



International Center for Urban Safety Engineering (ICUS)

Annual Report -2006-

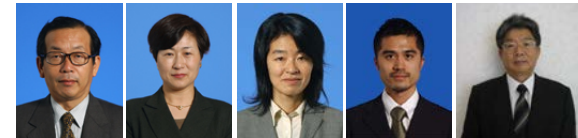


Staff Members (ICUS)

(2006)

Sustainable Engineering Division

- Prof. Taketo UOMOTO (Director and Professor)
- Prof. Reiko AMANO (Visiting Professor)
- Dr. Reiko KUWANO (Associate Professor)
- Dr. Yoshitaka KATO (Associate Professor)
- Mr. Toshio TOKUDA (Visiting Researcher)



Urban Safety and Disaster Mitigation Division

- Prof. Kimiro MEGURO (Professor)
- Prof. Shogo HAYASHI (Visiting Professor) ~June 30,2006
- Dr. Miho YOSHIMURA (Research Associate)



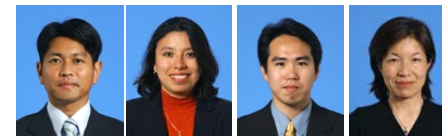
Infrastructure Information Dynamics Division

- Dr. Ryozo OOKA (Associate Professor)
- Dr. Taikan OKI (Associate Professor) ~October 30,2006
- Dr. Sanae Miyazaki (Visiting Associate Professor) July 1,2006~
- Dr. Junichi SUSAKI (Assistant Professor) ~February 28,2007
- Dr. Shinji TANAKA (Assistant Professor) March 1,2007~
- Dr. Takahiro ENDO (Research Associate)



Researcher and Secretary

- Dr. Hisashi KANADA (Project Research Associate)
- Dr. Paola MAYORCA (Project Research Associate)
- Dr. Raktipong SAHAMITMONKOL (Project Researcher)
- Ms. Eiko YOSHIMOTO (Secretary)



Staff Members (ICUS)

(2006)



(As of Dec. 2006)

Research Topics of ICUS

(2006)

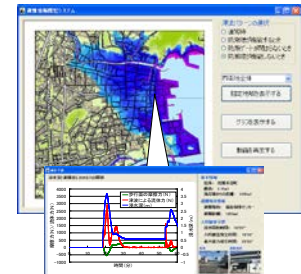
Sustainable Engineering Division

- Deterioration mechanism of existing structures
- Nondestructive testing technology for evaluation of deterioration
- Retrofitting and strengthening of structures considering deterioration mechanism
- Standard specification for design, construction and maintenance of structures
- Maintenance and management plan
- Long-term behavior of buried structures and their maintenance/renewal
- Evaluation of soundness of earth structures



Urban Safety and Disaster Mitigation Division

- Urban safety and disaster mitigation strategy
- Efficient and economic retrofitting method for masonry structures considering local availability of materials and workmanship
- Development of a platform system for sharing disaster information
- Development of integrated information system for total disaster management



Infrastructure Information Dynamics Division

- Remote sensing/geographic information system
- Spatial data analysis
- Urban warming/comprehensive environmental assessment
- Simulation of urban fire
- Development of water hazard warning system
- Intelligence Infrastructure for Urban Safety Management





Research Topics (2006)

- Sustainable Engineering -

- Evaluation of long-term durability performance of concrete using epoxy-coated reinforcing steel bars
- Influence of various factors on deterioration of repaired concrete structures
- Development of monitoring system for existing concrete bridges
- Application of near-infrared (NIR) spectroscopy for inspection of concrete structures
- Development of recycle concrete using low quality recycle aggregates
- Development of inspection and diagnosis software for tunnel structures
- Study on fracture mechanics of steel bar due to ASR
- Evaluation of concrete quality using multiple NDT
- Management of concrete structures' maintenance based on risk evaluation
- Modeling of concrete structures' deterioration considering non-homogeneous media
- Evaluation of environmental impacts on concrete structures using computational fluid dynamics (CFD)
- Long-term earth pressure acting on buried pipes
- Cave in on road due to old sewer pipes
- Water screen fire disaster prevention system



Research Topics (2006)

