Saitama University

Newsletter

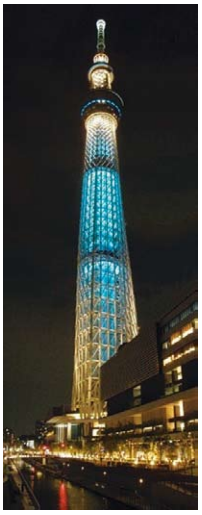
International Graduate Program on
Civil & Environmental Engineering

Issue No. 17 2012

After the magnitude 9.0 earthquake that hit Japan on the 11th of March, 2011, construction of the Tokyo Sky Tree, the tallest tower in the world, was delayed. The 634 meters Tokyo Sky Tree in Sumida, Tokyo, was finally opened to the public on the 22nd of May, 2012. The Tokyo Sky Tree is a broadcast tower built on reclaimed land in the Japanese capital. According to engineers, the Sky Tree will be able to withstand strong earthquakes.

The Tokyo Sky Tree is the world's second-tallest structure after the 828 meters Burj Khalifa in Dubai. The tower is 34 meters taller than the Canton Tower in Guangzhou, China and nearly twice the height of its predecessor, Tokyo Tower (333 meters). Tokyo Tower no longer provides complete digital terrestrial television broadcasting coverage because it is surrounded by many high-rise buildings. Therefore, the main purpose of the Tokyo Sky Tree is to relay television and radio broadcast signals. However, the Tokyo Sky Tree is not only for digital broadcasting, but also, has other facilities such as a restaurant and observation tower.

The design of the Tokyo Sky Tree was first published on the 24th of November, 2006, based on three concepts: the fusion of futuristic design and the traditional beauty of Japan, a catalyst for the revitalization of the city, and as a contribution to disaster prevention. The construction of the tower began in July, 2008. The Sky Tree's built on reclaimed land and much of the area was reclaimed from Tokyo Bay long ago. The tower has seismic proofing, including a central shaft made of reinforced concrete. The column (Shinbashira) acts as a stationary pendulum to counterbalance seismic waves, greatly reducing the sway in the surrounding structure. From 125 meters to 375 meters the main pillar is attached to the tower frame with oil dampers, which can absorb 50-percent of the energy from an earthquake. According to designers, the Sky Tree can withstand an 8.0-magnitude earthquake and possibly stronger. The exterior lattice is painted a color officially called Sky Tree White. This is an original color based on a bluish white traditional Japanese color called aijiro. Also, the tower is illuminated using LED lights. The construction company, Obayashi, which recently announced plans for a space elevator to start services by 2050, completed the construction of the Sky Tree on the 29th of February, 2012. Some 580,000 workers were engaged in the construction. The Sky Tree, which cost approximately 65 billion Yen (US$806 million), will provide services for digital radio and television transmission as well as an aquarium, a theater, academic institutes, and regional heating and cooling facilities. Two observatories are open to the public, at 350 meters and 450 meters. Even though construction of the Tokyo Sky Tree was delayed by two months due to the March 2011 earthquake, it now stands proudly as evidence of the courage of the Japanese people.



The Tokyo Sky Tree

Greetings from the Head of the Foreign Student Office

A magnitude 9.0 earthquake, followed by a tsunami and radiation trepidation from Fukushima nuclear power plant, attacked the east of Japan on the 11th of March, 2011. However, nearly a year after, Japan is successfully recovering from the March 2011 catastrophe. One great piece of evidence of Japanese recovery is the world's tallest radio tower called Tokyo Sky Tree, with a height of 634m, which was opened to the public on the 22nd of May, 2012. Natural disasters often remind us of the importance of advanced engineering knowledge when we meet calamities. The International Graduate Program on Civil and Environmental Engineering has a strong dedication to contributing to the improvements of knowledge of infrastructure and environment in dealing with natural disasters by educating young engineers and researchers from various countries.

I am very happy to say that many of our graduates are involved in civil and environmental development projects, both locally and globally. Some of our alumni have become successful academics, engineers, and researchers in countries other than their own, such as Australia, Japan, the UK, and the USA. We are happy to keep in touch with our alumni and provide them with technical support. I wish all of you happiness and good health.

Professor Hiroshi Mutsuyoshi
Head of FSO

Graduation Time Congratulations

September 2011

Mr. T. M. W. R. M. B. Samarakoon from Sri Lanka was awarded his D.Eng. degree under the guidance of Prof. Tanaka. His doctoral thesis was on the "Development of effective vegetation bioshield for tsunami mitigation and the estimation of potential damages to vegetation due to flooding".

