Japan Society of Civil Engineers
International Activities Committee

Newsletter

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"Civil Engineering" Dec. 2002 Feature Article: "Prepare for Big Earthquakes" (Summary)

Eight years have passed since the Hyogo ken Nambu Earthquake in 1995. In the January 2000 issue, Japan Society of Civil Engineers focused on the lessons from the disaster and published a special edition "Lessons from the Great Hanshin Earthquake – What could be taken over to the 21st Century?" At the same time, the Central Disaster Prevention Council carried out a re-examination of the estimated epicenter region of the virtual Tokai Earthquake in June 2001. The earthquake investigation committee of Japanese government released information on some active faults and long-term occurrence probability of an ocean trench type earthquake. The opportunity to see related articles on newspapers also increased. Such a field is the boundary region among the physical science, engineering, and social science. These academic fields need to cooperate in preparing for the big earthquakes to come.

This article entitled "Preparing for big earthquakes" will present the current conditions and issues relevant to the earthquake disaster prevention technology.

First of all, the generating mechanism of a big earthquake is explained. In this section, the occurrence of the earthquake in Japanese Islands, the ocean trench type earthquake, and the inland type earthquake are described intelligibly.

The measure towards utilization of the Nowcast Earthquake Information in the Meteorological Agency is introduced. Nowcast Earthquake Information is to presume "earthquake occurrence information," "epicenter information," "prediction seismic intensity information," and "earthquake attainment prediction time information," before the main shock reaches from the observation data, which is P wave promptly caught at the observing point near the epicenter region immediately after the occurrence of an earthquake. The Meteorological Agency is planning to distribute Nowcast Earthquake Information starting from the autumn of 2003 to users in certain areas in Japan.

The damage assumption based on risk management is also described. Since many of the engineering- institutions are aimed at the public benefit, it is difficult to describe everything based on profits and it is still more difficult to describe the performance by the rate of return. However, it is coming to a point where public institutions cannot be discussed without the economical efficiency. Therefore, while introducing the method of describing the performance of earning assets, seismic investment is described in terms of the applicability to an engineering-works institution for example. Next, the life cycle earthquake loss cost is explained. Japan is a world leading earthquake frequent occurrence country. Therefore, an earthquake risk is mentioned to one of the important risks to an engineering-works structure. If there is a risk, you have to make a decision about the countermeasure. The earthquake risk on life-cycle management is related to the determination of seismic ability. That is, although the expense will increase if seismic ability is made high, the possibility of loss by the future earthquake decreases. On the contrary, if a performance is made low, a future earthquake risk will increase. Therefore, the necessity of evaluating a future earthquake risk as earthquake loss cost comes out to the investment expense for a seismic improvement. When the demand seismic ability of a structure is considered in the frame of risk management, the life cycle earthquake loss cost will be evaluated.

Furthermore, the new trial for the earthquake disaster prevention technology over the earthquake disaster measures by the government or local authorities and a new earthquake disaster prevention technology for the lifelines, among other issues are described.

Summary by Editorial Committee on "Civil Engineering" (Group D)

U.K. Section of JSCE

The U.K. Section of JSCE, established in London on October 19, 2001, has experienced the first official operational year since the first Annual Meeting was held on March 22, 2002.

During the last twelve months until the second Annual Meeting scheduled in March, 2003, the U.K. Section has managed the following development activities:

1) Seminar "Japanese ODA and Africa" (April, 2002)
2) Seminar "Project Management Example in the U.K." (November, 2002)
3) Site Visit "Channel Tunnel Rail Link, Section 2, Contract 220, London Tunnel Project Site" (February, 2003)

London Tunnel (Inside)

ASCE 150th Anniversary Report

The ASCE's 150th Anniversary was held from November 3-6, 2002 in Washington D.C. The participants from JSCE were Dr. Kiyoshi Kishi, President, Dr. Masanori Hamada, Vice President, Dr. Satoru Madono, Member of JSCE International Committee, and others, including myself.

At the International Round Table on November 3, on the theme of "Corruption in the Build Environment: Implications of Transparency on Engineering Quality," as JSCE, after the greeting from President Kishi, Prof. Madono made a presentation on the importance of human resource cultivation. The Opening Ceremony was held at the Washington Convention Center on the 4th. At a technical session titled the "Past, Present & Future of Reliability-Based Structural Engineering Worldwide," I made a presentation introducing the present status of reliability design in Japan. At the "Lessons from the Kobe Earthquake and Following Practices of Earthquake Engineering," chaired by Dr. Hamada, JSCE introduced our work on the Japanese anti-earthquake designs after the earthquake. At the Honorary Member's Lunch on the 6th, Professor Emeritus Itoh Manabu, Tokyo University, and Professor Emeritus Maeda Yukio, Osaka University, were elected as Honorary Members.

