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RESTRUCTURING OF URBAN AREAS AND MODERNIZATION OF RURAL AREAS DURING POST-EARTHQUAKE RECONSTRUCTION

By

Takaaki Kato[1]

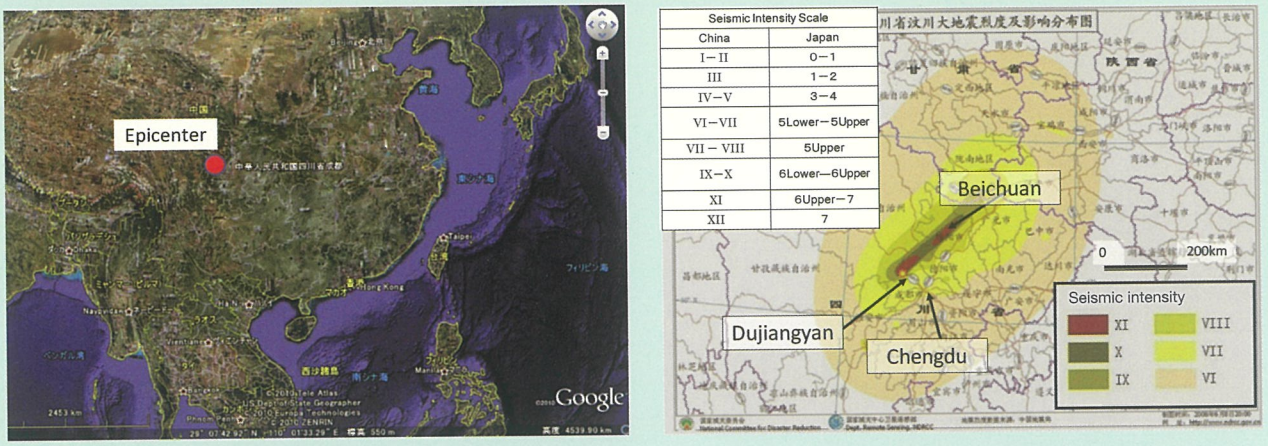
INTRODUCTION

The Wenchuan earthquake, which occurred on May 12, 2008 in Suchuan, China, was one of the largest disasters in the past hundred years. It measured 7.9 on the moment-magnitude scale (USGS) and is the largest class of inland earthquake. The epicenter was located in a mountain-ringed region and the focal area of the earthquake spanned three hundred kilometers in the north-south direction; therefore, a huge number of villages suffered from devastating damage, but urban areas (except Dujiangyan City and Qushan Town in Beichuan) avoided serious damage. The fatalities, however, were reported to be more than 90,000 and the number of collapsed buildings approximately 8 million. If the earthquake had hit at Chengdu City – the closest mega-city to the epicenter with a population of more than 10 million – the disaster could have been the worst in the world.

Presently, more than two years have passed since the earthquake occurred. During this period, the post-disaster reconstruction has been progressing at a steady but remarkable speed.

Post-disasterurbanreconstruction and rehabilitation have become important themes in the academic field of urban planning as a shift towards disaster preparedness after the Great Hanshin-Awaji earthquake disaster. The situation of post-disaster urban reconstruction

Post-disaster reconstruction plans shown at reconstruction exhibition in Chengdu City in October 2009



Location of Wenchuan Earthquake affected area and distribution of seismic intensity (http://www.ndrcc.gov.cn)

varies depending on specific factors of the affected areas such as urban planning institution, government system, and historical factors such as economic development. However, it is important to share the experiences and learn the lessons beyond these differences, as this can contribute to fruitful ideas and concepts for forth-coming post-disaster urban reconstruction in Japan.

This article reports the current situation of urban reconstruction, and introduces the results of investigations on the reconstruction plan of rural areas and Dujiangyan City.

PRESENT SITUATION OF AREA AFFECTED BY WENCHUAN EQ

The first step for urban reconstruction was early and dynamic. The reconstruction plan envisioned a rosy future, as demonstrated at an exhibition for urban reconstruction held at Chengdu City five months after the earthquake. Presently, this dream is being put into reality. Post-earthquake reconstruction has been implemented at an amazingly high pace, as the national government declared that reconstruction should be completed within three years, and it was finished a year ahead of schedule. Sixty kilometers of high-speed railway connecting Chengdu and Dujiangyan was also completed and started commercial service in May 2010.

Post-disaster reconstruction has two meanings – relief of the affected people and development for the coming future – and the balance between these two factors is said to be an important key for success in post-disaster reconstruction. Considering the images of reconstruction it would appear that Dujiangyan focused more on the latter. However, remarkable relief policies such as house-space exchange systems for the affected households were implemented in the background of the high-speed economic period, so we can understand that the government intended to balance these two factors.

