

# JSBM 2013

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**The 9<sup>th</sup> Japan-Korea Joint Seminar  
on Bridge Maintenance**

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Hakuchō Bridge

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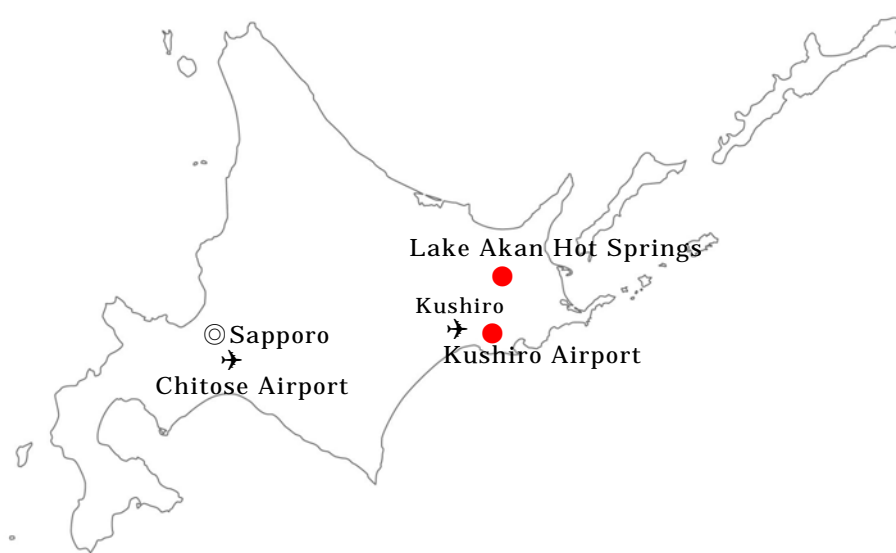
**July 24-27, 2013  
Kushiro, Hokkaido, Japan**

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# Preface

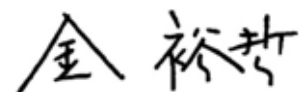
The JSBM (Japan-Korea Joint Seminar on Bridge Maintenance) has been held since 1992 in Japan or Korea. Both countries have worried about deterioration of bridge structures and their maintenance under similar design methods, traffic conditions and environmental surroundings. The knowledge and information about bridge maintenance have been exchanged among the scientists, researchers and engineers in universities, governmental offices and civil engineering companies of both countries. A lot of meaningful results have been obtained. I believe that this joint seminar has gotten steady recognition from both countries.

From 1992 to 2007, this joint seminar has been held every three years at Japan or Korea. When the 6<sup>th</sup> Seminar was held in Korea, it was decided that the seminar would be held every two years meeting from the needs of the times. In this time, the 9<sup>th</sup> Seminar was prepared by Japan side. The venue was selected at Kushiro in Hokkaido.

First of all, I, Japanese side chairman, would like to say my sincere thanks for all authors, participants and helpful stuffs. A total of 30 papers are presented in this time. The themes and problems of bridge maintenance are very wide. So, for solving them new technology are appearing in this seminar. I believe that we will obtain a lot of fruitful results through discussing and exchanging the information of the recent development and new technologies in both countries.

On behalf of the organizing committee I would like to express my appreciation to all of attendances. I also wish express my sincere thanks to colleague and stuffs concerned with preparation and management of this seminar.

July 24, 2013



KIM You-Chul, Dr.  
Chairman of JSBM 2013  
Professor Emeritus Osaka University

# Committee

## Chair parson

KIM, Y-C.	Osaka University, Japan
CHOI, D.H.	Hanyang University, Korea

## Advisory Committee

MATSUI, S.	Osaka Institute of Technology, Japan
CHANG, S.P.	Sungkyunkwan University, Korea
SIM, J.	Hanyang University, Korea

## Secretary of Seminar

LEE, H.S.	Osaka University, Japan
OH, H.	Jinju National University, Korea
MOON, D.	Kyungsung University, Korea