By Fuminao Okumura
(Railway Technical Research Institute)

The JSCE-EIT Joint Seminar on Steel Bridges in Bangkok

Opening Speech by EIT President Dr. Karoon

The JSCE-EIT (Engineering Institute of Thailand) Joint Seminar was held in Bangkok on January 10, 2003, on the theme "Advanced Engineering for Long-Life Steel Bridges." The seminar began with the opening speech by EIT President, Dr. Karoon Chandrangsuno, which was followed by 12 presentations (7 from JSCE and 5 from EIT). About 100 Thai engineers attended the seminar. After the seminar, Japanese delegates were invited to visit two steel factories and two construction sites. The seminar is the first of its kind and one of the efforts that JSCE International Activities Committee started making recently to promote the cooperation and/or stimulate the interaction with the societies/institutes having a cooperative agreement with JSCE.

By Eiki Yamaguchi
(Kyushu Institute of Technology)

Japan to Host 3rd World Water Forum

From March 16-23, 2003, Japan hosted the 3rd World Water Forum in Kyoto, Shiga and Osaka. The World Water Forum drew over 24,000 participants and over 130 Ministers from around the world to participate in the Ministerial Conference held on the occasion of the Forum.

Water issues are crucial as the world population continue to grow. Water issues will be a key component to achieving sustainable development and peace, as concerns grow over transboundary water conflicts.

The 3rd World Water Forum included Sessions: encompassing a broad range of issues important to the water sector; Regional Days: to draw global attention to local, national, and regional issues; and Dialogue between Participants and Ministers: to link Forum outcomes and the Ministerial Conference; the Senior Officials Meeting and Ministerial Conference to produce the Ministerial Declaration and discuss solutions to global water issues.

Info:http://www.worldwaterforum.org/

By Sam Baron
(Chuo University)

Report From Flood Disaster Investigation Team to Europe

Damages caused by the flooding of Gard River (right tributary of Rhone)

Heavy floods broke out in Germany, Czech Republic and Austria in mid-August, followed by another incidence in France in September 2002. The damages were extensive in all sites. In Czech Republic, a total of 220,000 people took refuge, 15 lives were lost, and the cost of the damage is estimated to amount to 3 billion euros. In Germany, damages were seen in scattered sites along Elbe and its tributary rivers. However, the greatest damage was sustained in Dresden where fifty square km was covered with water and 12,000 people evacuated. The estimated cost of damage in Germany is 9.2 billion euros. The damages along the Danube River in both Germany and Austria were relatively small but the characteristic is that the damage is instead seen along the tributary rivers. The cost of the damage is estimated at 2.5-3 billion euros in Austria. The flood in the southwest region of France claimed 24 lives and caused damage estimated at 1.12 billion euros.

In Japan, ten institutions* concerned weighed the situation heavily and held deliberations on guidelines for conducting field investigations. They jointly formed the "Year 2002 Flood Disaster Investigation Team to Europe." The team split into four groups (Elbe A, Elbe B, Danube, and Rhone) and conducted field investigations in their respective sites between Nov. 7-17 and between Jan. 8-17 for follow-up investigations.

Following is the brief summary of the report from the investigation team. It covers wide range of topics from the differences in river administration system to flood insurance policies in these countries as well as in comparison to Japan.

Austria has a nationwide flood control policy, aiming for minimum river development through "Water Care." On the contrary, in France and in Germany, river administration is left to the riverbank owners and states respectively. Following the disaster, France is aiming to enhance information distribution while maintaining the same flood prevention framework. In Germany, there is a project under way to implement a nationwide flood protection plan involving federal and state governments to secure more flood zones and further enforce land utilization regulations. These two objectives are in fact the general aims of all countries, which sustained damages from the flood. Japan should also further promote comprehensive flood control measures, and river administrators should actively carry out improvement of retarding basin within the flood zones.

Flood insurances in disaster-stricken countries are covered by private sectors. For example, in France, an insurance system called CatNat, which was established after the great flood of 1981, enjoys a high purchase rate. In all four countries, financial compensation was provided to victims. In Germany, the federal government made special one-time arrangement to provide 100% compensation for damaged houses.

Mass media played a vital role in Europe by providing appropriate information to national and international community about the floods and the damages they incurred. The media also had a positive influence on volunteer activities and encouraged donations to victims. As for the role of media in implementing disaster measures, the event created an opportunity to discuss how to provide appropriate and useful information efficiently.