The earthquake mainly hit the rural areas, except for Dujiangyan City, which has world heritage sites, and Qushan Town, which is the central town in Beichuan. During the planning process, housing supply for the affected households was given high priority. New houses were supplied by "new farm village construction" in rural areas and development of new urban areas in the cities. Urban redevelopment of the inner city was planned after settling.

FARM RECONSTRUCTION IN RURAL AREAS

Various kinds of "new village constructions" were implemented with the objectives of modernizing life and industrialization in China during the early 2000s. Sichuan has a large amount of farmers, so it experienced many trial models of "new village construction." The reconstruction in rural areas was based on the new village construction plans which were already in place.

The reconstruction was conducted at a high pace and large scale beyond what is possible in Japan. Planning and design drawings were given to thousands of villages in the affected areas and each village was reconstructed just as shown in the drawings. By March 2010, new life had already begun in many villages and, at the present, the situation in rural areas appears like an exhibition for new village models.

RECONSTRUCTION IN URBAN AREAS

Dujiangyan City developed new residential areas and restructured inner city areas, and residential apartments for affected households were nearly completed in May 2010. These houses, however, are not public housing for affected people but for general sale, following a Chinese-specific characteristic policy. The house-space exchange system was a new institution published by the government one month after the earthquake. All households which lost houses were to be given a new house of 70 square meters and, in exchange, they would give up their rights to their original house and land. Most people chose this institution and received new houses, except for a few people who rebuilt on the original site.

This institution aims to quickly handle disposition rights and accelerate housing acquisition for affected households, while also moving those households from the inner city to the suburbs. This strategy thus made redevelopment of the inner city easier and, in fact, the inner city redevelopment plan was published as soon as the affected households signed the contract to relocate. Currently, the inner city redevelopment is being fully carried out and, next year, Dujiangyan City will present a new, redeveloped face to the world.

Qushan Town in Beichuan, which was devastated by huge landslides, was moved to a flat site more than 20 kilometers away from its original location. The new town has been constructed but the original town will be preserved without change as a "museum of earthquake disaster," and will serve as an important tourism resource for the region.

CONCLUSION

Dynamic reconstruction has been performed in area affected by the Wenchuan earthquake. Perhaps it can be said that the disaster accelerated the modernization of the rural area and redevelopment of urban areas. This situation is in contrast to recent cases in Japan, where the focus is on the protection of individual lives and there is little consideration of future reconstruction of cities or regions. There is a large difference in conditions, as Japan is facing low economic growth and a decreasing population, whereas China is in a high economic growth period. Clearly, many more lessons may be learned from these reconstruction activities.

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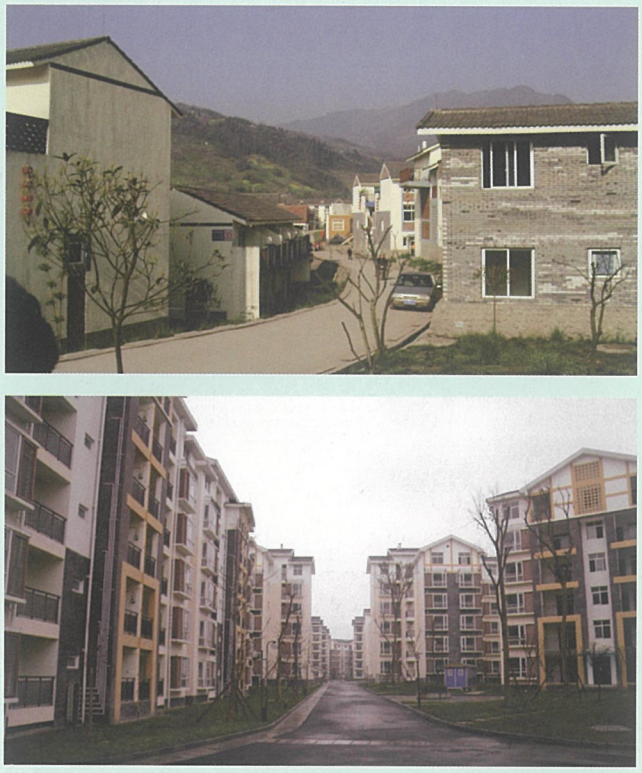


A typical reconstruction model for "new village construction" in Pengzhou (top) and Dujiangyan (bottom), March 2010

Original Qushan Town in Beichuan

Flooding of the Indus River in Pakistan

The Indus River is a major and historical river which runs through Pakistan, starting from the northern areas of Pakistan adjacent to China and India. Its main source is from the melting of snow and monsoon rains. In the hilly area where the Indus River starts, the temperature is below zero degrees most of the winter, and heavy snowfall occurs in these areas. In summer, this snow melts and, at the same time, monsoon rains occur. The melting of snow coupled with heavy rains produces severe flooding. The Indus River passes through the whole length of Pakistan and is joined by many other tributary rivers, such as the Kabul River, Jhelum River, Chenab River, Ravi River, and Sutlej River, etc. Ultimately, the Indus River discharges into the Arabian Sea at Tatta near Karachi.

