



Japan Society of Civil Engineers International Activities Committee Newsletter

No. 24, April 2008

June 2007- May 2008

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Promotion of Cooperation and Mobility in the Asian Region



FURUKI, Moriyasu
Executive Director, JSCE

We see that a broad mobility of people, goods and information is taking place in the 21st century. While the mobility of information has been pushed by rapid development of the Internet, the mobility of people seem not have gained the speed so much in the Asian region. Compared to it, the European Union (EU) region, facilitating mobility through integrating engineering codes and standards, provides engineers with access to career opportunities throughout the region.

In terms of land space, history, economical activities and political systems, many differences can be found between the EU and Asian regions. In addition, there has so far been little movement toward integration in the latter region. It is not realistic, accordingly, for the region to seek mobility in the same way as in the former region without taking some necessary steps (ref. Figure 1).

The circle with radius 1,000 km, are from the following city:
Right: Manila
Left: Brussels



Figure 1. Distribution of major cities in Europe and Asia

(Continue page 2)

The Asian region has unique characteristics showing distinctive differences from those of the European region. These characteristics, deriving mainly from a seismically active crust and a monsoon climate, are 1) mountain-building events caused by plate tectonics, located around Japan, Taiwan, the Philippines, Indonesia and the Himalayas; 2) earthquake-prone areas; 3) much rainfall and high humidity; 4) much sediment discharge and alluvium development in relation to 3; 5) highly populated areas due to the fertile soil in these warm humid climates; and 6) frequent earthquakes and wind and water hazards, which have caused more than 90 % of the total natural disaster-related fatalities in the world.

What is more, global warming has arisen as the most critical common issue on the earth.

The above characteristics serve to remind us that information and knowledge within the major disciplines of civil engineering such as earthquake, river, hydraulic, coastal, geotechnical, urban, material and disaster prevention/mitigation engineering should to be shared among countries in the region.

In order to tackle these issues, JSCE has closely worked with international researchers and engineers and held joint seminars with its international counterparts on a bilateral basis. In recent years, 5 joint seminars have been organized on average per year in concrete, structural, urban design, as well as planning and construction management engineering. Also, the JSCE has hosted the ACECC Technical Committees on Asian design codes, covering areas such as tsunami, earthquake codes and other discussions in cooperation with overseas civil engineering societies.

Moreover, working together with local engineers, the JSCE offers its expertise and technology in disaster-related assistance, recovery and reconstruction activities.

While promoting the above-mentioned areas of international cooperation, the JSCE will take further actions so that members will be able to visualize its future path.

First, the Asian region should maximize the common points between its engineering qualification systems, codes and standards, so that these might be integrated somewhat. Although a completely integrated system may not be possible, it will be necessary to understand and approve systems, standards and codes one by one and introduce revisions in a timely manner among all countries in the region. We believe that we will be able to contribute to this kind of harmonization and cooperation in the region and continue to work together with our international peers and engineering organizations.

Another, important issue is that of civil engineers pursuing careers in the region. For example, an international student should be able to find employment in Japan before returning home, and furthermore, a Japanese engineer should be able to work outside of the country. That cooperation will encourage the mobility of people and produce a highly trained future workforce that will enable us to solve global and regional issues and contribute to the creation of a prosperous, safe and peaceful society.

Under the leadership of the President and International Affairs Committee Chair, the JSCE is promoting the abovementioned movements of international mobility by looking at the future.