## Organizing Committee

KAMADA, T.	Osaka University, Japan
INOUE, S.	Osaka Institute of Technology, Japan
HAYASHIKAWA, T.	Hokkaido University, Japan
OKADA, S.	CERI, Public Works Research Institute, Japan
OONISHI, H.	Iwate University, Japan
HIGASHIYAMA, H.	Kinki University, Japan
SAKINO, Y.	Kinki University, Japan
HIROHATA, M.	Nagoya University, Japan
MITAMURA H.	Office Sun Bridge, Japan

Organized by  
Osaka University  
Calamity Science Institute  
Assoc. for Civil Eng. Tech. of Hokkaido

# Schedule

## July 24, 2013

Welcome reception 19:00 ~ 21:00

## July 25, 2013

Opening ceremony 9:00 ~ 9:30

Joint seminar 9:45 ~ 17:30

Photo 17:30 ~ 18:00

Banquet 19:00 ~ 21:00

## July 26, 2013

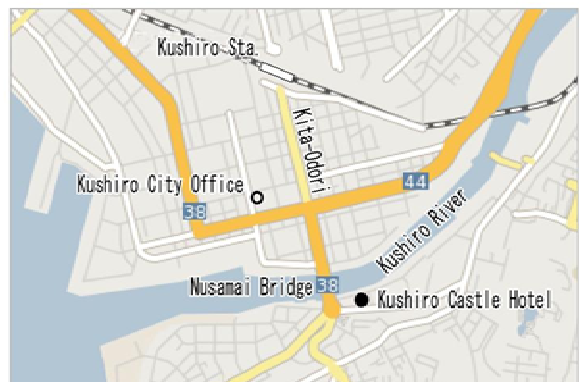
Joint seminar 9:45 ~ 12:00

Open discussion 14:00 ~ 17:00

Closing ceremony 17:00 ~

## July 27, 2013

Post-conference Tour 8:30 ~



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# Program of Joint Seminar

## July 25

9:00 ~ 9:30	Opening ceremony
9:45 ~ 12:00	Session I
12:00 ~ 13:00	Lunch
13:00 ~ 15:00	Session II
15:00 ~ 15:30	Coffee break
15:30 ~ 17:30	Session III

## July 26

9:45 ~ 12:00	Session IV
12:00 ~ 14:00	Lunch
14:00 ~ 17:00	Open discussion
17:00 ~	Closing ceremony

## Details of Sessions

<b>Session I (July 25      9:45 ~12:00)</b>	
<b>Session Chair (KAMADA Toshiro, ANN Ki-Yong)</b>	
<b>9:45 ~ 10:00</b>	<b>Detection of Through-Deck-Type Fatigue Cracks in Steel Bridges by Self-reference Lock-in Thermography</b> SAKAGAMI Takahide (Kobe University) IZUMI Yui (University of Shiga Prefecture) KONISHI Takuyo (Metropolitan Expressway)
<b>10:00 ~ 10:15</b>	<b>Effect of the Lateral Rigidity of Main Cable on Tension Loss of Wrapping Wire</b> KIM Jung-in, CHOI Jin-hyuk, LEE Minjae, YOON Jahgeol (Daelim Industrial Co.)
<b>10:15 ~ 10:30</b>	<b>Fatigue Durability Inspection for Steel-Concrete Composite Deck by Infrared Thermography Technology</b> MIZUNO Hiroshi (Kawada Industries Inc.) IZUMI Yui (University of Shiga Prefecture) SAKAGAMI Takahide (Kobe University) OKADA Shinya (CERI for Cold Region) MATSUI Shigeyuki (Osaka Institute of Technology)
<b>10:30 ~ 10:45</b>	<b>Measure to Repair Fatigue Cracks on a Deck Arch Bridge</b> KIDA Hideto, TAKEMURA Hiroshi (SHO-BOND Corporation) MATSUI Shigeyuki (Osaka Institute of Technology) SUGIURA Kunitomo (Kyoto University,) FURUICHI Toru (Ijikanrikobo Co., Ltd.)
<b>10:45 ~ 11:00</b>	<b>Break</b>
<b>11:00 ~ 11:15</b>	<b>Prediction by FSM for Corrosion Damage of Steel Members Covered by Concrete</b> HIROHATA Mikihiro (Nagoya University) KIM You-Chul, JIN Chunfeng (Osaka University)
<b>11:15 ~ 11:30</b>	<b>Dynamic Analysis for the WPC Girder Bridge</b> BANG Choonseok, KIM Leehyeon, AHN Sungkwon (Korea Railroad Research Institute)
<b>11:30 ~ 11:45</b>	<b>Recent Developments and Application of High-Strength PPWS in Korea</b> YOO Hoon, SEO Ju-Won, LEE Sung-Hyung, PARK Young-Ho (Hyundai Engineering & Construction)
<b>11:45 ~ 12:00</b>	<b>Estimation of Rating Factors for Cable-Stayed Bridges Using Load and Resistant Factor Rating</b> CHOI Dong-Ho, GWON Sun-Gil (Hanyang University) YOO Hoon (Hyundai Engineering and Construction)

