EASEC
East Asia-Pacific Conference on
Structural Engineering & Construction

Conference Program

EASEC-13

The Thirteenth East Asia-Pacific Conference on Structural Engineering and Construction

Sapporo, Japan
September 11-13, 2013

Supported by
Japan Society of Civil Engineers
Architectural Institute of Japan
Japan Society of Steel Construction
Japan Concrete Institute
Asian Concrete Federation
Association for Civil Engineering Technology of Hokkaido

Sponsored by
Steel Highway Bridge Research Committee,
Association for Civil Engineering Technology of Hokkaido
Concrete Research Committee,
Association for Civil Engineering Technology of Hokkaido

Organized by

FACULTY OF ENGINEERING, HOKKAIDO UNIVERSITY

HOKKAIDO UNIVERSITY

Contents

Greeting

To my knowledge, the East Asia-Pacific Conference on Structural Engineering and Construction (EASEC) is the first civil engineering conference series in the Asian region. EASEC was started by the late Prof NISHINO Fumio and his colleagues at the Asian Institute of Technology in 1986. Since then, EASEC has been held 11 times starting with Chiang May in 1989, Shanghai in 1992, Seoul in 1993, Gold Coast in 1995, Taipei in 1998, Kochi in 1999, Singapore in 2001, Bali in 2003, Bangkok in 2006, Taipei in 2008, Hong Kong in 2011. After the history of over a quarter of a century, Hokkaido University in Sapporo, Japan is honored to be the host of EASEC-13. This conference venue is the most north in the EASEC history.

Hokkaido University, founded in 1876, is one of the oldest universities in Japan. . Its second batch of graduates includes Prof HIROI Isami, a structural engineer who went to gain practical experience in USA. In 1893 he wrote a widely used textbook "Plate Girder Construction" in English for engineers in USA and at the end of the 19th century, as a construction engineer, oversaw the construction of Japan's oldest concrete harbor structure in Otaru near Sapporo. Participants of EASEC-13 are encouraged to visit Otaru to witness the breakwater and thousands of concrete pieces for long-term property tests, which are the heritage of Prof HIROI.

EASEC-13 attracts over 300 papers and expects nearly 350 participants from 27 countries/economies. We have seven keynote lectures: one each from Australia, China, Hong Kong (China), Indonesia and Thailand and two from hosting country, Japan and three special sessions organized by groups from Australia, Japan and Korea. The contents of papers show a full range of structural engineering and construction, which reflect the scale of construction activities in the region. As usual we have the award ceremony for Nishino Medal and Nishino Prize during the conference banquet.

EASEC-13 cannot be realized without warm support from members of the International Steering Committee, chaired by Prof Sritawat KITIPORNCHAI, International Advisory Committee and Local Advisory Committee. Two sponsors, Steel Highway Bridge Research Committee and Concrete Research Committee of Association for Civil Engineering Technology of Hokkaido, are greatly appreciated.

On behalf of the conference organizer of EASEC-13, I welcome you all and wish that EASEC-13 could provide you the best opportunity to exchange information on the latest technology and research development and to enjoy your reunion with old friends or to start new friendship.

Tamon UEDA
Chairman of Local Organizing Committee for EASEC-13

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Architectural Institute of Japan

Japan Society of Steel Construction

Japan Concrete Institute

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General Information

Date

September 11 – 13, 2013

Venue

The conference venue is School of Engineering, Hokkaido University. Hokkaido University was originally founded in 1876 as Sapporo Agricultural College. The university is known to have a beautiful campus with trees, springs, rivers and historical buildings.

Language

English is the official language in the conference. Papers are to be written and presented orally in English.

Early Registration

Early registration will be available on September 10 in the Secretariat Room (A102). To avoid the peak registration in the morning of September 11, you are strongly recommended to register on the afternoon of September 10 (15:30 – 20:30).

15:30 – 20:30, September 10 (Tuesday)

Registration

The registration desk is located at the entrance hall of the conference venue. Opening hours will be:

8:00 – 17:00, September 11 (Wednesday)

8:30 – 17:00, September 12 (Thursday)

8:30 – 17:00, September 13 (Friday)

Secretariat Room

Room A102

Preview Room

Room C208

Presentation Notes

15 minutes including Q&A. Speakers should arrive 10 minutes before the start of the session, and confirm their names and institution information to the session chair.

Internet Access

Free WiFi internet access will be available in the conference rooms. If you need to use the WiFi service, please ask for an ID at the registration desk.