In 2010, the melt was higher than the average due to wildfires in Russia and higher-than-average temperatures; at the same time, monsoons produced a heavier rainfall than the average yearly precipitation value, and NASA and the Pakistan Meteorological Department cautioned that the risk of flooding was high from July to September 2010.

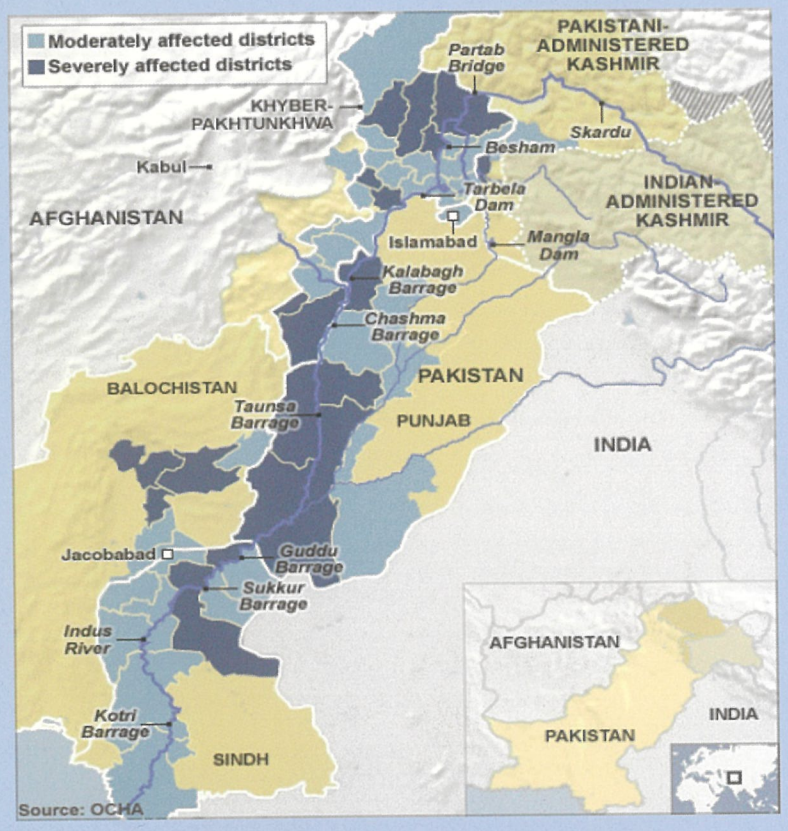
This water caused heavy flooding in northern Pakistan. Since these areas are hilly, the flood area was small but the water velocity was high, which led to the collapse of waterway structures such as bridges. Further downstream more water entered the Indus River from the tributaries and this accumulated water flooded the area between the Jhelum and the Indus Rivers. Discharge from other rivers into the Indus combined at Panjnad in Punjab and submerged the city of Sukkur. Areas along the 2,200 kilometer-length of the Indus were severely affected by the flood and most infrastructure such as bridges, roads, villages and recreational places on river banks were completely flushed.

Many reasons for this flooding have been pointed out:

- *In 2010, the monsoon rains were above average compared to previous years*
- *The melting of snow was above average due to wildfires in Russia*
- *Lack of water storage reservoirs*
- *Global warming*

The disaster caused by this flood was the severest in the history of Pakistan. Damage statistics include:

- *Flooding submerged 17 million acres of land, caused scarcity of food in the near future.*
- *Communications facilities were damaged due to flooding, and the damage estimated was 131 million US$.*
- *In most flood areas, many residential structures were damaged; in some areas, whole villages were destroyed.*
- *1,961 deaths and 2,995 injuries were reported; overall, more than 20 million people were affected.*



Areas in Pakistan affected by flooding of the Indus River (source: United Nations Office for the Coordination of Humanitarian Affairs)

(by Mr. S. Nazir, former Meguro Lab student)

2010 Darfield (Canterbury) Earthquake – initial report

The magnitude 7.1 Darfield (Canterbury) earthquake occurred at 4:35am 4 September 2010 (NZST) on the previously unknown Greendale fault. The surface rupture was a dextral strike-slip extending about 30km. The maximum surface ground movement was approximately 4.6m and the rupture zone was 30 to 300 m along the fault. The focus was approximately 11km deep and was located about 8km southeast of Darfield and about 37km west of the centre of New Zealand's second largest city, Christchurch. This area is considered to be in a zone of moderate seismicity. In the weeks subsequent to the main shock, a number of aftershocks rocked the region and caused strong localized shaking and further damage and liquefaction.

