



## Japan Society of Civil Engineers International Activities Committee

# Newsletter

No. 18 May 2005

### 2004 Sumatra Offshore Earthquake and the Indian Ocean Tsunami

#### Establishment of Special Committee to research the damage caused by 2004 Sumatra Offshore Earthquake and the Indian Ocean Tsunami

##### 1. Aim

The establishment of this Special Committee is aimed to make an assessment of the reality of the damage caused by Sumatra Offshore Earthquake and Indian Ocean Tsunami and, as well as to organize the achievements as the data for disaster prevention improvement against earthquakes and tsunami, to provide cooperation for the concerned countries by the overseas cooperation agreements and make proposals for the measures against huge earthquakes from our experiences in Japan based on the JSCE's activities for Hanshin Awaji Great Earthquake and Niigata-ken Chuetsu Earthquake and so on.

The huge ocean trench type earthquake which took place off the coast of Sumatra Island on December 26, 2004 and the great tsunami which occurred subsequently attributed to the earthquake caused unprecedented catastrophic disaster to the Indian Ocean coastal nations as well as to the northern part of Sumatra Island, which is the closest spot to the epicenter. As those disaster-stricken countries are still developing and not well equipped with the alarm systems to the earthquake/tsunami, Japan, with her world's most advanced scientific technology in the fields of earthquake/tsunami disaster prevention/mitigation, is expected to provide multilateral and active cooperation for the restoration and reconstruction projects and the disaster prevention planning.

On the other hand, imminence of huge ocean trench type earthquakes in the Eastern Sea, the South-Eastern Sea and the Southern Sea has been pointed out in our country and the envisioned damage and the broad outline of countermeasures have just been drawn up mainly by the specialist research group in the Central Disaster Prevention Conference. The Sumatra Offshore Earthquake has made the simultaneous occurrences of those three huge earthquakes realistic and the necessity for working out new countermeasures is now asked for.

JSCE has been making proposals for earthquake resistance improvement of civil engineering structures such as the earthquake

resistance standards and the reinforcement in addition to the damage investigation at the time of the Hanshin-Awaji Great Earthquakes in 1995, and has been making contributions actively to the infrastructure development with high quality of earthquake resistance. As well, in November 2004, JSCE established a special committee to work out a role which JSCE should play to address huge earthquake disasters such as the Tokai Earthquake. In addition, pertaining to the Niigata-ken Chuetsu Earthquake which occurred in October, 2004, JSCE implemented a prompt and extensive site investigation, made progress reports, and is now drawing up of the final report and working on new proposals to be made.

##### 2. Main Activity Plans

The following items shall be carried into effect with coordination among the concerned organizations.

1. Collection of the wide-area basic data.
2. Establishment of the archives
3. Site investigation
4. Building an international network
5. Public release of the investigation outcomes.

##### 3. The Committee Members

Chair of the special committee is Fumihiko IMAMURA, Professor of Tohoku University. The Committee shall be made up of learned experts in/outside the society who are needed for the investigation. Selection of the members shall be made by the discussion between the Chair of the Committee and the JSCE Executive Director. In operating this committee, sufficient cooperation and coordination shall be sought with the Joint Sub-Committee on the Tsunami Damage Estimation and Mitigation Technology Study by the Earthquake Engineering Committee and the Coastal Engineering Committee, and the Special Committee on Studying Responses to Huge Earthquakes Disasters.

##### 4. Duration

The duration of the Committee shall be about six months from January 5, 2005. Progress reports shall be made as needed.

*From "Letter of Intent for the establishment of Special Committee"*

## JSCE's Activities after the disaster by Sumatra Earthquake and Tsunami

JSCE established the 'Special Committee to Research the Damage Caused by the 2004 Sumatra Offshore Earthquake and the Indian Ocean Tsunami' immediately after the disaster, and dispatched investigation and assistance teams to the region.

The activities are follows; the activities will be reported on the JSCE website.

<2004>

Dec. 26 Occurrence of the Sumatra Earthquake and the Tsunami

\*Set up emergency meeting at JSCE headquarters, and send letters to affected countries

<2005>

Jan. 5 Established the Special Committee

Jan. 14 Held a Debrief session by immediate investigation team including JSCE members

Feb. 27 Dispatched a JSCE investigation team  
-Mar.8 to Sumatra Island

Apr. 1 Held a Debrief session by the investigation team

Apr. 12 Dispatched a JSCE assistance team for  
-17 disaster prevention

April 23 Dispatched a JSCE investigation team  
-30 to Nias Island, Indonesia

## CICHE-JSCE Joint Seminar Report

The CICHE (Chinese Institute of Civil and Hydraulic Engineering) - JSCE (Japan Society of Civil Engineers) Joint Seminar on Concrete Engineering was held in Kaohsiung, Taiwan, in conjunction with the Annual Meeting of CICHE on December 3, 2004. In past years, a strong relationship has developed between the construction industry of Taiwan and Japanese professional engineers. In order to enhance further collaboration, the seminar was planned on the basis of the agreement of cooperation between CICHE and JSCE.