Note: each ID can only be used by one computer or device, and multi-access from one ID will be considered as illegal.

Refreshments

Coffee, water, tea and snacks are provided to all participants at C209 and C212.

Welcome Reception

Date: Tuesday, September 10

Time: 18:30 – 20:30

Venue: Room A101 of the conference venue

Free drinks and refreshment available for you.

Lunch

Date: September 11 – 13

Time: 13:00 – 14:30 on September 11, 12:30 – 14:00 on September 12 and 13 (1 hour 30 mins)

Venue: Main Cafeteria of the conference venue, *Chuo* and *Hokubu* Cafeteria

You will be provided lunch vouchers for 3 days when you check-in at the registration desk. The vouchers can be exchanged for food up to 500 yen at a cashier of cafeteria. If the total amount exceeds 500 yen, you should pay the rest by yourself. No change given even if you order less than 500 yen.

Banquet

Date: Thursday, September 12

Time: 18:30 – 20:30 (Meeting time and point: 18:00 at the registration desk)

Venue: Sapporo Beer Garden

Address: 2-10, Kita 7, Higashi 9, Higashi-ku, Sapporo

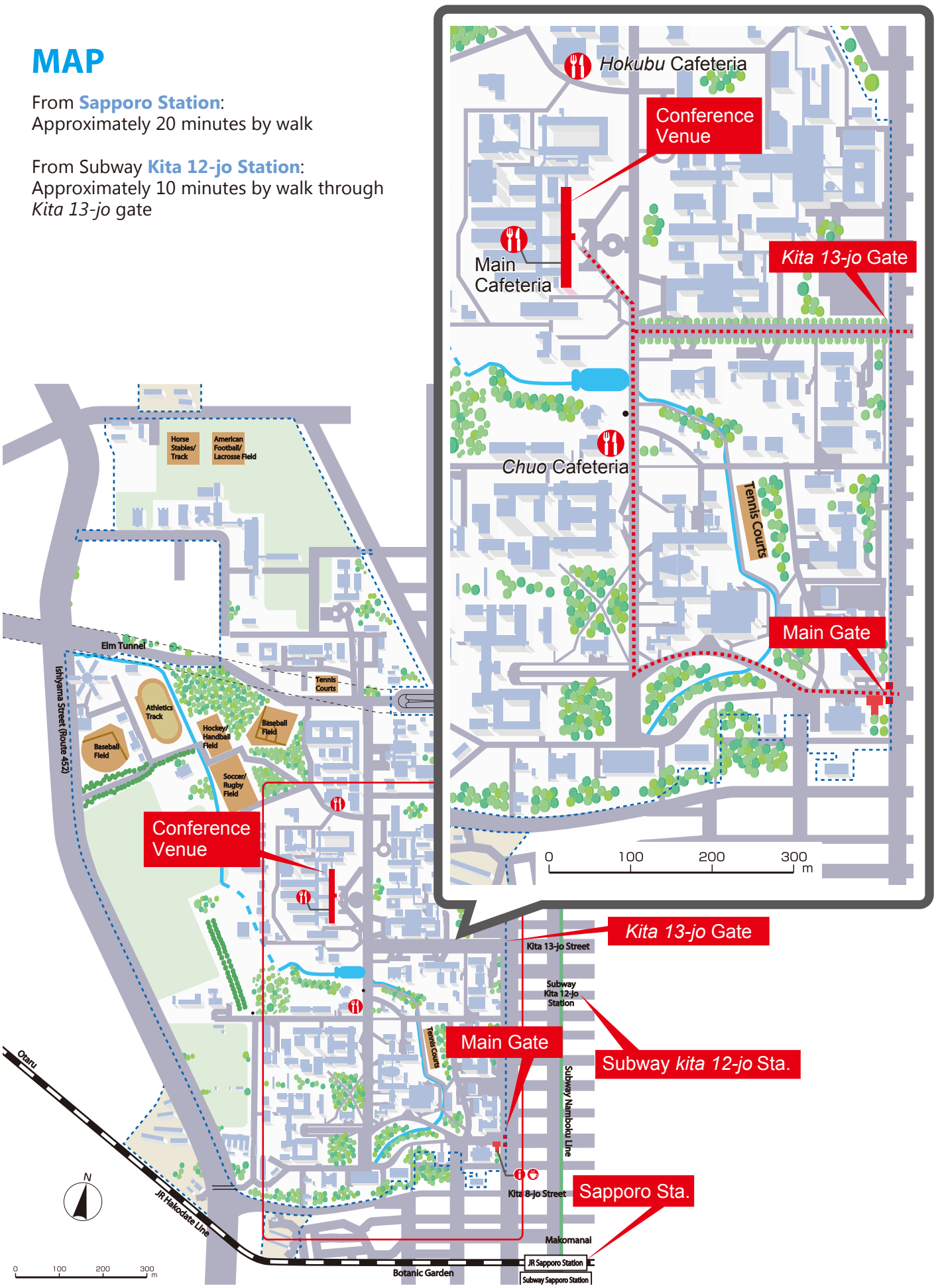
Tel: 0120-150-550

Fresh lamb BBQ buffet, vegetable and seafood are served in the popular beer hall. Sapporo Beer is one of big beer brands in Japan, and you can also enjoy fresh beer. Shuttle buses will take you from the conference venue to Sapporo Beer Garden and back to Sapporo Station after banquet.

MAP

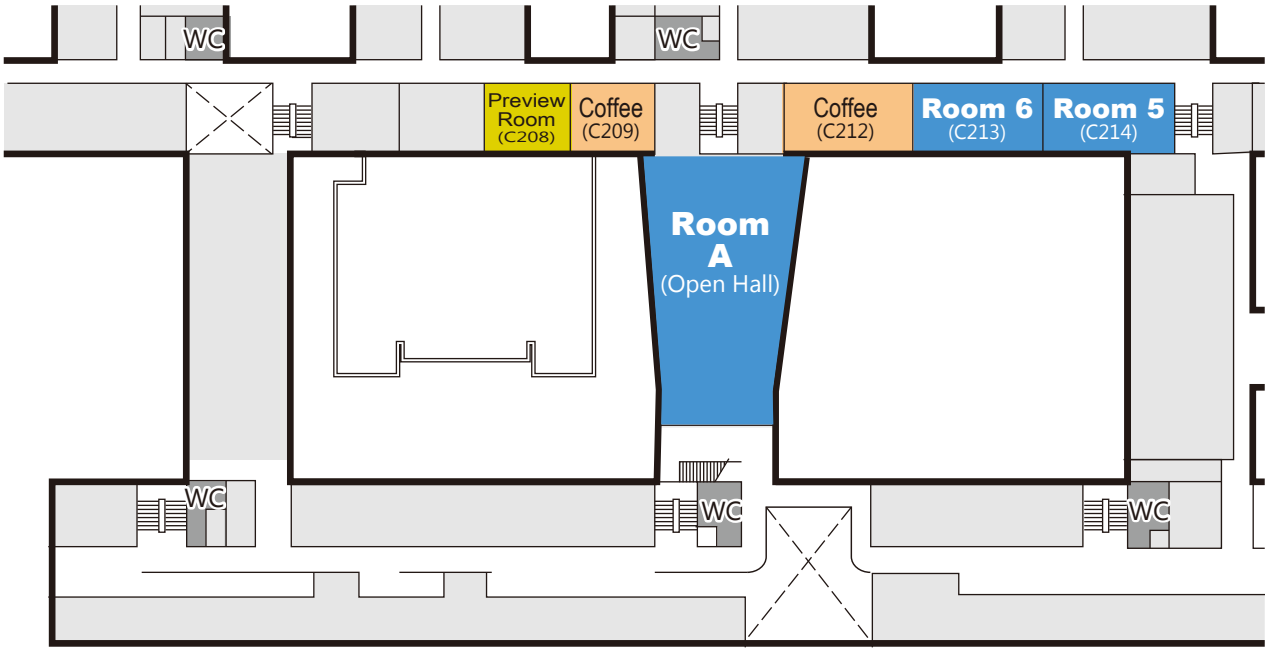
From **Sapporo Station**:
Approximately 20 minutes by walk

From Subway **Kita 12-jo Station**:
Approximately 10 minutes by walk through *Kita 13-jo* gate