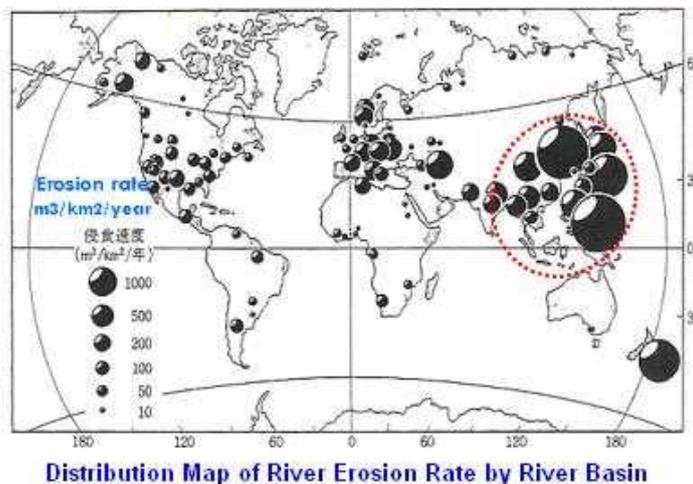


Figure 2. River Erosion Velocity

Disaster Report The 2007 Pisco Peru Earthquake

At 18:41, August 15, 2007 a large earthquake hit the central part of Peru's coast, some 150 km south of Lima. The earthquake tragically resulted in 519 deaths, 1291 injured, and more than 650,000 affected people (INDECI, as of September 30). Totally some 80,000 dwellings and buildings were damaged or completely destroyed in the regions of Ica, Lima, Huancavelica, Ayacucho and Junín. Despite the large number of building damage the death toll was relatively low most likely due to the earthquake occurrence time. Pisco and Chincha cities were the hardest hit. The Peruvian government preliminarily estimated that public infrastructure recovery will cost at least US\$220 million. The most affected cities were Pisco, Chincha, and Ica with intensities as high as MM VII and strong ground motions lasting almost three minutes. Table 1 summarizes the earthquake effects.

Table 1. Collapsed and affected facilities.

Houses	collapsed	75,681
	affected	92,828
Schools,	collapsed	643 classrooms
	affected	635 classrooms
Health Facilities,	collapsed	14
	affected	112
Bridges	collapsed	2
	affected	4

HOUSING DAMAGE

According to the latest housing census, more than 50% of the houses were made of adobe without any type of reinforcement in the affected region; among them 70% were more than 25 years old. Consequently, they performed badly exhibiting cracks at wall intersections, partial wall collapse and complete collapse as shown in the photo below. A few houses which were reinforced by either external coatings (existing structures) or inner cane reinforcement (new constructions) performed well.



Figure 1. Unreinforced and reinforced houses

Also available on web: <http://www.jsce-int.org/>

The second most popular housing material in the earthquake affected areas is confined masonry. If built following good design and construction practices, they are very seismic resistant. However, many bad practices were evidenced by this earthquake.

PUBLIC FACILITIES

Most of this earthquake fatalities occurred in very old public buildings and approximately 30% of them at the San Clemente Church in Pisco. There is a need for legislation that requires retrofitting. Schools and hospitals that were built following the design codes performed very well whereas those which did not fail. At the San Juan de Dios hospital in Pisco, the buildings which had just been finished before the earthquake did not suffer any damage whereas the remaining units dating from the 30's were left useless. Privately owned public facilities such as hotels did also suffer extensive damage.

CODE ENFORCEMENT

As in many other developing countries, self construction is widespread in Peru and building code control system is not functioning. Programs to train masons may be key to overcome this situation.

LAND USE

Inadequate land use is also an issue. Vulnerable areas in many cities have been already identified by programs such as the Sustainable City Program carried out by INDECI (Civil Defense). However, putting this findings into practice still takes too long time, therefore severe damage e.g. due to liquefaction was observed both in Pisco and Tambo de Mora.



Figure 2. Building settlement of 0.7 m.

TECTONIC DEFORMATION

Tectonic induced ground tension cracks near San Luis caused damage to both houses, roads and created irrigation problems for farmer.



Figure 3. Ground tension cracks in front of collapsed houses

Full report is at following Website:
http://shake.iis.u-tokyo.ac.jp/Peru2007/JSCE_JAEE_Report/Index.htm

By Jorgen Johansson and Paola Mayorca,
(Institute of Industrial Science, Univeristy of Tokyo)

ACECC Meetings in Sydney, Australia

Asian Civil Engineering Coordinating Council (ACECC) held meetings in Sydney, Australia as follows:

Day1: February 25, 2008

- 10th Planning Committee Meeting
- 5th Technical Coordinating Committee Meeting

Day 2: February 26, 2008

- 16th Executive Committee Meeting

Dr. Yukihiro Sumiyoshi, JSCE Representative to ACECC and four other members of Committee on ACECC of JSCE participated in these meetings and played active roles in various items.

The day-one meetings were held in the Sydney Convention Centre located in a beautiful seaside area (Photo 1), which is the venue of the 5th Civil Engineering Conference in the Asian Region (CECAR) to be held in August, 2010. JSCE reported on the activities of Awarding Subcommittee and E-Publications Subcommittee in the Planning Committee Meeting (PCM), Technical Committee on Harmonization of Asian Design Codes, Technical Committee on Great Mekong Delta and Technical Committee on Sumatra Earthquake in the Technical Coordinating Committee Meeting (TCCM).