- Urban Safety and Disaster Mitigation -

- Development of integrated information system for total disaster management
- Development of next generation disaster management manual for implementation of efficient disaster countermeasures
- Development of platform system for sharing disaster information
- Quick estimation and monitoring of earthquake damage using power supply changes
- System for promotion of retrofitting of low earthquake resistant structures
- Numerical simulation of total collapse behavior of structures
- Efficient and economic retrofitting method for masonry structures considering local availability of materials and workmanship
- Development of human evacuation model for tsunami disaster mitigation
- Study of functions of emergency base hospitals during earthquakes and their disaster management manual system



Research Topics (2006)

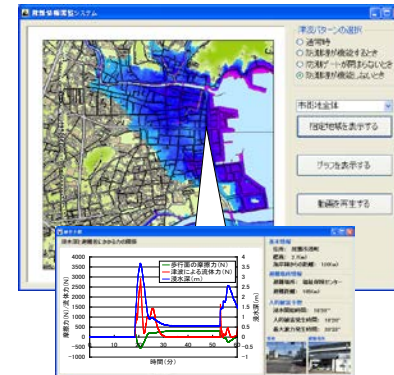
- Infrastructure Information Dynamics -

- Monitoring of the environment in East Asia using satellite data (TERRA/MODIS), (forest fires, extraction of 3D surface feature, albedo, etc.)
- 3D city modeling using data from airborne laser scanning and digital camera
- Estimation of precipitable water distribution over land using NOAA/AVHRR Data and GPS-derived precipitable
- Relaxation effect of urban greening on urban heat island
- Urban fire simulation in aid of computational fluid dynamics (CFD) method
- Prediction of air pollution by wind tunnel experiment and numerical simulation
- Study on the mechanism of CO₂ emission in urban region
- Development of real time river discharge forecasting system
- Development of a system to enhance the accuracy of low-cost GPS observations
- Study on spatial distribution of disaster logistics by GIS
- Development of agricultural drought monitoring system from satellite and meteorological data
- Concept making of disaster intelligence infrastructure
- Bridge health monitoring system

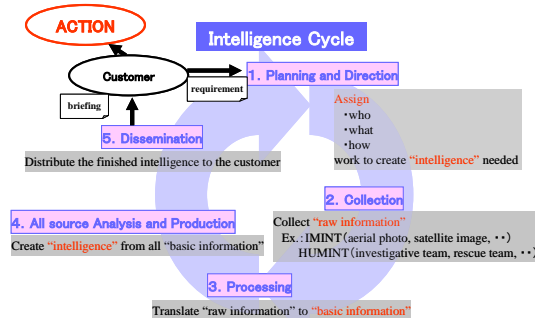
Research and Investigation (2006)



Bridge Health Monitoring System



Mapping System for Assessment of
Evacuation Conditions



Concept of Disaster Intelligent
Infrastructure

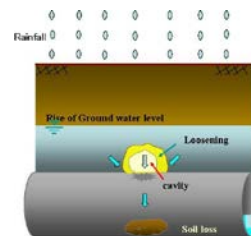
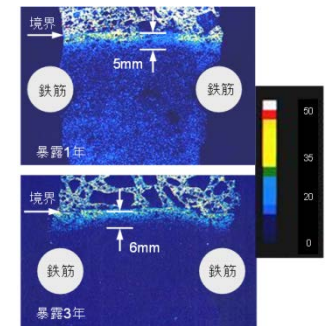