Ms. Sajeewani Rajika Amarasinghe from Sri Lanka was awarded her Ph.D. degree under the guidance of Prof. K. Watanabe. Her doctoral thesis was on the "Estimation of unsaturated hydraulic properties of porous media using evaporation measurement techniques".

Mr. Rama Mohan Pokhrel from Nepal was awarded his Ph.D. degree under the guidance of Prof. Kuwano. His doctoral thesis was on the "GIS approach for zoning spatial variation of liquefaction potential in sedimentary deposits".

Ms. Anu Sharma from Nepal was awarded her Ph.D. degree under the guidance of Prof. Komatsu. Her doctoral thesis was on the "Mobilization, transport and deposition of suspended soil-colloids and their role in contaminant transport through saturated porous media".

Mr. Praneeth Nishadi Wickramarachchi from Sri Lanka was awarded his D.Eng. degree under the guidance of Associate Prof. Kawamoto. His doctoral thesis was on the "Gas transport parameters in landfill final cover soils: Development of predictive models and decision-making flow chart based on soil physical properties".

Mr. Senanayaka Vidhanage Thilanka Janaka Perera from Sri Lanka was awarded his Ph.D. degree under the guidance of Prof. Mutsuyoshi. His doctoral thesis was on the "Shear behavior of RC members using high-strength concrete".

Mr. Dewan Abdus Sabur from Bangladesh was awarded his M.Eng. degree under the guidance of Prof. H. Kubota. His master's thesis was on the "Performance evaluation of a bus priority lane as a countermeasure for congestion and modal shifting".

Mr. Mahendra Bahadur Baniya from Nepal was awarded his M.Eng. degree under the guidance of Prof. Asaeda. His master's thesis was on the "Development of mathematical models for *Phragmites japonica* and mangroves and its application".

Mr. Deepak Chhetri from Nepal was awarded his M.Eng. degree under the

Research Profile Series (16)

Design and Planning Laboratory

A doctoral study in the Urban Transportation Group

One of the main tasks of urban planners is to create a safe and livable environment for people to live in. However, despite many efforts, the safety of city neighborhoods often suffers from vehicles running at excessive speeds on local streets, particularly those with a 30 km/h speed limit. Vehicular speeding may cause traffic safety problems and threaten the livability of residential areas. To make public driving more calm and safe, it is necessary to find out the speed-influencing factors from both street features and drivers' psychological characteristics. In an attempt to address this issue, and after extensive discussions with my supervisor, Prof. Hisashi Kubota in the Urban Transportation Group, Design and Planning Laboratory, I decided to engage in a research study entitled "Speeding mechanisms on urban residential streets with a 30 km/h speed limit".

In the first part of my study, a vehicle speed survey was conducted on a variety of street sections. During the survey, individual free-flow speeds were recorded continuously by an advanced STALKER ATS radar gun connected to a laptop in the field. Based on the collected data, a simultaneous regression approach was applied for the first time to model both the maximum speed and the speed at the entrance to the unsignalized intersection of each street section. In addition, several profile-speed models have been further developed to fully explain driving speeds under the influence of roadway and roadside characteristics. The developed speed models incorporate various street design factors which provide helpful information for urban planners and street designers to cope with speeding issues that are very common on most residential streets in Japan.

A vehicle speed survey in the field

The second part of the study deeply explored any psychological and personality factors that may influence drivers' speed choice. A well-known theory in psychology, namely the theory of planned behavior (TPB) was employed as a frame of reference to address this research question. Vehicle speeds were observed individually on two residential street sections, and then a questionnaire was sent to the corresponding drivers. The result based on the sample of 376 Japanese respondents not only successfully explain speeding behavior under a theoretical framework, but also theoretically contribute to the improvement of previously-developed TPB models. In addition, there were several implications made regarding speeding intervention, and traffic-safety related policies, based on the new findings from this part of the study.

In the next step, my research will examine the impact of traffic conditions, especially that of excessive speed on both perceived traffic safety (from the viewpoint of residents) and actual safety (represented by historical crash data). Based on that knowledge, it is hoped that a comprehensive framework for addressing the speeding issue and related traffic safety problems can be obtained in order to positively contribute to the development of safer and more livable neighborhoods for residents in the future.

Lastly, after more than a year and a half of studying at Saitama University, I am very pleased to say that my decision to come here for further study was correct, as the university has an excellent environment for anyone who wants to experience and challenge themselves with world-class advanced research. I do hope that all of our foreign students here can benefit from this before gaining success in future careers.

guidance of Prof. Kuwano. His master's thesis was on the "Variation of water content within compacted bentonite through swell process under saline condition".

