end of the discussion, each group reports its decisions and policies in a pseudo-press conference as the mayor. Last year, the participants had a lively discussion in group work, and the final presentations were exciting. Japanese students are encouraged to attend the workshop this year.



**Participants as City Mayors Discuss Post-Disaster Policies**

After the workshop, IAC Networking Reception will be held. We hope the reception will be an opportunity for foreign engineers and international students who work and learn in various places, and to get acquainted with each other for developing their networks in the future.

**【Reported by Kohei Nagai (The University of Tokyo), Leader of Int'l Student Network Group, IAC】**

## FY2018 JSCE Awards

A JSCE Award ceremony was held during JSCE General Assembly at Hotel Metropolitan Edmont Tokyo on June 14, 2019. 24 civil engineers including 5 non-Japanese engineers were recognized with the three awards International Lifetime Contribution Award, Continuing International Contribution Award, and International Outstanding Collaboration Award.

For further details, please visit [http://www.jsce-int.org/a\\_t/international](http://www.jsce-int.org/a_t/international).

### < International Lifetime Contribution Award: 4 winners >

The Award recognizes (1) Japanese civil engineers for their significant contributions to the development of civil engineering technology and/or the infrastructure development through their professional practices in and outside Japan; (2) non-Japanese civil engineer(s) for his/her commendable achievements to the progress and promotion of Japanese civil engineering.

NAME	AFFILIATION
Toshio Azuma	Japan Sediments Management Association
Toshiji Takatsu	Japan International Consultants for Transport Co., Ltd.
Hideo Tokuyama	DENTSU INC.
Nguyen Ngoc Dong	Ministry of Transport, Socialist Republic of Vietnam

**< Continuing International Contribution Award: 16 winners >**

The Award recognizes young professionals who have made and will make a significant contribution to the development of civil engineering and/or the development of infrastructure outside Japan with their unique and inspiring perspectives and solid technical skills.

NAME	AFFILIATION	NAME	AFFILIATION
Yosuke Inaba	KAJIMA Corp.	Yoshikazu Takayama	Konoike Construction Co., Ltd.
Kazuhisa Iwami	Nippon Koei Co., Ltd.	Hiroyuki Tateyama	Oriental Consultants Global Co., Ltd.
Tomoyuki Okada	Ministry of Land, Infrastructure, Transport and Tourism	Hiroyuki Maeba	Hazama Ando Corporation
Kenji Kanazawa	MAEDA Corp.	Nobuyuki Matsuo	Japan International Consultants for Transportation Co., Ltd.
Kazuhiro Kurokawa	Ministry of Land, Infrastructure, Transport and Tourism	Tsuyoshi Matsushita	CTI Engineering International Co., Ltd
Keiichi Sakai	Penta-Ocean Construction Co. Ltd.	Shigeyuki Matsumoto	Japan International Corporation Agency
Masanobu Sakamoto	Shimizu Corp.	Daisuke Murai	TAISEI Corp.
Tatsuo Takano	East Nippon Expressway Company Limited	Mitsuhiro Yamane	IHI Infrastructure System Co., Ltd.

**< International Outstanding Collaboration Award: 4 winners >**

The Award recognizes foreigners who has made contributions to the development of civil engineering in Japan or other countries, through the exchange and collaboration with Japan, and is expected to play an active role in the progress and development of civil engineering field.

NAME	AFFILIATION
Thi Ha	Nippon Koei Co., Ltd.
Hakan Yuksel	Oriental Consultants Global Co., Ltd.
Nakhorn Poovarodom	Thammasat University
Rex G. Legario	TAISEI Corp.

## MOM Road Tunnel Project in Hong Kong

Hong Kong currently has fifteen major road infrastructure projects such as tunnels and bridges. Two of these are owned and operated by the private sector in accordance with the Build-Operate-Transfer (BOT) method. The other thirteen are owned by the Hong Kong government, with their management, operation, and maintenance (MOM) entrusted to the private sector.

Among the thirteen government-owned road infrastructure projects, two tunnels are handled by our company: Eastern Harbour Crossing Tunnel (EHC) and Tate's Cairn Tunnel (TCT).



**Katsumi Ichinose**  
(Kumagai Gumi Co.,Ltd.)

We have been involved in the MOM project in Hong Kong since the 1980s. We started construction on the EHC tunnel in August 1986 and have operated it for the past thirty years via a local company. This was the first BOT project in Hong Kong. On August 6, 2016, the franchise period expired, and the tunnel was handed over to the government.



**External Appearance of EHC**



**External Appearance of TCT**

Before the handing-over, the government decided to put the MOM contractor of EHC out for tender, just like other road tunnels. To prepare for the tender, we established a new MOM company, which took over the records of the BOT company. The deadline for the tender was November 20, 2015. Our company, which has deep expertise in operating the tunnel, held a strong position in the technical score and won the tender.

As a result, the tunnel was returned to the government at midnight on August 6, 2016. Our BOT projects, which had lasted for thirty years in Hong Kong, were completed, and the new MOM project began at the same time.

TCT, which had also been operated based on the BOT method, reached the end of its franchise period in July 2018 and was returned to the government. Our MOM company made a bid for this as well, and won the tender. We believe this was the result of the smooth transition of the EHC from a BOT tunnel to a government-owned tunnel.



**Countdown from BOT to MOM at Midnight, August 6, 2016**

Among the three undersea road tunnels connecting Hong Kong Island and Kowloon Peninsula, EHC is the easternmost tunnel. The tunnel is 2.2 km long and its average daily traffic is 81,000 vehicles. TCT, on the other hand, is a mountain tunnel that connects Diamond Hill in Kowloon and Sha Tin in the New Territories. The tunnel is 4.0 km long and its average daily traffic is 63,000 vehicles. An overview and the location of both tunnels are described in Table 1 and Figure 1.