(From left) Prof. K. Sakai, Prof. S. Morichi, Prof. J. C. Chern and Prof. Y. W. Chan

The seminar began with the opening speeches by Prof. J. C. Chern and Prof. Shigeru Morichi, presidents of each society. Firstly, Prof. Taketo Uomoto, Univ. of Tokyo, gave a keynote lecture on "New technologies on maintenance of concrete structures". Then, ten research lectures (each 5 from Taiwan and Japan) were presented.

The proceeding for the seminar was published, in which five papers each from JSCE and CICHE are included. There were 115 participants in the seminar. It is expected that this seminar promote future collaboration and developments among engineers and researchers of Japan and Taiwan.

Finally, we would like to express our sincere thanks to Prof. Y. W. Chan and the other staffs of CICHE who kindly arranged for the seminar.

By Koji SAKAI (Kagawa University)

## "JSCE Guidelines for Concrete"

The Japan Society of Civil Engineers announces the availability of new publications on concrete. JSCE has published many recommendations, standards and standard specifications in Japanese. The new publications are the English version series.

These new publications may be utilized at the overseas-project and also as the teaching materials for educations.

Title List:

- No.1 Recommendations for Design and Construction of Concrete Structures Using Electric Arc Furnace Oxidizing Slag Aggregate
- No.2 JSCE Standards on Test Method for Diffusion Coefficient of Chloride Ion in Concrete
- No.3 Standard Specifications for Concrete Structures  
-2002 "Structural Performance Verification"
- No.4 Standard Specifications for Concrete Structures  
-2001 "Maintenance"
- No.5 Standard Specifications for Concrete Structures  
-2002 "Seismic Performance Verification"



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## JSCE Study Tour Grant 2004



**Nagendra Prasad. Adhikari**

*Recipient of JSCE Study Tour Grant, 2004*

*Nepal Engineering Association*

Japan Society of Civil Engineers is increasingly gaining popularity due to its active participation in the promotion of civil engineering discipline in national as well as international arena.

Its creative and diverse activities in the field of civil engineering have enabled it to stand as the most active professional societies in the world. JSCE has just completed its 90<sup>th</sup> birthday and it is obvious that one will expect a lot from the pioneer institution like JSCE for the betterment of mankind in the years to come. Among the varieties of cooperation with other like minded institutions, 'Study Tour Grant' is one that comes under "International Scientific Exchange Fund" which is awarded to enhance mutual understanding and cooperation between JSCE and overseas societies of the civil engineering discipline. It was my good luck that I was awarded the highly reputed JSCE study tour grant for the year 2004. Indeed, it was a great honor to Nepal Engineers' Association and personally me. I am very much grateful to International Affairs Section, JSCE for its incredible support in designing a perfect study tour schedule considering my subject of interest, i.e. disaster related activities and organizations, on high level. I am quite hopeful that this award has at least paved a way for the amicable relationship between our two professional organizations.

I experienced the Study Tour extremely inspiring and fruitful as it offered an opportunity to observe Japanese technology. What I noticed minutely was the geo-physical features of Japan that is manifested by its dynamic tectonic activities. Japan has been involved in the war against natural disasters for hundreds of years in the name of floods, typhoons, earthquakes, landslides and other hazards. These sorts of disasters have compelled the Japanese people to cope up with such adverse situations. Moreover, high seismic activities, poor topography along with complicated soil conditions and high population density have coerced Japan to devise advanced civil engineering constructions to adapt suitably. Japan faced the most devastating earthquake of the century named Kobe earthquake, 1995. It is believed that if the disaster of the same scale would have occurred in other regions besides Japan, the loss would have been beyond our imagination.

I was highly impressed when I was taken to pay an observation visit to Kansai International Airport. It is indeed a revolutionary civil creation that is also recognized as one of the ten great civil engineering achievements of the 20<sup>th</sup> century for its

construction technologies as well as environmental conservation efforts and social and economical contributions. Regarding the Weighted Equivalent Continuous Perceived Noise Level (WECPNL), 70 are kept within the sea area, which meets the environmental standards of surrounding areas. Likewise, Kansai International Airport Land Development Co. Ltd. has been certified ISO 14001, an international standard for environmental management. Approximately 160,000 take-off and landings per year of the first phase airport is expected to reach a level of 230,000 take-off and landings after the completion of second phase construction.

The next remarkable feature of Japanese society that I noticed about is its fascinating culture, social norms and values. It was a great pleasure to meet so many interesting and kind people during my stay in Japan who really have a genuine mutual respect for others. The most attractive part that one can observe about the modern Japan is its research-oriented culture. It was found that majority of universities, construction companies, consultancies; government development organizations have their own research wings that enhance the standard of civil engineering and construction business in Japan. The civil engineering profession is getting more challenging in the context of Japan as they are directing their efforts towards above and under the water surface as they are lacking the ground space for civil constructions.