March 2012

Mr. Madurap Perumage Chamila Madusanka Gunasekara from Sri Lanka was awarded his M.Eng. degree under the guidance of Prof. Mutsuyoshi. His master's thesis was on the "Development of high durable concrete using ion-exchange resin admixture against chloride attack".

Mr. H. M. Rasel from Bangladesh was awarded his M.Eng. degree under the guidance of Prof. Tanaka. His master's thesis was on the "An experimental study of reducing bed shear stress on the downstream slope of embankment with vegetative roughness".

Mr. Sagar Kattel from Nepal was awarded his M.Eng. degree under the guidance of Prof. K. Watanabe. His master's thesis was on the "Analysis of highly fluctuated pore pressure change by using soft computing techniques".

Mr. Mazhar Nazir from Pakistan was awarded his M.Eng. degree under the guidance of Prof. Komatsu. His master's thesis was on the "The controls of heavy metal mobility in soil: Sorption on soil and colloidal solutions and colloid-facilitated transport".

Mr. Nguyen Trung Thanh from Vietnam was awarded his M.Eng. degree under the guidance of Assistant Prof. Tachibana. His master's thesis was on the "Effects of vacuum pressure on consolidation and shear behavior of normally consolidated clay".

Mr. Hafiz Muhammad Awais Rashid from Pakistan was awarded his M.Eng. degree under the guidance of Associate Prof. Kawamoto. His master's thesis was on the "Effect of single-species salt solutions on solute transport and geotechnical index properties in bentonite ".

Mr. Kamal Raj Shrestha from Nepal was awarded his M.Eng. degree under the guidance of Prof. Tsunokawa. His master's thesis was on the "Appropriate technology for developing countries: A comparative study of Nepalese and Japanese pavement designs for low volume roads".

Mr. Rangga Adiprima Sudisman from Indonesia was awarded his M.Eng. degree under the guidance of Associate Prof. Osada. His master's thesis was on the "Experimental study on fluid flow containing microbubbles through porous sandstone and sand grains".

Mr. Tran The Anh from Vietnam was awarded his M.Eng. degree under the guidance of Prof. Tanaka. His master's thesis was on the "Experimental study on sediment transport by tsunami over land flow".

Mr. Gayan Indika Wanasinghe from Sri Lanka was awarded his M.Eng. degree under the guidance of Associate Prof. Suzuki. His master's thesis was on the "Investigation of the gradation effect on peak friction angle under different confining pressures using 3D-DEM".

Welcome New Students

October 2011


B. G. N. Sewwandi
Sri Lanka, Doctor


I. M. T. M. Illankoon
Sri Lanka, Doctor


La Trung Vinh
Vietnam, Doctor


Nguyen Phuong Dac
Vietnam, Doctor


Nguyen Tung Hoang
Vietnam, Doctor


Tariq Khawaja Adeel
Pakistan, Doctor


Haque Mohammad Najmol
Bangladesh, Master


Sabai Oo
Myanmar, Master


Rajib Mohammad
Bangladesh, Master

April 2012


Abdul Rahimi Abdul Rahman
Malaysia, Master


Nguyen Thi Hai Duong
Vietnam, Master


Iasmin Hasina
Bangladesh, Master


Asif Arshid
Pakistan, Master


N. M. Chandana Kumara
Sri Lanka, Master


Kamal Kumar Adhikari
Nepal, Master


Kamran Hussain Syed
Pakistan, Master


Logagowry Karunananthasivam
Sri Lanka, Master


Mahadev Thapa
Nepal, Master


Dizon Margarita Pelango
Philippines, Master


Md. Shafquat Hasan
Bangladesh, Master


Naba Raj Shrestha
Nepal, Master


Nirmala Kumuduni Dharmarathne
Sri Lanka, Master


Sushmita Hossain
Bangladesh, Master


Thanh Tung Pham
Vietnam, Master


G. G. T. Chandrathilake
Sri Lanka, Master

News

New Appointments

Dr. Aya Kojima was appointed as an assistant professor of Design and Planning Laboratory in April 2012. Her research interests are transportation planning and consensus building.

Faculty on Move

Dr. Djoen San Santoso of Design and Planning Laboratory resigned from Saitama University in November 2011. At present he is working as an assistant professor at the Asian Institute of Technology (AIT) in Thailand.

Prof. Yasushi Sasaki of Environmental and Hydraulic Eng. Laboratory retired from Saitama University in March 2012 and became an emeritus professor.