33 cm vertical offset observed at St. Paul's Church, Dallington (Cubrinovski et al.)

Damage to ceilings and contents (photo: Giacomo Paganotti)

Possibly one of the most significant effects of the earthquake was the extensive damage to lifelines and residential houses resulting from liquefaction and lateral spreading. This occurred primarily in areas close to major streams, rivers and wetlands throughout Christchurch as well as Kaiapoi, approximately 19km north of Christchurch. Ejection of silt causing a blanket over 200mm thick occurred in many regions. Lateral spreading of up to 3m caused large cracks and damaged houses severely. Houses settled unevenly, and many kilometres of water pipe and wastewater pipe were damaged. Empty sumps floated and roads had up to 0.5m vertical offsets.

Older residential houses suffered collapse of brick chimneys. Older houses often had vertical and horizontal cracks around the interior gypsum board. Many houses on good soil, especially those with lighter roofs built on a slab-on-grade foundation suffered no damage at all. A number of older unretrofitted unreinforced masonry (URM) structures in the central business district partially collapsed, and many unreinforced brick parapets collapsed onto the footpath below.

Newer multi-storey structures generally seemed to behave well. One structure made from concrete indicated beam plastic hinge rotations; in others, damage was evident in gravity columns or at the ends of simply supported precast beams. Most structures showed no distress, and the base-isolated hospital performed well.

Non-structural damage caused the majority of business interruption in both older and newer structures. This resulted from ceiling tiles falling, cracking in internal linings and contents falling to the ground. The University of Canterbury was closed for 2 weeks while ceiling tiles were replaced over some lecture theatres. Damage to water supply systems and leaked water from broken pipes led to falling wall tiles. Damage to tiles and carpet occurred at internal building separation joints.

While the Darfield Earthquake was similar in magnitude to the 2010 Mw 7.0 Haiti earthquake, there was no loss of life and only 2 injuries. One of the major reasons for this difference is the time of day the earthquake occurred. Nevertheless, it shows that a system of building construction controls, while never perfectly followed, can be very effective in limiting life and other losses.

The initial estimate of losses is NZ $4 billion. All residential houses are insured by the NZ Earthquake Commission to NZ $100,000 before private insurance takes over. These insurances are bringing a lot of money into the region and mitigate long term losses.

Acknowledgement

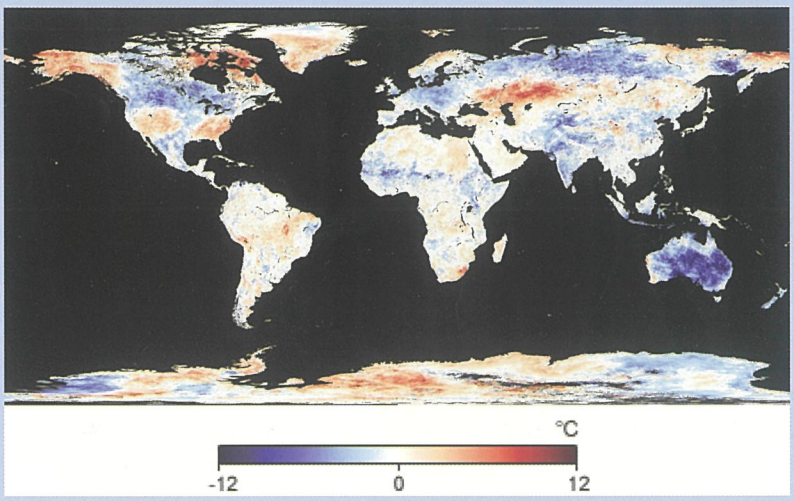
This report, was made possible by information provided by many researchers from around the world. Much of this is recorded in the Bulletin of the New Zealand Society for Earthquake Engineering, 43(4), Dec. 2010.