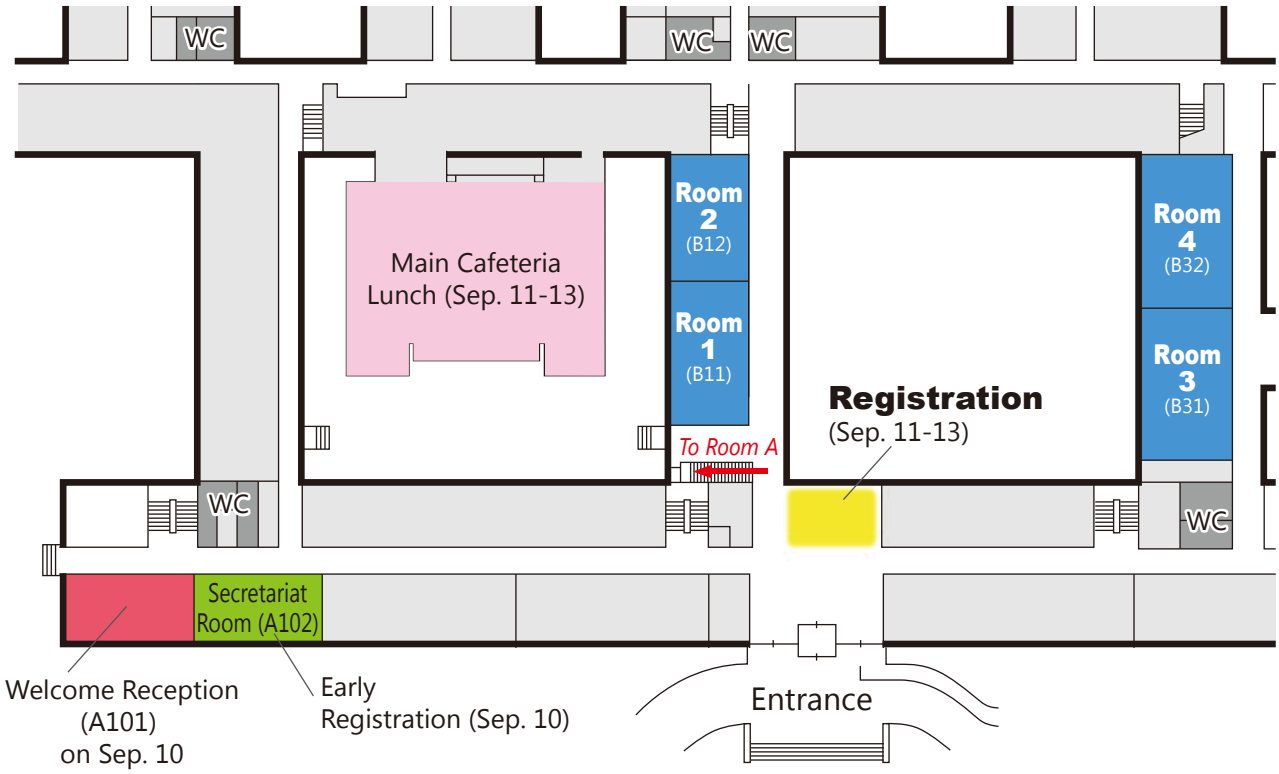


Floor Map

Level 2



Level 1



Conference Program

Program at a Glance

	Sep 10	Sep 11	Sep 12	Sep 13	
8:00		Registration			8:00
8:30			Registration	Registration	8:30
9:00		Opening Ceremony	Keynote Lecture 3	Keynote Lecture 6	9:00
9:30		Nishino Medal & Prize	Keynote Lecture 4	Keynote Lecture 7	9:30
10:00		Keynote Lecture 1	Keynote Lecture 5	Plenary Assembly	10:00
10:30		Keynote Lecture 2	Break	Break	10:30
11:00		Break	Parallel Sessions D-1 to 6	Parallel Sessions G-1 to 6	11:00
11:30		Parallel Sessions A-1 to 6			11:30
12:00					12:00
12:30			Lunch	Lunch	12:30
13:00		Lunch			13:00
13:30					13:30
14:00			Parallel Sessions E-1 to 6	Parallel Sessions H-1 to 6	14:00
14:30		Parallel Sessions B-1 to 6			14:30
15:00					15:00
15:30	Early Registration		Break	Break	15:30
16:00		Break	Parallel Sessions F-1 to 6	Parallel Sessions I-1 to 6	16:00
16:30		Parallel Sessions C-1 to 6			16:30
17:00					17:00
17:30					17:30
18:00					18:00
18:30	Welcome Reception		Banquet		18:30
19:00					19:00
19:30					19:30
20:00					20:00
20:30					20:30