Despite our geographical distance, our two countries (Nepal and Japan) bear similar geographical features i.e. both falls under the active tectonic zones. Nepal also faced two devastating earthquakes in 1934 and 1988 that claimed tens of thousands of people and property worth millions. From the latter earthquake, Nepal has also paid a serious attention in mitigating the adverse impacts posed by such disasters. Besides earthquake, Nepalese are regularly suffered by floods, landslides and fires. Nepal can learn different techniques and technologies from Japan in this connection as Japan has been able to counter much of its ill-fates by its self developed technology and much more could be copied from its experience.

In short my Japan study tour was not only a unique and exclusive opportunity to get the direct view of Japanese development in the field of civil engineering and have industrious discussions with erudite colleagues but also to see and feel a beautiful country very closely and get familiar with its rich custom and culture.

## Shaking Grounds My Profession Life in Japan



**MINESAWA GEORGE VULPE**

*Research & Development Group  
Datamark Division*

*Hakusan Corporation*

The passion for civil engineering was “inherited” from my father, Prof A. Vulpe and from the hundreds of books on his study room shelves.

I was fortunate to join the “Gh. Asahi” Polytechnic Institute in Iasi, Romania. The school of Civil Engineering has a long tradition, excelling in the field of reinforced concrete structures and seismic engineering. The University had educated many generations of engineers, teaching them to fulfill their career dreams by trying daring projects. Their contribution is defining the landscape in every Romanian city as well in many other places in the world. During my studies I concentrated on the rehabilitation of RC structures deteriorated by seism. I also had the opportunity to work first hand with British design standards during the research project conducted at Sheffield Hallam Univ., UK.

The definitive moment of my career was the admission to the graduate program of School of Engineering at Yokohama National University. The three years spent in pursue of understanding and numerical modeling of concrete behavior were years of endeavor and elevated professional satisfaction. The exceptional role of Prof. Tatsuya Tsubaki in formatting me as an engineer I always gratefully acknowledged. Also it shall be mentioned the warm and dedicated atmosphere in the department with the professors being interested in the progress of all and each of the students. The results of the research were published in the dissertation thesis for the degree of Doctor in engineering and a number of journal papers including JSCE Journal of Structural Engineering. Of dear memory is my participation to the 1<sup>st</sup> JSCE Summer Symposium where I was honored with the Certificate of Excellent Presentation.

In my desire to work closer to the field of earthquake engineering, I joined Hakusan Corporation. The company is the major supplier of earthquake monitoring networks in Japan and is well known through its “Datamark” line of earthquake monitoring and telemetering instruments.

Here I could bring my contribution to several major projects for volcano and earthquake data analysis. The largest one was the multi-yearly project for the detection of crystal anomalies that precedes the earthquakes. The project envisioned by Principal Researcher Yamamoto of NIED (National Institute for Earth Science and Disaster Prevention) is contributing to the in-depth understanding of earthquakes and it opens the possibility of forecasting such events. Working together with the other engineers at Hakusan, I felt

the satisfaction of providing the right tools that the researchers need for the analysis of real-time data.

At 35, my near future plan includes my participation to a project for earthquake monitoring of S-E Asia via satellite network, to connect in real-time tens of observation points. This project will allow us to utilize the earthquake engineering experience of Japan and will lay the foundations of a project in which Japanese and international researchers will work together to prevent tragedies such the S-E Asian tsunami. Also, I am interested in finding new applications for the newly developed Datamark line of structural monitoring data-loggers. I hope that the years to come will be as interesting as they are now.

I am a great admirer of the Japanese culture and of the way of living and working in Japan. I shall mention how honored I feel to be granted the Japanese citizenship. It gives me a strong motivation to try to contribute more to the society as an engineer in the earthquake disaster prevention.

I shall acknowledge the Japanese Universities (YNU, TIT, TU) contribution to the education of graduate students from Romania and the financial support by the Ministry of Education of Japan, which provided us with the best environment for learning and research. Every one graduate had become a sincere admire and advocate of Japan in the world. I do hope to bring my modest contribution to build bridges between the nations and cultures.

### Publications

*ARTICLES (From Dec. 2004 to Mar. 2005)*

***Concrete Library No. 116:*** An Example of Design Calculations Based on JSCE Specifications for Concrete Structures -Reinforced Concrete Deck in Open-Piled Pier-: Examples of Maintenance Activities Based on JSCE Specifications for Concrete Structures (in Japanese), March 2005, Pages 192, Price: JPY2,520-, [ISBN4-8106-0517-5](#)

***Concrete Library No. 117:*** An Example of Design Calculations Based on JSCE Specifications for Concrete Structures-Highway Bridges-(in Japanese), March 2005, Pages 321, Price: JPY2,730-, [ISBN4-8106-0515-9](#)

***Concrete Library No. 118:*** An Example of Design Calculations Based on JSCE Specifications for Concrete Structures -Railway Constructions- (in Japanese), March 2005, Pages 321, Price: JPY2,730-, [ISBN4-8106-0515-9](#)

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