(by Prof. G. MacRae, University of Canterbury)

Project on Amazonian Carbon Dynamics (Part II)

Hundreds of forest fires were reported this summer in Russia. According to the Russian News and Information Agency, RIA Novosti (http://en.rian.ru), the fires killed over 50 people, burned out more than 2,000 homes, making thousands homeless, and affected 11 million hectares of crops. Pilots from neighboring countries, such as Ukraine, Belarus, Kazakhstan, Azerbaijan, Italy, France, and Turkey fought to smother the wildfires, while many other countries contributed rescue works. Russian Prime Minister Vladimir Putin said on 15 September, 2010, "Next year we will allocate 2.5 billion rubles (US$ 81 million) for forest rehabilitation and 5 billion rubles (US$ 161.5 million) for preventing wildfires." In line with Russian law, the Russian Emergencies Ministry is in charge of extinguishing fires only in residential areas, not in forests, so new amendments are necessary. In the end of September, satellite images started to show us a sequence of forest fires in east Siberia. The smokes from east Siberia sometimes cover northern Japan and we cannot stop watching the wildfires in Russia.

(by H. Sawada)



Land surface temperature anomaly in September 2010 (NASA)

RC67 Committee Activities

Recently in Japan, forest management and education using actual forests have been implemented as CSR (Corporate Social Responsibility) activities by many private companies. However, no one is sure whether these activities are environmentally-friendly or not, so from April 2009 ICUS started RC67 (Research Committee 67) with several private companies to evaluate the CSR activities currently being implemented.

Lecture on CSR activities in the forest

Forest visit

Over the last year, we have investigated more than 200 CSR reports in all types of industries and then reported on the re-forestation or educational activities using actual forests as CSR activities. These reports are available from ICUS in Japanese.

This year, we are investigating how CSR activities are implemented. As part of our investigation, we visited the forest owned by Mitsubishi Paper Mills Ltd. on August 3, 2010. Implemented CSR activities included forest education on the industrial method for producing paper and forest management methods such as thinning and re-forestation, and the importance of forest conservation. These activities are implemented for both the company employees and the community.

The purpose of CSR activity is to develop a younger generation who doesn't purchase products from illegal logging and who thinks sustainable logging and utilization of trees is importance. When the younger generation with these values grows up, it may help to reduce illegal logging – or so we hope.

(by T. Endo)

Development of a new-style simulation exercise

Disaster Reduction and Human Renovation Institute (DRI), established in Kobe City after the Kobe earthquake disaster, developed a Simulation Exercise for emergency response headquarters, Management by Objectives (SEMO), based on the result of several years of experience. The purpose of SEMO is to perform and learn how to manage an emergency response headquarters based on management by objectives.

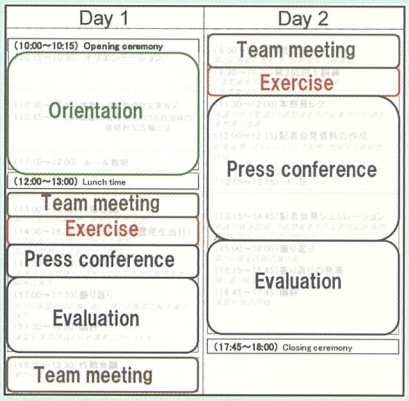
Management by objectives is one type of management method. DRI researchers adapted this method to the style of disaster response as an organization based on past disaster experiences. Management by objectives consists of three principles: "sharing the common operational picture with all concerned," "developing action plan with strong objectives," and "conducting strategic public relations."

The basic model of SEMO consists of five stages: "orientation," "team meeting," "exercise," "simulated press conference," and "evaluation." To design a real exercise, the basic model is customized based on the constrained conditions, the object of the exercise, and time for exercise. "Exercise" means the field participants practice management of emergency headquarters according to management by objectives.

The training course based on SEMO was conducted at DRI. The main target of this course was the disaster response officer of local government. Participants repeated the sequence "team meeting," "exercise," "simulated press conference," and "evaluation" twice after the first orientation. In the training course, participants learned the purpose of the course and rules of the exercise with concentration through orientation and team meeting. In the exercise, participants responded according to management by objectives based on this sequence. For example, participants shared common operational pictures such as writing a situation on a map. They organized action policies according to problems in the affected area for making action plan with objectives, and they conducted strategic public relations using maps with journalists. If some participants had not yet understood the purpose of this training course, then the exercise designers coached them. During the simulated press conference, participants announced their own action plan with objectives one week after the earthquake occurred to the journalists. After the simulated press conference, each group looked back at their response and made a presentation summarizing the content of their self-view according to the three principles of management by objectives. Finally, the roles of journalist and designers of exercise evaluated and commented on the response and presentation of the participants.

Through this training course, almost all participants answered that they benefited greatly from this training course. Some participants replied that they understood the importance of management by objectives and would try to apply SEMO to their disaster training course of the local government.