Image of Sagging Road by
Collapsed Sewage Pipe

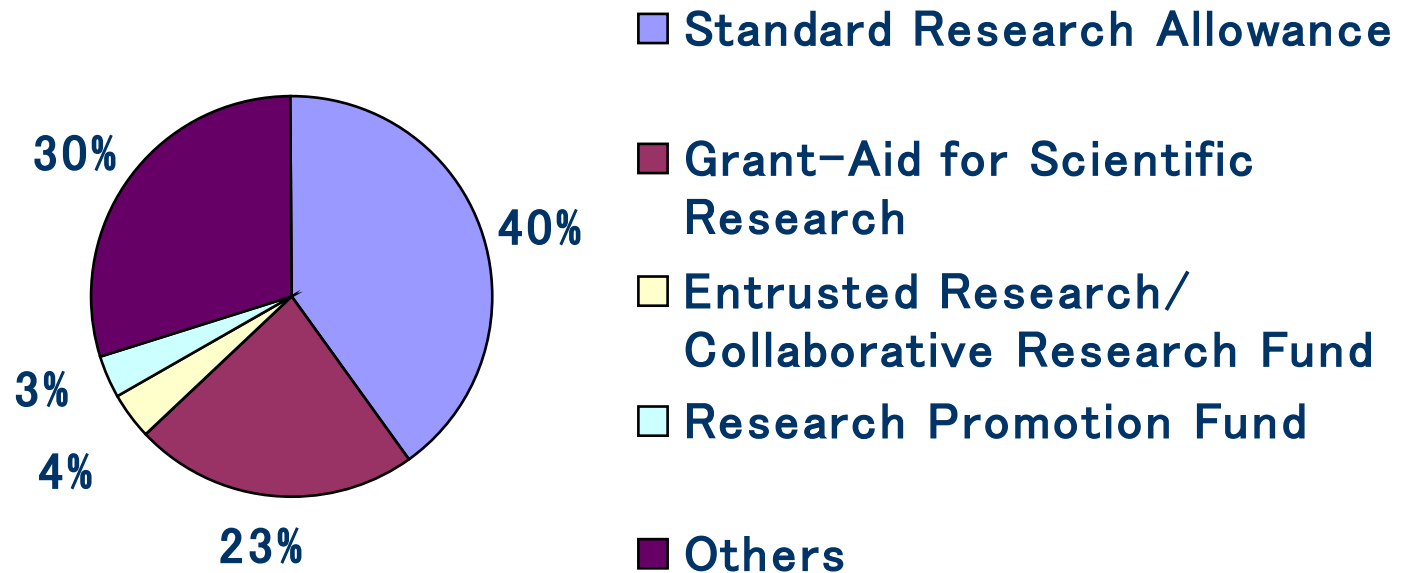


Mechanism of
Degradation Process



Budget of ICUS

(2006)





Projects (2006)

- Sustainable Engineering -

Grant-in-Aid for Scientific Research

- Utilization of Multimedia Hazard Map for Disaster Prevention in Megacities through Optimum Urban Planning

Research Promotion Fund

- Investigation on Current Situation of Existing FA Concrete Structures in Thailand
- Evaluation of Long-term Durability Performance of Concrete Tunnel in the Bosphorus Strait
- Development of Guidelines for Diagnosis of Deteriorated Concrete Structures by Multi-spectral Method
- Case Study on Seismic Diagnosis and Earthquake Retrofit for Disaster Prevention Officers of Local Governments - no.2 -

Collaborative Research

- Development of Advanced Maintenance and Monitoring System for Concrete Bridges
- Development of Inspection and Diagnosis Software
- Study on the Evaluation of Repair Materials for Concrete Structures
- Development of Disaster Prevention Manual for the University of Tokyo Hospital

Others

- Investigation of Deteriorated Concrete Bridges in Bangkok
- Study on the trenchless renewal for deteriorated buried pipe



Projects (2006)

- Urban Safety and Disaster Mitigation-

Grant-in-Aid for Scientific Research

- Development of Evaluation Method of Regional Multi-Hazard Vulnerability
- Development of an Integrated Assessment Program for the Sustainability, Safety and Security of Urban Underground Infrastructure
- Development of Technical and Social Systems for Promotion of Seismic Retrofitting of Weak Structures
- Seismic Performance of Unreinforced Concrete Block Infilled Reinforced Concrete Buildings
- Comprehensive Strategy for Tsunami Disaster Management with a Focus on a Sustainable Framework for Long Term Tsunami Monitoring and its Application to Developing Countries.

Research Promotion Fund

- Special Coordination Funds for Promoting Science and Technology (RR2002)
Special Project for Urban Earthquake Disaster Mitigation
 - “Study for Integrated Earthquake Disaster Reduction Countermeasures,
 - Pre-Event Measures”
 - “Development of Integrated Numerical Simulator for Tsunami Disaster in Coastal Region”
- Disaster Reduction by Proper Crisis Management of Information Technology

Cooperative Research

- Collapse Analysis of Ballast Track



Projects (2006)

- Urban Safety and Disaster Mitigation-

Others

- Development of Disaster Management Manual System for Tokyo University Hospital Considering its Functions as Emergency Base Hospital
- Research Project with the Japan Bank for International Cooperation
“Proposal of Retrofitting Technique of Masonry Structures with PP-band Meshes”
- Analysis of the Behavior of Pregnant Women in Disaster Situations



Projects (2006)