On the second day, there was a heated discussion in the Executive Committee

Meeting (ECM) regarding the ACECC foundation: some misunderstandings and confusions seemed to exist about the formal creation date and the founding societies/institutions. Therefore, even though Dr. Sumiyoshi led the discussion, no conclusions were reached, resulting in the creation of the ACECC foundation Subcommittee to sort out the issue.

Another main item in the ECM was the ACECC membership application: Institute of Civil Engineers, India, and Cambodian Association of Civil Engineers briefed the application to be an ACECC member in the ECM. In the last ECM, 2007, the membership of Indonesian Society of Civil & Structural Engineers (HAKI) was just approved. ACECC's activities and contributions have been recognized widely in the Asian region. The host for the 6th CECAR in 2013 was also decided in this ECM: HAKI was selected as a host and the 6th CECAR will be held in Bali, Indonesia.

On the afternoon of the second day, after the ECM, Sydney Civil and Structural Panel had a technical seminar for its members, in which JSCE gave a lecture on Japanese steel bridges.

Next ACECC ECM and other relating meetings will be held on April 2009 in Hanoi, Vietnam.



Photo 1. Sydney Convention Centre

By YAMAGUCHI, Eiki, Ph.D.
(Vuce-Chair, Committee on ACECC, JSCE, Kyushu Institute of Technology)

Inaugural Meeting of Thailand Section President of JSCE Visited Thailand

Dr. Yumio Ishii, the president of JSCE, visited Thailand together with Professor Kazuaki Miyamoto, the chairperson of Task Force of Contribution to Asia, Special Presidential Committee, JSCE, and other task force members to celebrate the establishment of Thailand Section of JSCE from 12th to 15th March.

The inaugural meeting of Thailand Section was held on the 14th at Imperial Queen's Park Hotel, Bangkok with 16 participants. At beginning of the meeting, Dr. Ishii gave a congratulatory speech and expressed his expectations for the Thailand Section to play a liaison between Thailand and Japan in the civil engineering field. Senator, Dr. Samart Rachapolshitte, the president of the new section expressed his pleasure in celebrating the establishment and his intentions to promote the activities between the two countries. Prof. Kazuaki Miyamoto and Dr. Rungsun Udomsuri, the section's vice president also delivered congratulatory and welcome addresses. Dr. Ishii presented a Thailand Section flag and appointment letters to the president, the vice president and the secretary general, and then the section member discussed about future activities.



Dr. Ishii and participants in the Inaugural Meeting

On the 13th, the JSCE president with the delegates paid a courtesy call on Dr. Prasong Tharachai, the president of the Engineering Institute of Thailand (EIT), and Dr. Watcharin Gasaluck, the chairman of the civil engineering committee of EIT, and had the collaborative seminar "Current and Future of Civil Engineering Education and Profession in Asian Countries" between JSCE and EIT. After the welcome address by Dr. Tharachai and the keynote address by Dr. Ishii, Prof. Worsak Kanoknukulchai of Asia Institute of Technology (AIT) gave a presentation on the new direction of engineering education in Thailand. Following the presentation, 6 presenters from both countries gave their views

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about current situation, and problems of engineering education and profession in Thailand, the Philippines and Japan. These presentations were informative to learn accreditation of engineering education and the evaluation systems of engineer's qualification, and to consider future engineering education and qualifications in the Asian region.



*Presenters and participants
in the Collaborative Seminar at EIT*

During his stay, Dr. Ishii paid courtesy call on Mr. Rapin Charutula, Director General of DRR (Department of Rural Road), MOT (Ministry of Transport), Mr. Silpachai Jarukasemratana, Director General of DLT (Department of Land Transport), MOT, and Dr. Maitree Srinarawat, Director General of OTP (Office of Transport and Traffic Policy and Planning), MOT to learn about current problems and future directions of infrastructure development in Thailand. Dr. Ishii discussed with them about the importance of infrastructure development and the role of civil engineers.