(by S. Kondo)



Training course curriculum

Sharing common operational picture

Strategic public relations

BNUS activities

Seminar on "Urban building fire disaster mitigation focusing on Bangladesh building fire issues"

Participants of fire disaster mitigation seminar

On August 17, 2010, BNUS and Bangladesh Fire Service and Civil Defense members organized a seminar on "Urban building fire disaster mitigation focusing on Bangladesh building fire issues." It was held at BUET, and Prof. M.A. Ansary of BNUS moderated the seminar. In this seminar, renowned fire expert Prof. Shinichi Sugahara of Tokyo University of Science and his visiting team presented their experiences on fire hazard.

An official of the Bangladesh Fire Service and Civil Defense also gave a lecture on "Practical observation of Bashundhara City fire to Nimtoli fire." In his lecture, he presented very practical facts and issues behind the fire hazard in Bangladesh. He also gave emphasis on the additional rules and regulations which should be incorporated in the upcoming National Building Code.

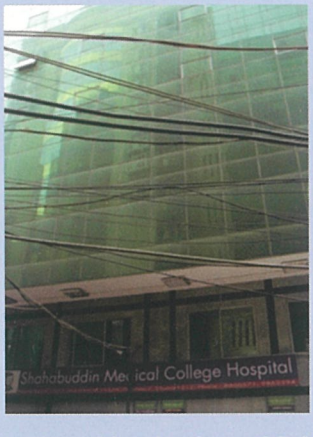
Dr. Sanjib Barua showed the "The academic observation of Bashundhara City fire to Nimtoli fire in light with Bangladesh Building Design Code," followed by Prof. Sugahara who delivered a lecture on "The simple and affordable fire protection for buildings in Bangladesh referring to experience in Japan." Finally, Dr. Hideki Yoshioka, research engineer of the Building Research Institute of Japan, presented a lecture on "The academic evaluation of Bashundhara City fire with respect to Japan building fire technology."

Evaluation of fire fighting system at high-rise buildings in Dhaka

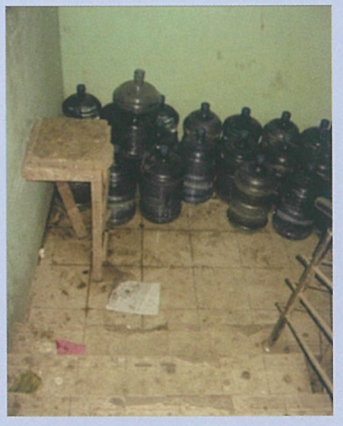
Recently some serious fire incidents have occurred and fire has affected many lives and properties. The main causes behind the large losses were inadequate firefighting equipment in buildings and lack of awareness about fire safety. These stimulate the researchers of BNUS to conduct detailed studies on fire fighting systems of high-rise buildings in Dhaka City. To get an idea about the fire fighting system in Dhaka, 2.5% of 2,150 high-rise buildings have been surveyed (with the assistance of the Bangladesh Fire Service and Civil Defense) from 9 zones (Dhaka City was divided into 12 zones total). Most of the survey buildings are taller than 8 stories, or high-rise.

In this study, researchers examined the existing condition of fire fighting systems including fire protection and detection systems, precautionary arrangement in and around high-rise buildings, occupants' awareness level and evacuation plan during fire break out and assessment of these systems with the Bangladesh National Building Code (BNBC) rules in terms of Total Score (TS).

(by M.A. Ansary, BNUS)



Educational institution with inadequate fire fighting system



Blocked emergency exit of commercial building

RNUS – ICUS's Regional Network Office for Urban Safety in Bangkok, Thailand

About six months have passed since I became Coordinator of the Regional Network Office for Urban Safety (RNUS), ICUS's regional research body in Bangkok, Thailand. In this article, I would like to describe my role and activities in Thailand as RNUS coordinator.

RNUS was founded in 2002 as a collaborative center jointly operated by the School of Engineering and Technology (SET), Asian Institute of Technology (AIT), and ICUS. RNUS's missions are: establishing regional research network for sharing information and technology in the field of urban safety engineering; conducting collaborative research with various research institutes, governmental and international organizations in Asia; and developing and disseminating innovative urban safety technology by considering sustainability and unique regional characteristics.

RNUS is now operated by three staff: a coordinator (myself) and a secretary, Ms. Aphisorn Suwannasuk, with supervision by Dr. Pennung Warnitchai, Associate Professor of SET, AIT. As coordinator, I have three main roles as follows.