Conference Program

Overview

	September 11						
	Room A (Open Hall)	**Room 1** (B11)	**Room 2** (B12)	**Room 3** (B31)	**Room 4** (B32)	**Room 5** (C214)	**Room 6** (C213)
8:00-9:00	Registration						
9:00-9:30	Opening Ceremony						
9:30-10:00	Nishino Medal & Prize						
10:00-11:00	Keynote Lectures						
11:00-11:30	Break						
11:30-13:00		A-1 Seismic Control	A-2 Structural Health Monitoring (SHM)	A-3 Construction Management	A-4 Disaster Prevention	A-5 Analytical and Design Methods	A-6 Composite Structure
13:00-14:30	Lunch						
14:30-16:00		B-1 Seismic Control & Seismic Isolation	B-2 SHM Models & Sensors	B-3 Construction Management & Data Based Maintenance	B-4 Connection of Steel Structure	B-5 Fiber Reinforced Concrete	B-6 Concrete Structure
16:00-16:30	Break						
16:30-18:00		C-1 Seismic Performance Evaluation	C-2 Bridge Engineering & Structural Dynamics	C-3 Data Based Maintenance	C-4 Fatigue of Steel Structure	C-5 Fiber Reinforced Concrete & Carbon Nanotube	C-6 Corrosion of Concrete

	September 12						
	Room A (Open Hall)	**Room 1** (B11)	**Room 2** (B12)	**Room 3** (B31)	**Room 4** (B32)	**Room 5** (C214)	**Room 6** (C213)
8:30-9:00	Registration						
9:00-10:30	Keynote Lectures						
10:30-11:00	Break						
11:00-12:30		D-1 Seismic Design	D-2 Deterioration of Bridges	D-3 Construction Management	D-4 Special Sesson 1: Composite Sandwich Structures	D-5 Composite Material & Concrete Material	D-6 Deterioration of Concrete
12:30-14:00	Lunch						
14:00-15:30		E-1 Seismic Retrofit	E-2 SHM and Maintenance of Concrete Structure	E-3 Construction Management	E-4 Special Sesson 2: Shear Connectors in Steel-Concrete Hybrid Structures	E-5 Concrete Material	E-6 Deterioration of Concrete
15:30-16:00	Break						
16:00-17:30		F-1 Seismic Analysis	F-2 Bridge Slab	F-3 Construction Management & Strucrual Design	F-4 Special Sesson 3: Innovative Base Isolation Systems	F-5 Concrete Material	F-6 Composite Structure
17:30-18:30	Move to the banquet venue (Meeting time-18:00, Meeting point-Registration desk)						
18:30-20:30	Banquet						

Conference Program

Overview

	September 13						
	Room A (Open Hall)	**Room 1** (B11)	**Room 2** (B12)	**Room 3** (B31)	**Room 4** (B32)	**Room 5** (C214)	**Room 6** (C213)
8:30-9:00	Registration						
9:00-10:00	Keynote Lectures						
10:00-10:30	Plenary Assembly						
10:30-11:00	Break						
11:00-12:30		G-1 Seismic Analysis & Design	G-2 SHM and Maintenance	G-3 Bridge Engineering	G-4 Bridge Engineering & Tall Buildings	G-5 Composite Structure (FRP)	G-6 Composite Structure
12:30-14:00	Lunch						
14:00-15:30		H-1 Seismic Analysis & Soil-Structure Interaction	H-2 Vibration Based SHM	H-3 Failure and Buckling of Steel Structure	H-4 Structural Analysis	H-5 Composite Structure (FRP)	
15:30-16:00	Break						
16:00-17:30		I-1 Earthquake Engineering & Experimental Methods	I-2 Dynamics & Experiment	I-3 Bridge Engineering & Structural Dynamics	I-4 Corrosion of Steel Structures	I-5 Composite Structure (Joint & Steel-Concrete)	

Conference Program

Keynote Lectures

September 11 (10:00 - 11:00)

Keynote Lecture 1 (Chair: Prof. Toshiro HAYASHIKAWA)

WIND-VEHICLE-BRIDGE INTERACTION: FATIGUE ASSESSMENT AND RELIABILITY

Y.L. XU (Y.L. XU, Z.W. CHEN)

Keynote Lecture 2 (Chair: Prof. Toshiro HAYASHIKAWA)

AN INTEGRATED DETERIORATION METHOD FOR PREDICTING LONG-TERM PERFORMANCE OF BRIDGE COMPONENTS: CASE STUDIES

Y. C. LOO (G. P. BU, J. H. LEE, H. GUAN, Y. C. LOO)

September 12 (9:00 - 10:30)

Keynote Lecture 3 (Chair: Prof. Koichi MAEKAWA)