**Session II (July 25 13:00 ~ 15:00)****Session Chair (ZI Goang-Seup, HIROHATA Mikihiro)**

<b>13:00 ~ 13:15</b>	<b>Preparation of Influence Surface for Three Dimensional Structures by Employing Muller-Braslau`S Theorem into 3D FEM Analysis and Some Fatigue Examinations</b> FURUICHI Toru, SAKO Hirotsugu (Ijikanrikobo Co., Ltd) MATSUI Shigeyuki (Osaka Institute of Technology)
<b>13:15 ~ 13:30</b>	<b>Overview of Urban Maglev Structures in Korea</b> KIM Leehyeon, BANG Choonseok (Korea Railroad Research Institute)
<b>13:30 ~ 13:45</b>	<b>Piezoelectric Energy Harvesting for Low Frequency Using Vibration of Hanger Cables</b> GWON Sun-Gil, JUNG Jin-Woo, CHOI Dong-Ho (Hanyang University) PARK Yeon-Soo (Chonnam National University)
<b>13:45 ~ 14:00</b>	<b>Nondestructive Testing Method of Internal Defects in Concrete Using Flexural Vibrations and Their Low Frequency Spectral Amplitudes</b> HATTORI Shinichi, KAMADA Toshiro (Osaka University)
<b>14:00 ~ 14:15</b>	Break
<b>14:15 ~ 14:30</b>	<b>Development of MgO Base Ceramic Cement for Rapid Setting and Hardening of Concrete</b> SIM Jongsung, LEE Hyeon Gi, ANN Ki Yong (Hanyang University)
<b>14:30 ~ 14:45</b>	<b>Introduction of Plan of New Bridges Considered with Maintenance</b> SHITARA Nobuo, TANAKA Gou (Chodai Co., Ltd.)
<b>14:45 ~ 15:00</b>	<b>Deterioration and Retrofit Method by Freezing and Thawing in Existing Bridge</b> CHA Cheoljun, LEE Seogoo (KISTEC)
<b>15:00 ~ 15:30</b>	Coffee Break