Prof. Toshiko Komatsu of Soil Mechanics Laboratory retired from Saitama University in March 2012. She continues to work on her research project as a special research professor in the same laboratory.

Dr. K. Sakamoto of Design and Planning Laboratory resigned from Saitama University in March 2012. He is currently working for a company in his related field.

Awards

Dr. Rabin Tulandhar (doctoral graduate in 2006) who is working as a lecturer in James Cook University was awarded Australian Award for University Teaching in the category of Citation for Outstanding Contributions to Student Learning 2011 by Australian Learning and Teaching Council.

Dr. Sohail Ahmed Rai (doctoral graduate in 2006) was awarded Australia Day Achievement Award for doing good modelling work in relation to development of draft Basin Plan for the Murray Darling Basin in January, 2012.

Dr. Shingo Asamoto was awarded the best research of the year by a young researcher from Japan Concrete Institute, fundamental study on volumetric change mechanism of cementitious materials based on pore structure, 2012.

Mr. Rama Mohan Pokhrel received the best paper presentation award at 13th JSCE International Summer Symposium 2011, for the paper "Geostatistical approach for zoning spatial variation of liquefaction potential in sedimentary deposits".

Mr. N. A. K. Nandasena was awarded a full fellowship from the organizing committee of PIANC COPEDEC VIII to attend and present the paper "Numerical modelling of boulder transport by tsunami: The model predictions and its sensitivity" in the 8th International Conference on coastal and port engineering in developing countries (2012), IIT Madras, India.

Research towards the 2011 Great East Japan tsunami

The Coastal and Tsunami Engineering research group (CTE) in Hydraulic Engineering Laboratory has started research related to the 2011 Japan tsunami. Mr. N. A. K. Nandasena, Emeritus Prof. Yasushi Sasaki, and Prof. Norio Tanaka recently published their findings in the journal of Coastal Engineering, Elsevier (Impact factor 1.6). The title of their paper is "Modeling field observations of the 2011 Great East Japan tsunami: Efficacy of artificial and natural structures on tsunami mitigation".

Message from Alumni

I graduated from Saitama University in March, 2010, with a Master's degree in Environmental Science and Civil Engineering. It was also a great privilege for me to be a recipient of the ADB-JSP scholarship during my two-year-study period. My academic experiences at Saitama University, a premiere research and teaching institute, had been a fulfilling one. I had an invaluable learning experience and it has helped me to expand and strengthen my education. Apart from a range of courses to choose from, I also had the opportunity to conduct research with some of the best professors and researchers in the field of Civil and Environmental Engineering. Moreover, in addition to my professional enhancement, studying in Japan has enabled me to learn Nihongo, and also, to make new friends and associate with people from different backgrounds and exchange our cultural and traditional values.

Currently, I am working for the Ministry of Works and Human Settlement in Bhutan who is responsible for providing physical infrastructures within the country. With my enhanced academic background in Civil and Environmental Engineering, I hope to develop physical infrastructures that serve the development of my country without posing any threat to the pristine environment. Today, I am glad that my education at Saitama University has enabled me to contribute to the development of my country and make a positive difference in my own small ways.

Best Wishes,

Tshering Chhoden
Bhutan

Message from the Foreign Student Office

We are pleased to inform you that we have issued the prospectus 2012, which is updated once every three years. The FSO home page has also been updated by Dr. Janaka, who is a FSO member and postdoctoral researcher in structural materials lab. Please enjoy the 2012 prospectus and our new FSO home page.

As mentioned on the front page, Tokyo Sky Tree has been open since May 22, 2012. It is officially recognized as the tallest broadcasting tower in the world. It will become a very popular spot among people this year.

By the way, we have good news about our department. Two professors, Prof. Yamaguchi and Prof. Mutsuyoshi have become the vice president of Saitama University. They are playing an important role in the management of Saitama University.

We hope that all of you are working actively and are in good health. We are looking forward to hearing from you anytime.

The Foreign Student Office (FSO)
Department of Civil & Environmental Engineering
Saitama University 255 Shimo-Okubo
Sakura-ku, Saitama-shi, Saitama
Japan 338-8570
Phone/Fax: +81-48-858-3555
Email: fso@sun.civil.saitama-u.ac.jp
http://www.civil.saitama-u.ac.jp/fso/

Editorial Board for this issue
Chief Editor: Prof. H. Mutsuyoshi
Design and Layout: K. Nakazawa

Contributors:
Dr. Perera S. V. Thilanka Janaka
Ms. Tshering Chhoden
Mr. Do Duy Dinh