There is much that Japan could learn from this experience. As was the case of the Danube River, overflow of tributary river waters have contributed to the great damage caused by the floods in Europe. In preparing future hazard maps in Japan, we must learn from this event and take into consideration the possibility of tributary river overflow. Also, the flooding of underground urban space in European cities signals us the need to further advance measures against flooding of underground space in Japan.

The measures taken in response to the floods in Europe are also noteworthy. For example, Japan should learn from the wide use of Internet in Europe to convey information regarding disaster prevention. The active role of specially trained volunteer organization such as "technical assistance group" in Germany should be studied.

The complete report can be obtained at the JSCE library. The summary of the report is also available at the JSCE website at http://www.jsce.or.jp

By Kengo Sunada
(Chairman of Committee on Hydraulics, JSCE)

**Japan Society of Civil Engineers, Ministry of Land, Infrastructure and Transport, Cabinet Secretariat, National Institute for Land and Infrastructure Management (NILIM), Public Works Research Institute, Disaster Prevention Research Institute Kyoto University, Japan Institute of Construction Engineering, Foundation of River and Watershed Environment Management, Foundation of River & Basin Integrated Communications Japan, Infrastructure Development Institute – Japan*

JSCE Study Tour Grant 2002

S.M. Parvez Mohit

Celebrating its 75th Anniversary, Japan Society of Civil Engineers (JSCE) is allotting a series of Study Tour Grants to the similar societies/institutes of different countries to visit Japan. In continuation with last 10 years, last year in 2002, JSCE invited me as a member of the Institute of Engineers, Bangladesh (IEB) for the Study Tour Grant 2002 to Japan.

It is quite helpful to get such an opportunity to visit Japan as an engineer from a developing country like Bangladesh, and it is a very important way to enhance mutual understanding between colleagues in different cultures and different parts of the world, and to learn from each other's experiences how the problems are solved. It is also much more interesting to get a view of current projects and techniques by means of study visits to the sites of a technically developed country like Japan and discussion with the engineers involved.

The study tour took place from October 7 to October 11 2002. Its itinerary was designed to have a well-balanced mix of visits to a university research center, some governmental and some public research institutes and finally some construction sites in and around Tokyo Metropolitan area.

Among many differences between civil engineering practice in Bangladesh and Japan, the main ones are the scale and the size of projects. Japan has only 20% of its land, a very limited space, to construct their infrastructures and other facilities. So their main objective is to save the space, utilize the underground and construct high-rise structures. Earthquake force is something we do not always consider in Bangladesh, but we must consider the wind force as it occurs during cyclones in Bangladesh.

After returning to my country I wrote this report on my visit to Japan. This report presents my experiences and my thoughts during my visit in Tokyo. Although my visit in Japan was very short, it was a wonderful and most valuable opportunity in my life. During my visit I got a chance to get a closer view of the civil engineering activity in Japan and to see the beautiful country, meet its hard-working and friendly people and to learn to some extent about the culture and traditions of Japan.

In this opportunity, I would like to express my thanks to the officials of the International Affairs Section of JSCE for their kind effort and their attention. And finally I must express my deep gratitude to all the members and officials of JSCE and IEB for selecting me and giving me the chance to visit Japan.

By S.M. Parvez Mohit
(Japan Engineering Consultants Co., Ltd.)

Invitation to 3rd CECAR

Following the 2nd CECAR (The 2nd Civil Engineering Conference in the Asian Region) which was held in Tokyo in April 2001, the 3rd CECAR is going to be held in Seoul, Korea, August 16-19, 2004. JSCE has been heavily involved in this conference and ACECC (Asian Civil Engineering Coordinating Council), which is the administrative organization for this conference, as one of the founding members since its establishment. CECAR provides the civil engineering profession with an important opportunity to discuss how the future infrastructure in harmony with the Asian region should be, to promote the information exchange on the various issues such as the needs for research and development for the future civil engineering, and to establish international partnership to seek ways to solve problems in the Asian region. The updated information will be introduced on the JSCE website. I would like to ask for as many people's participation in the conference as possible. Your cooperation with us would be highly appreciated.

By Fuminao Okumura
(Chairman of Committee on ACECC, JSCE)

Publications

ARTICLES (From December to February 2003)

Concrete Library International No.40, JSCE, December 2002, CD-ROM, Price: \3,150, ISSN 1347-2119

Standard Specifications for Concrete Structures-2002, Seismic Performance Verification (in Japanese), JSCE, December 2002, 133 pages + CD-ROM, Price: \6,000, ISBN4-8106-0244-3

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