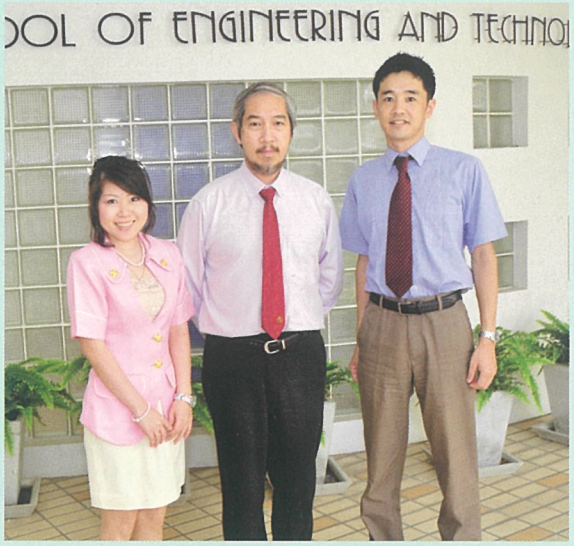
First: enhancing RNUS activities by organizing seminars and events inside AIT campus and in Bangkok. For example, this year at AIT we organized the RNUS seminar on Fiber Reinforced Concrete in June, and the 3rd International Joint Student Seminar on Civil Infrastructures in July. In November we will organize a Symposium on Geospatial Technologies for Disaster and Environmental Management, and the 4th IIS Thailand Alumni party in downtown Bangkok.

Second: providing regular lectures at SET, AIT as a visiting faculty. I will teach a course on "EIA (environmental impact assessment) and GIS (geographic information systems) for water resource management" at the Water Engineering and Management (WEM) field of study at SET, AIT, in the semester starting from 2011 January. In addition, I have been supervising three Master course students from Afghanistan, Myanmar, and Pakistan at AIT's WEM and Disaster Preparedness and Mitigation Management program.

Third: conducting my own research on sustainable watershed management in the Mekong River basin. Luckily, AIT is the best location for conducting my research because of the convenient access to the Mekong region.

For further details on RNUS activities, please visit our recently-renewed website. Also, you are welcome to stop by the RNUS office when you have the opportunity to come to Bangkok.

(by A. Kawasaki)



RNUS staff picture, from left to right: Ms. Aphisorn, Dr. Pennung, Dr. Kawasaki

RNUS website: <http://www.set.ait.ac.th/rnus/>

3rd Joint Student Seminar on Civil Infrastructures at AIT

The 3rd Joint Student Seminar on Civil Infrastructures was held at the Asian Institute of Technology (AIT) in Bangkok, Thailand, on July 29 and 30.

The participants joined two main activities. First, the presentation session was held at AIT on July 29. In this session, three professors gave us lectures and then 16 students presented their research works in various fields such as transportation, geotechnical, concrete structure, disaster mitigation, and applied remote sensing engineering.

The next day, a field trip to Pattaya was organized by RNUS. We visited the Petroleum Authority of Thailand (PTT), Sea Turtle Conservation Center, Thai Island and Natural History Museum and Pattaya Floating Market.

This seminar provided us with many great experiences. First, the presentation session was very exciting and we could enjoy lots of good discussion on our research topics and exchange communication with different students and researchers. Second, the field tour was an unforgettable trip. We had many new experiences with the other participants. In particular, a lecture by Mr. Chatchai Subin, staff at PTT, gave us a good understanding of the history of gas transmission and its network in Thailand. Finally, the best part of this seminar was making many new friends with the civil infrastructure students from Thailand, Korea, and Bangladesh. We really appreciate the work of the organizers, Dr. Tanaka, Dr. Kawasaki, Dr. Park, and Ms. Aphisorn in AIT, and also the participation of all members who joined the seminar. We hope next year's seminar will also be very good.

(by H. Kishi, PhD student, Sawada-Takeuchi laboratory)

Group photo of seminar participants

Severe heat wave in Japan

Japan experienced an extremely hot summer in 2010. From June to September, the monthly mean temperatures were higher than normal (based on 1971-2000 average). The difference in Japan between the monthly mean temperatures and normal was higher than the global difference. In particular, the monthly mean temperature in August was the highest recorded in 113 years, since statistics began being taken 1898.

In Tokyo in August, the monthly mean temperature was 29.6°C (+2.9°C above normal); 30 days with maximum temperatures over 30°C (+8.6 days above normal); 6 days with maximum temperatures over 35°C (+4.8 days above normal); and there were 30 days with minimum temperature higher than 25°C.

Under this severe heat, many people suffered from heat stroke. In the four months from June to September, 56,119 people were taken to hospital by ambulance for heat stroke in Japan, and 171 people died and 1,848 people were in serious condition. Senior citizens over the age of 65 made up 46.3% of those hospital visitors.