- Infrastructure Information Dynamics-

Grant-Aid for Scientific Research

- Development of Network for Monitoring Natural Disasters in Asia using Satellite Remote Sensing (JST: Japan Science and Technology Agency)
- Modeling Global Hydrological Cycles and World Water Resources Coupled with Human Activities (JST: Japan Science and Technology Agency)
- Development of Optimum Design Method for Outdoor Environment using Multi-objective Genetic Algorithm
- Life Cycle Value Evaluation of Sustainable Building by Contingent Valuation Method (CVM)
- Detection of agricultural drought in paddy fields using NDVI from MODIS data - A case study in Buriram Province, Thailand – (Ministry of Foreign Affairs, Japan)
- A simplified model for retrieving bare soil moisture from radar scattering coefficients - Application for drought assessment in Buriram province, Thailand (Ministry of Foreign Affairs, Japan)

Research Promotion Fund

- The Application and Development of Geothermal Air-Conditioning System using Ground Heat Exchanger and Utilizing Building Foundation Pile in Urban Area (NEDO: New Energy and Industrial Technology Development Organization)
- A Pilot Study of Effective and Integrated Water Resources Management Based on a Global Earth Observation System (MEXT: Ministry of Education, Culture, Sports, Science and Technology)

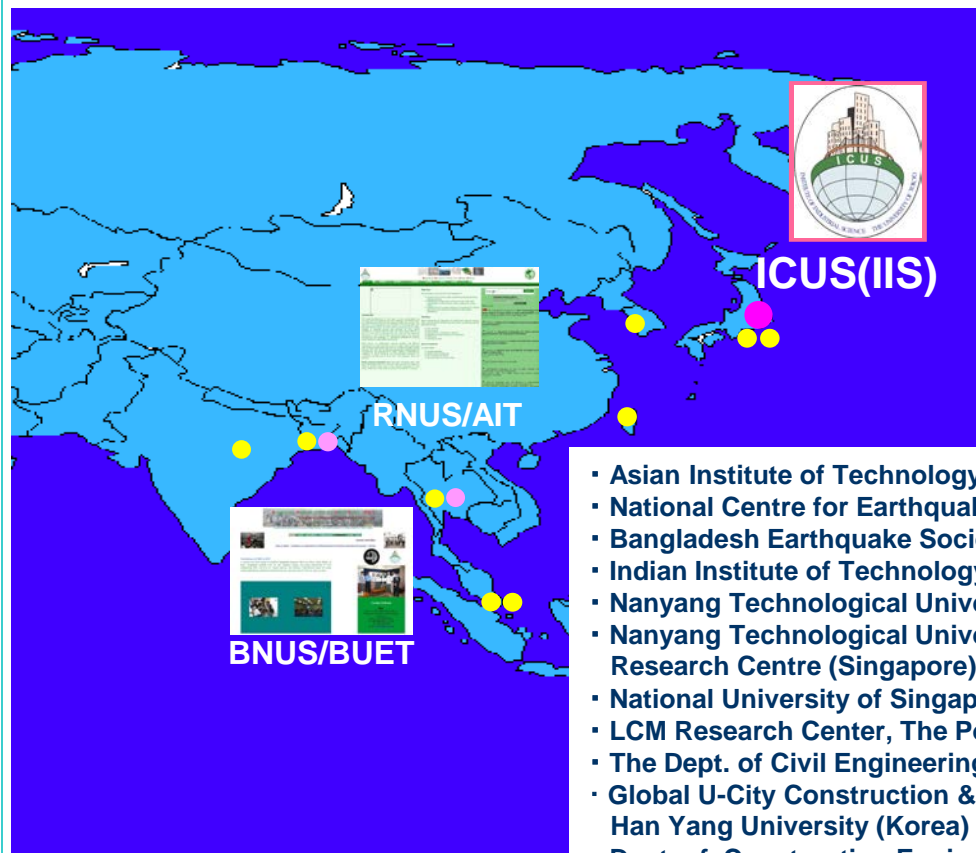
Collaborative Research

- Basic Analytical Research of the Factors Influencing Outdoor Thermal Environment at Residential Scale – Mechanism Clarification of New Phenomenon and Application Development
- Study on the Influence of Air-Conditioning Systems and Distributed Local Energy Supply Systems on Heat-Island Phenomenon
- Integrated Water Management System for Future – Basin Aspect –



ICUS Global Network

(2006)