**Table 1 Overview of Tunnels**

Project Name	Eastern Harbour Crossing Tunnel MOM Project	Tate's Cairn Tunnel MOM Project
Location of Tunnel	Undersea tunnel connecting Quarry Bay in Hong Kong Island and Cha Kwo Ling in Kowloon Peninsula	Mountain tunnel connecting Diamond Hill in Kowloon and Sha Tin in the New Territories
Project Duration	Two years (and optional one-year extension)	Three years (and optional one-year extension)
Date of Project Start	August 7, 2016	July 11, 2018
Length of Tunnel	2.2 km	4.0 km
Number of Traffic Lanes	Two lanes each way, four in total	Two lanes each way, four in total
Average Daily Traffic	81,000 cars	63,000 cars
Number of Toll Booths	Ten booths, including four booths that collect tolls automatically	14 booths, including five booths that collect tolls automatically
Toll	Motorcycle: \$13; Passenger car: \$25; Truck: \$38; Coach: \$38	Motorcycle: \$15; Passenger car: \$20; Truck: \$28; Coach: \$35
Evaluation of Tender	Price evaluation: 60%; Quality evaluation: 40%	Price evaluation: 60%; Quality evaluation: 40%
Required Number of People	209 (Operation: 125; Equipment and electricity: 45; Civil engineering: 48)	201 (Operation: 120; Equipment and electricity: 45; Civil engineering: 36)
Key Persons	A tunnel manager and a chief engineering controller	A tunnel manager and a chief engineering controller

The purpose of a MOM project is to manage, operate, and maintain the tunnel. To be specific, the project deals with the collection of tolls on behalf of the government, traffic management, emergency response to accidents, etc., operation and maintenance of the tunnel and mechanical equipment, maintenance of green zones, etc.

The biggest concern when conducting a MOM project in Hong Kong is securing human resources. Workers work in three shifts. Under our contract with the government, we need to employ 209

workers for EHC and 201 for TCT. If the number of workers falls below these numbers, we may be penalized by the government. The Hong Kong labor market is suffering from a shortage of workers; therefore, we must be creative to secure sufficient manpower with a limited budget.

We gained entry into the Hong Kong market in 1961, which means we will soon be celebrating our 60th anniversary. We have been involved in a wide variety of infrastructure construction projects. The MOM projects allowed us to engage in the downstream side of business. Taking advantage of our achievements in Hong Kong, we would like to contribute to total infrastructure projects in other countries.



**Figure 1 Location of Tunnels**

【Report by Katsumi Ichinose

(General Manager, Hong Kong Branch, Kumagai Gumi Co., Ltd.)】

## CECAR8 Technical Session “Women in Civil Engineering”

The JSCE Diversity Committee organized a technical session entitled “Women in Civil Engineering” at CECAR8 held in April 2019 at Tokyo. The author, the session convener, introduces the background, purpose, results, and expectations to the future sessions.

The author has been involved in activities at the JSCE Diversity Committee and the Society of Women Civil Engineers and has been longing for international communication. At CECAR8, the author successfully organized the session for women civil engineers and their supporters for networking. In total, six papers from four countries and regions were registered, and five from three countries were discussed at the session on that day.

The topics of five presented papers included the history of female students’ class at a university and women engineers’ society with a 30-year history, changes in company’s strategy from long-hour work to work-life balance that enabled diversity and inclusion in the organization, and the necessity and importance for women engineers to take leadership roles. Prof. Yoh Sasaki, Waseda University, the session chair received many comments and questions from the audience that initiated vibrant discussions. The session closed with a comment proposed by a master-course-exchange student to Japan. She appreciated the session in which she learned and exchanged information with the participants and opinions and requested us to keep continue discussion like this.



**Participants of the Session**



**Participants Actively Listen the Presentation**



**Ms. Robin A. Kemper (President of American Society of Civil Engineers) Delivers the Presentation**

The number of women JSCE members has grown fourfold in these two decades, yet it occupies only about 5% of all the members or 4% of full members. We convinced ourselves that exchanging information and opinions with young engineers and students within and among countries are vital in realization of a diversified and sustainable society. We would like to take part in other CECARs and other opportunities in the future.

**【Report by Kiko Yamada-Kawai, Dr. Eng. (JSCE Diversity Committee)】**

## Updates

- ◆ 2019 JSCE Open Campus (July 6)  
<http://committees.jsce.or.jp/cprcenter/node/167>
- ◆ Joint Seminar on The Future of Transportation in Eastern Asia at the era of MaaS and Big Data (July 10)  
<https://www.facebook.com/JSCE.en/posts/2765452636817437>
- ◆ Japanese Civil Engineers the Global Leaders Symposium Series No.14 (August 28)  
<http://committees.jsce.or.jp/kokusai/>
- ◆ 2019 JSCE Annual Meeting International Program (September 3-4)  
<http://www.jsce-int.org/event/annual>
- ◆ The 21st International Summer Symposium (September 3-4)  
<http://www.jsce-int.org/node/592>
- ◆ 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/>
- ◆ Asian Civil Engineering Coordinating Council (ACECC) International Newsletter  
<http://www.acecc-world.org/newsletter.html>
- ◆ IAC “News Pick Up!!” on the JSCE Japanese website  
<http://committees.jsce.or.jp/kokusai/node/118>
- ◆ Summary of featured articles in JSCE Magazine Vol. 104, No.7, July 2019  
<http://www.jsce-int.org/pub/magazine>
- ◆ Journal of JSCE  
<https://www.jstage.jst.go.jp/browse/journalofjsce>

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### § IAC Facebook §

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### **Comments and Questions**

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