**Session III (July 25 15:30 ~ 17:30)****Session Chair (HAYASHIKAWA Toshiro, LEE Seung-Tae)**

<b>15:30 ~ 15:45</b>	<b>Residual Stress Generated by Repair Welding of Orthotropic Steel Deck</b> KIM You-Chul, JIN Chunfeng, SHIMIZU Kosumo (Osaka University) HIROHATA Mikihiro (Nagoya University) AOKI Yasumoto (Hanshin Expressway Co., Ltd.) TAKAMURA Yoshiyuki (Hanshin Expressway Eng. Co., Ltd.)
<b>15:45 ~ 16:00</b>	<b>Assessment of Temperature Behavior for a Suspension Bridge Using GNSS Data</b> JUNG Jinwoo, MOON Daejoong, NAM Soonsung (EJtech Co., Ltd.) RO Sangkon, PARK Jihyun (United Nations Global Compact)
<b>16:00 ~ 16:15</b>	<b>Heat Conduction Analysis of Steel-Concrete Composite Decks Under Freeze-Thaw Environment</b> MATSUMOTO Takashi, HAYASHIKAWA Toshiro, HE Xingwen (Hokkaido University) OMOTE Shinya (CERI for Cold Regions) KUBO Keigo (Japan Bridge Association)
<b>16:15 ~ 16:30</b>	<b>Performance Test for Low Electric Power Typed and MEMS Based Seismometer</b> JUNG Jinwoo, MOON Daejoong, NAM Soonsung (EJtech Co., Ltd.) LEE Byeungleul, LEE Seungjae (Korea University) CHOI Dongho ( Hanyang University)
<b>16:30 ~ 16:45</b>	<b>Break</b>
<b>16:45 ~ 17:00</b>	<b>Predicting Flexural Behavior of Ultra-High-Performance Fiber-Reinforced Concrete Based on Uniaxial Tensile Behavior</b> NGUYEN Duy Liem, KIM Dong Joo (Sejong University)
<b>17:00 ~ 17:15</b>	<b>Experimental Comparison for Fatigue Shearing Strength of Highly Functional Polyurethane Bridge Deck Waterproofing System by Rotating Shearing Test and Normal European Style Shearing Test</b> HAZAMA Akinori (Hachinohe Institute of Technology) MITAMURA Hiroshi (Office Sun Bridge) SAWAMATSU Toshikazu (CERI for Cold Region) MIURA Koji (Japan Construction Method and Machinery Institute) ODE Tsutomu (Mitsubishi Plastics INFRATEC) MATSUI Shigeyuki (Osaka Institute of Technology)
<b>17:15 ~ 17:30</b>	<b>Study on Biaxial Flexural Performance Evaluation of Fiber-Reinforced Cementitious Composites</b> ZI Goangseup, KIM Jihwan (Korea University)

<b>Session IV (July 26 9:45 ~ 12:00)</b>	
<b>Session Chair (KIM Dong Joo, Okada Shinya)</b>	
<b>9:45 ~ 10:00</b>	<b>Resistance of CAC Mortars Under Severe Acid Attack</b> LEE Seungtae (Kunsan National University)
<b>10:00 ~ 10:15</b>	<b>Investigation for Brittle Fracture Possibility of Several Overage Steels in Cold Region</b> KIM You-Chul (Osaka University) HIROHATA Mikihiro (Nagoya University) MATSUNAWA Hidenori (Hokkaido University) OMOTE Shinya (CERI for Cold Region) MITAMURA Hiroshi (Office Sun Bridge)
<b>10:15 ~ 10:30</b>	<b>Evaluation of Applicability of Concrete Containing Waste Glass Sludge in Bridge and Road Exposed to Deicing Salts</b> LEE Hyeonggi, JUNG Hwanbong (Hanyang University) SIM Jaewon (Highway and Transportation Technology Institute) ZI Goangseup (Korea University) OH Hongseob (Jinju National University) SIM Jongsung (Hanyang University)
<b>10:30 ~ 10:45</b>	<b>Tower-Support Connection for Concrete Wind Energy Substructures</b> CHOI Jisun, CHOI Gukgwon, ZI Goangseup (Korea University)
<b>10:45 ~ 11:00</b>	<b>Break</b>
<b>11:00 ~ 11:15</b>	<b>Permeability of Steel Fiber-Reinforced Concrete Measured by Surface Electrical Resistivity</b> MOON Doyoung, PARK Sungjae (Kyungsoong University)
<b>11:15 ~ 11:30</b>	<b>A Manual of Countermeasure for Fatigue Failure in Steel Girder Bridges</b> YAMAOKA Daisuke, FUKUNAGA Akihiko, MARUYAMA Takeshi (Chodai Co., Ltd.) KAMIKUBO Seiji (Ministry of Land)
<b>11:30 ~ 11:45</b>	<b>Analysis of Offshore Structure Using XSEA</b> KIM Kidu, PLODPRADIT Pasin, KIM BumJoon, KIM Hyungi (Konkuk University)
<b>11:45 ~ 12:00</b>	<b>Corrosion Behavior of Welded Part of Structural Steel by Accelerated Exposure Test</b> HIROHATA Mikihiro, ITOH Yoshito (Nagoya University)