Memorandum of Understanding and Joint Research Network

- Asian Institute of Technology (Thailand)
- National Centre for Earthquake Engineering (Bangladesh)
- Bangladesh Earthquake Society (Bangladesh)
- Indian Institute of Technology, Kanpur (India)
- Nanyang Technological University, College of Engineering (Singapore)
- Nanyang Technological University, Protective Technology Research Centre (Singapore)
- National University of Singapore, Dept. of Civil Engineering (Singapore)
- LCM Research Center, The Port and Airport Research Institute (Japan)
- The Dept. of Civil Engineering, Shibaura Institute of Technology (Japan)
- Global U-City Construction & Information, Hub Dept. of Civil Engineering, Han Yang University (Korea)
- Dept. of Construction Engineering, National Kaohsiung First University of Science and Technology (Chinese Taipei)



International Activities (RNUS) (2006)

Regional Network Office for Urban Safety (RNUS), AIT, Thailand

Projects

- Preliminary Inspection on Short-Span Traffic Bridges in Bangkok Metropolitan Area, Thailand
- Condition Evaluation and Maintenance Planning for Traffic Bridges in Marine Environment (Eastern Thailand), Thailand
- A Collaborative Research on the Application of Expansive Concrete to Control Cracking of Concrete Structure in Thailand, Thailand

Seminars

- RNUS Seminar – August 9, 2006
Associate Prof. Shinichi Miyazato, Associate Prof. Mitsuharu Tokunaga, Mr. Yoichi Hiraishi, and Mr. Daishin Hanaoka (Kanazawa Institute of Technology)
- RNUS Seminar– November 13, 2006
Associate Prof. Toshiharu Kishi (IIS, The University of Tokyo) and Dr. Yasushi Tanaka (Nagaoka University of Technology)
- RNUS Seminar – February 1, 2007
Dr. Wonsiri Punurai (Mahidol University, Thailand)



International Activities (BNUS) (2006)

Bangladesh Network Office for Urban Safety (BNUS), BUET, Bangladesh

Projects

- Evaluation of concrete bridges and flyovers of Dhaka city
- Non-destructive testing of Bangladeshi buildings
- School earthquake safety program

Workshops

- Evaluation of Concrete Structures, June 14-15, 2006
- First Aid VI, VII, VIII, IX, November 30 - December 2, 2006
- Search and Rescue (SAR) training program, December 10-12, 2006

Seminars

- The seminar organized by the Engineering Staff College Bangladesh and the Bangladesh Earthquake Society – June 15, 2006
Prof. Kimiro Meguro (ICUS)
- Seminar on Importance of Maintenance of Existing Concrete Structures - December 5, 2006
Prof. Taketo Uomoto (ICUS)
- Seminar on Recent Development of Earthquake Related Activities in Japan - December 6, 2006
Prof. Kimiro Meguro (ICUS)



Activities

(2006)

Domestic

- SEIKEN Open House (June 1-3, 2006) IIS
- 11th ICUS Open Lecture (September 25, 2006) IIS
“Risk management of hygiene for architectural equipments”
- Chiba Experimental Laboratory Open House
(November 10, 2006) Chiba
- Different Research Fields' Results (6 times/Year) Tokyo

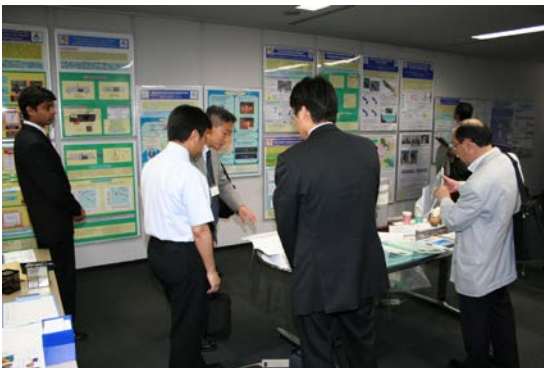
International

- The 5th International Symposium on “New Technologies for Urban Safety of Mega Cities in Asia”, November 16-17, 2006, Cape Panwa Hotel, Phuket, Thailand

Activities

(2006)

“SEIKEN Open House” June 1-3, 2007 “The 11th ICUS Open Lecture” September 25, 2007



Activities

(2006)

**The 5th International Symposium on “New Technologies for Urban Safety of Mega Cities in Asia”,
November 16-17, 2006, Cape Panwa Hotel, Phuket, Thailand**



Participants : 88 persons (Japanese : 29 persons)