*Discussion with Mr. Rapin, DRR
With Mr. Silpachai, DLT With Dr. Maitree, OTP*

*By FUKUDA, Atsushi, Dr. Eng.
Member, Task Force of Contribution to Asia,
Special Presidential Committee, JSCE
(Professeor, Nihon University)*

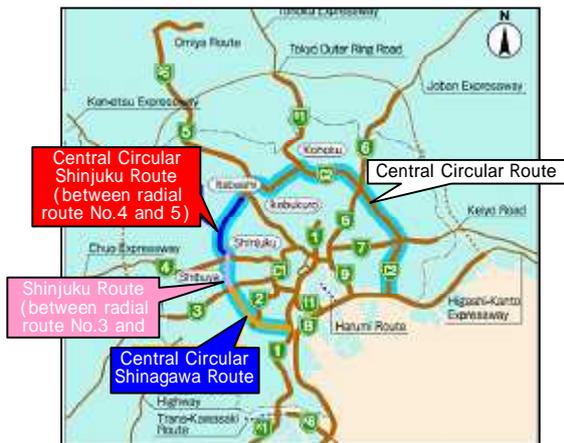
Project Report

Tokyo Smooth - Central Circular Shinjuku Route makes it possible



*Nishi-Shinjuku JCT connects Shinjuku Route and Radial route No.4
(Photo by Joe Nishizawa)*

Metropolitan Expressway Co., Ltd. is currently working on the completion of Central Circular Route as a primary countermeasure against traffic congestion in the Tokyo metropolitan area. Since the construction work began in 1994, about two-thirds of the section of Central Circular Shinjuku Route consisting of west part of the Central Circular Route (between the JCT of radial route No.4 and 5, length of 6.7km), was finally opened in service on 22nd December 2007.



Expressway network in Greater Tokyo area

Since the opening of the route, some significant improvements of traffic condition have been observed. Although it has been only for few months since the opening, a fair amount of data have been obtained from traffic counter. Based on that data, weekday's average values in terms of traffic volume, travel time and others were compared to those on the last year's traffic conditions. The findings are:

- a) average weekday's total traffic queue length in the Tokyo area reduced from approximately 46km to 36km (22% reduction)

- b) loss time/day due to traffic congestion in the Tokyo area reduced from approximately 67,000 vehicle·hr/day to 50,000 vehicle·hr/day (25% reduction)
- c) travel time from Takaido to Misato reduced from 75min (via Inner Circular Route) to 50min (via Central Circular Shinjuku Route) (25min shorter)



Improvement on traffic condition

Following the last year's opening of the route, the rest of the Shinjuku Route will be opened in two years (between the JCTs of radial route No.3 and 4, length of 3.4km). Furthermore, the Central Circular Shinagawa Route, which completes the construction of Central Circular Route, will be opened in five years. After the completion of the Shinagawa Route, the total length of tunnel section will be approximately 18km. The tunnel will be very unique in the world as an urban tunnel having such a long length. Therefore, safety control traffic control systems for the tunnel have been taken into consideration in the construction of the Shinjuku and Shinagawa routes.



*Inside of Shinjuku Route (Shield tunnel section)
Photo by Joe Nishizawa*

*By SHIRATORI, Akira
(Metropolitan Expressway Co.,Ltd.)*

Lie-Liung CHOU Workshop on BOT Projects in Taiwan

The workshop “BOT Projects in Taiwan” was held at the University of Tokyo on 25th January 2008 with over 30 participants. This workshop was organized by the Research Center for Social Management of Kochi University of Technology, Japan. This research center was selected as one of the outstanding research centers by the 21st Century Center of Excellence (COE) Program conducted by the Ministry of Education, Culture, Sports, Science and Technology, Japan in 2004.

In this workshop, Professor Lie-Liung Chou, Kochi University of Technology lectured on the planning and management of the two big BOT railway projects in Taiwan: Taiwan High Speed Rail (Shinkansen) and Kaohsiung Mass Rapid Transit (Subway), of which he was in charge, and then the participants discussed with him actively on the merits of the BOT projects and the succession of the skills.

Prof. Chou, the Chief Engineer of Taipei Mass Rapid Transit Department, Vice-Director General of Taiwan High Speed Rail Bureau, Director General of Kaohsiung Mass Rapid Transit Department and Executive Vice-Minister for Transport and Communications of Taiwan, has produced outstanding achievements. He was the first engineer to introduce a BOT system to Taiwan in terms of efficiency and effectiveness of the projects. He took up a professorship at Kochi University of Technology in October 2007 and now he is summarizing his projects from the viewpoint of Social Management Systems. He was the President of Taiwan Section of JSCE.