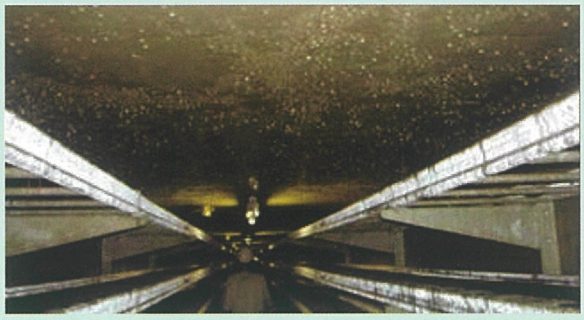
Overall, residents in Japan were unable to sleep well at night and had to endure the heavy heat during the day.

(by S. Kondo)

RC62 Committee Activities

ICUS Research Committee on the performance degradation due to ageing infrastructure (RC62) has conducted quantitative evaluation of the performance of concrete and soil structures towards evaluating the performance of an entire structure from the ground up. This committee is targeted at real structures and, for infrastructure facilities, there are many different types of structures. This particular study looked at a type of underground reinforced concrete box culvert structure. In order to determine the condition of the structure, the committee members visited an actual structure on-site and conducted a general inspection to check the deformation and cracking and diagnose repair and reinforcement based on the degree of deterioration. However, at this time there is no evaluation method for change of performance due to ground factors, so in the future the committee needs to organize the information necessary for this evaluation using inspection results of actual structures.

(by K. Hayakawa, Tokyu Construction Corporation)



View inside box culvert structure

Observed deterioration inside box culvert structure

ICUS Activities

- *Prof. K. Meguro traveled to Jakarta, Indonesia, from Sept. 25 to Oct. 4 for a survey on the development of PP-band method.*
- *Dr. S. Tanaka traveled to Lisbon, Portugal, from July 10 to 15 for the World Conference on Transportation Research 2010. He then also visited Bangkok, Thailand, for the Joint Student Seminar on Civil Infrastructure.*
- *Dr. T. Kato traveled to Suchuan, China, for an investigation on the post-disaster reconstruction after the 2008 Wenchuan Earthquake from Aug. 13 to 18.*

Awards

- Dr. T. Endo received the Best Paper Award at the International Society for Photogrammetry and Remote Sensing (ISPRS) Commission VIII on Aug. 12.
- Mr. K. Makinodan, master course student in Ohara Laboratory, received the Best Presentation Award from the Japan Society for Natural Disaster Science on Sept. 17.
- Mr. K. Hayakawa, researcher in Y. Kato Laboratory, received the Excellent Presentation Prize at the Japan Concrete Institute Annual Conference on July 8.
- Dr. M. Henry, ICUS project researcher, Mr. K. Makinodan, master student in Ohara Laboratory, and Mr. T. Takaishi, master student in Meguro Laboratory, all received the Excellent Presentation Prize at the Japan Society of Civil Engineers Annual Conference from Sept. 1-3.

Editor's Note

During the period covered by this volume, many disasters and accidents happened in the world. Some of them were reported in our newsletter, such as flooding of the Indus River in Pakistan, the Canterbury Earthquake, forest fires in Russia, and a severe heat wave in Japan.

The most notable accident for me, however, was the Copiapó mining accident. On August 5, 2010, a cave-in occurred at the San José copper-gold mine in the Atacama Desert near Copiapó, Chile. The accident left 33 men trapped 700 meters below ground. All trapped men were rescued on October 13, 2010, after 69 days of rescue works. We could see many miracles such as none of the men died – even though it was such a large-scale accident – and the period to rescue was far shorter than expected. We could also see many advanced technologies for supporting their life underground and for the rescue works, and it taught us the importance of technological development. However, "hope" is an extremely important factor for surviving under such severe conditions (Prof. Meguro wrote about "hope," or "nozomi" in Japanese, in ICUS Newsletter Vol. 9 No. 4).

In the main article of this newsletter, Prof. Takaaki Kato of ICUS reported on reconstruction of urban and rural after the 2008 Wenchuan Earthquake. A good reconstruction plan helps to keep the victims' "hope" alive for a long time.

(by Y.Kato)

Announcement of USMCA 2011 (Chiangmai, Thailand)

We would like to announce that the 10th International Symposium on New Technologies for Urban Safety of Mega Cities in Asia (USMCA2011) will be held in Chiangmai, Thailand on October 12-14, 2011. Further information will be available on the ICUS and RNUS websites as details of the symposium are decided.

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