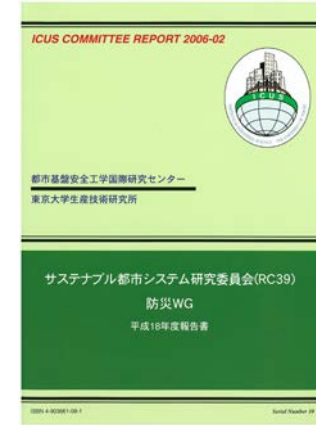
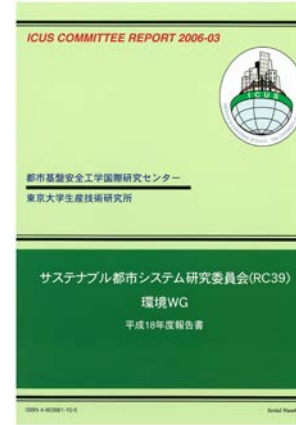
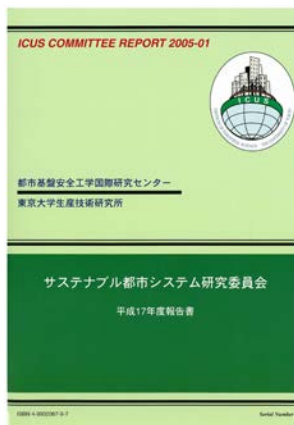
RC39 (2006)

– Industry-university joint research–

Three working groups have been organized for conducting the activities of Research Committee 39 (RC39).

The themes of these working groups are as follows;

- Aging Infrastructure Management
- Disaster Mitigation
- Environment



ICUS Research Committee Reports



Publications

(2006)

ICUS News Letter

ICUS Report

Volume 6 Number 1- 4

2006- 01 - 09

“Compilation of ICUS Newsletters ”

“ICUS ACTIVITY REPORT ICUS Summarizing the Activity of Quinquennium”

“Report on the 10th ICUS Open Lecture”

“Proceedings of the Fifth International Symposium on New Technologies for Urban Safety of Mega Cities in Asia ”

“Report on Application of Fly Ash as Concrete Ingredient in Thailand and Japan”

“Report on Mapping of Soil Moisture in Paddy Fields from Temporal Jers-1/Sar Images for Drought Assessment in Buriram Province, Thailand”

“Evaluation of The Seismic Vulnerability of Bangladeshi Buildings Using Non-Destructive Testing”

“Report on the 11th ICUS Open Lecture”

“Utilization of Multimedia Hazard Map for Disaster Prevention in Mega Cities through Optimum Urban Planning”

ICUS Research Committee Report 2006-01- 03

SEIKEN SYMPOSIUM 48

The Proceeding of the 7th Workshop “Comparative Study on Urban Earthquake Disaster Management” Annual Report

ICUS Newsletters were sent to over 1,500 network members from about 150 countries, including, foreign embassies, consultants, researchers, engineers and practitioners. The newsletters can be downloaded from “<http://icus.iis.u-tokyo.ac.jp/>” free of charge.



Research Papers

(2006)

	Sustainable Engineering Division	Urban Safety and Disaster Mitigation Division	Infrastructure Information Dynamics Division
IIS Bi-monthly Research Report (SEISAN KENKYU)	17	5	8
Books/Translated Books	0	9	0
Reviewed Papers/Journal Papers	22	13	37
Conference Papers (International)	15	10	35
Conference Papers (Domestic)	19	16	54
Survey Reports	1	1	0
Others	4	8	1
Total	78	62	135



ICUS Activities Recognized (2006)

Prof. Kimiro MEGURO	May, 2006	Excellent paper award	JAEE	Meguro Lab.
Dr. Yoshitaka KATO	May, 2006	Encouraging prize	JCI	Kato Lab.
Dr. Hisashi KANADA	May, 2006	Encouraging prize	JCI	ICUS
Dr. Hisashi KANADA	July, 2006	Excellent paper award	JCI	ICUS
Mr. Pakawat SANCHAROEN	July, 2006	Excellent paper award	JCI	Uomoto Lab.
Dr. Hisashi KANADA	November, 2006	Best Concrete Research	2nd Asian Concrete Federation	ICUS
Dr. Raktipong SAHAMITMONKOL	November, 2006	Best Concrete Research	2nd Asian Concrete Federation	ICUS
Dr. Kawin WORAKANCHANA	November, 2006	Excellent Young Researcher	USMCA 2006	Meguro Lab.

JAEE: Japan Association for Earthquake Engineering

JCI: Japan Concrete Institute

**International Center
for Urban Safety Engineering (ICUS)**

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