Prof. Chou obtained his degree in concrete structures from the University of Tokyo in 1984. It is a great pleasure and honor for JSCE to receive him as a full-time professor in Japan.



Prof. CHOU, Lie-Liung

By OUCHI, Masahiro, Dr. Eng.
Member, International Activities Committee, JSCE
(Kochi University of Technology)

Also available on web: <http://www.jsce-int.org/>

Joint Seminar in 2008

In this year, Joint Seminars will be held in Sweden, Indonesia and Australia with support from International Scientific Exchange Fund, JSCE.

JSCE has Agreements of Cooperation (AOC) with 25 counterparts around the world. Joint seminar is one of collaborative activities with the AOC counterparts, to exchange information with them to better serve the members and civil engineering profession and to contribute to building better infrastructures, a better quality of life for present and future generations.

International Activities Committee (IAC) plays a major role to organize joint activities in cooperation with committees in Research Division of JSCE. Since 2004 the IAC has received support from International Scientific Exchange Fund, JSCE.

The joint seminars are as follows:

1. JSCE-SVR Joint Seminar on Concrete Engineering
Date: June 10, 2008
Venue: Bålstra, Sweden
2. JSCE-PII Joint Seminar on Disaster - Earthquake and Tsunami-
Date: August 25, 2008
Venue: Padang, Indonesia
3. The JSCE-EA Joint Seminar on Steel Structures
Date: November 13-14, 2008
Venue: Sydney, Australia



Photo of Joint Seminar in 2007

*These seminars' information will be updated.
Please check the latest information at JSCE English Website: <http://www.jsce-int.org>

Information

Event Calendar

JSCE 94th General Assembly

Date: May 30, 2008

Place: Hotel Metropolitan Edmont, Tokyo

JSCE 2008 Annual Meeting & 63rd Annual Conference

Date: September 10-12, 2008

Place: Tohoku University, Sendai, Japan

International Program

Day 1: Sep. 10, 2008

- 1) Roundtable Meeting
- 2) Panel Discussion
- 3) International Session

Day 2: Sep. 11, 2008

- 4) WFEO-JFES-ACECC Symposium
- 5) JSCE-KSCE Joint Seminar on Concrete Technology

*For more information: <http://www.jsce-int.org/>.

May 2008

15-17 The 11th Uddevalla Symposium 2008

Date: May 15-17, 2008

Venue: Kyoto International Community House, Kyoto, Japan

URL: <http://www.symposium.hv.se/extra/pod/>

June

11-14 1st International Symposium on Life-Cycle Civil Engineering (IALCCE '08)

Date: June 11-14, 2008

Venue: Villa Monastero, Varenna, Italy

URL: <http://www.ialcce08.org>

July

20-23 6th International Conference on Road and Airfield pavement Technology

Date: July 20-23, 2008

Venue: Sapporo Convention Center, Sapporo, Japan

URL: <http://www.jsce.or.jp/committee/pavement/icpt2008.html>

November

19-21 EASEC – 11 (East Asia-Pacific Conference on Structural Engineering and Construction)

Date: November 19-21, 2008

Venue: National Taiwan Univ., Taipei, Taiwan

URL: <http://easec11.easec.org/index.html>

Call for Paper

The 10th International Summer Symposium, JSCE

Date: Sept 18, 2008

Place: JSCE Headquarter, Tokyo, Japan

Important Dates

-Paper Submission: June 8, 2008

-Notification of Acceptance to Authors: Middle of July 2008

-Submission Modified Paper:

Middle of August 2008

-Symposium : September 18 2008

URL: <http://www.jsce-int.org/iss.shtml>

International Conference on Performance – Based Design in Earthquake Geotechnical Engineering- from case history to practice-

Date: June 15-17, 2009

Place: Tsukuba International Congress Centre, Tsukuba, Japan

Important Dates

Abstract Submission: May 31, 2008

URL: <http://www.comp.tmu.ac.jp/IS-Tokyo/>

Publications

From Feb to Apr 2008

Journal of Global Environmental Engineering Vol.13:

March 2008, Pages 140,

Price: JSCE Member JPY3,000-/Non-Member JPY6,000-

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