EVALUATION OF TSUNAMI FORCE ACTING ON BRIDGE GIRDERS

K. MARUYAMA (K. MARUYAMA, Y. TANAKA, K. KOSA, A. HOSODA, T. ARIKAWA, N. MIZUTANI, T. NAKAMURA)

Keynote Lecture 4 (Chair: Prof. Hak Eun LEE)

LEARNING FROM LOCAL WISDOM: FRICTION DAMPER IN TRADITIONAL BUILDINGS IN INDONESIA

B. LUMANTARNA (B. LUMANTARNA, P. PUDJISURYADI)

Keynote Lecture 5 (Chair: Prof. Tamon UEDA)

CONCRETE CRACKING PROCESS INDUCED BY STEEL CORROSION- A REVIEW

Y.X. ZHAO (Y.X. ZHAO, H. XU, W.L. JIN)

September 13 (9:00 - 10:00)

Keynote Lecture 6 (Chair: Prof. Mitsumasa MIDORIKAWA)

STRUCTURAL DESIGN OF TOKYO SKYTREE

T. KOBORI (T. KOBORI, A. KONISHI)

Keynote Lecture 7 (Chair: Prof. Sritawat KITIPORNCHAI)
[Arthur CHIU Memorial Lecture, ACML]

HIGHER MODE EFFECTS ON THE SEISMIC RESPONSES OF HIGH-RISE CORE-WALL BUILDINGS

P. WARNITCHAI (P. WARNITCHAI, MUNIR A.)

Conference Program

Special Sessions

September 12 (11:00 - 12:30)

D-4: **Composite Sandwich Structures for Structural Engineering and Construction**
Session Outline:
Composite sandwich structure has become the new generation of material used in structural engineering and construction. This material offers a lightweight, high-strength, easy and fast installation, and reduced energy in transportation. Composite sandwich structures are now being used as structural panels, building components in residential and industrial buildings, and as bridge decks in a number of infrastructure projects. This session will focus on the current research, developments and applications of composite sandwich structures in structural engineering and construction.

September 12 (14:00 - 15:30)

E-4: **Shear Connectors in Steel-Concrete Hybrid Structures**
Session Outline:
In the steel-concrete hybrid members and structures, the shear connectors are key parts to ensure the required stress transmission between the steel member and the concrete one. The design shear resistance of the shear connectors employed in the steel-concrete hybrid structures is usually constructed based on the test data of the element test specimen such as the push-out specimen. However, applying the performance-based design method, it is required to accumulate the data of the shear force-displacement relation, the shear force distribution along the shear connector arrangements as well as the shear resistance of the shear connectors. Furthermore, it is required to clarify the relation between the behavior of the shear connector in the element test specimen and the behavior in the actual structure.
The objective of this organized session is to discuss the fundamental and practical research related to the above field.

September 12 (16:00 - 17:30)

F-4: **Innovative Base Isolation Systems for Earthquake Disaster Mitigation**
Session Outline:
Earthquake disaster mitigation continues to be one of the challenging problems in the field of structural engineering. To protect buildings and bridges from the seismic excitation, base isolation systems have been widely investigated and implemented in practice. Innovative base isolation devices using intelligent materials have been developed continuously and their effectiveness is being validated through simulation and experimental tools. This session focuses on innovative damping devices and the performance of structures with such devices. The advances of the state of the art methodologies for developing innovative base isolation systems as well as the application of the systems will be presented. Synergic method of combining the analytical and experimental approaches to evaluate the characteristics and effectiveness of the innovative base isolation systems will also be the focus of the session.

Conference Program

Parallel Sessions

Paper titles and authors' information below are based on your final manuscripts.

A-1: Seismic Control
Room 1 (Sep. 11, 11:30-13:00)
Chair: Prof. Makoto OHSAKI

A-1-1 **DEVELOPMENT OF A PASSIVE VARIABLE FRICTION DAMPER WITH DISPLACEMENT-DEPENDENT DAMPING FORCE CHARACTERISTICS**
K. SHIRAI, T. SANO, Y. SUZUI

A-1-2 **PARAMETER OPTIMIZATION OF GEOMETRICALLY NONLINEAR TUNED MASS DAMPER FOR MULTI-DIRECTIONAL SEISMIC VIBRATION CONTROL**
M. OHSAKI, S. TSUDA, N. SUGIYAMA

A-1-3 **SEISMIC PERFORMANCE OF FIXED-MOVABLE-FIXED SUPPORTED FOLDED CANTILEVER SHEAR STRUCTURE**
M. N. WIJAYA, T.KATAYAMA, E.S.KAYA, T.YAMAO

A-1-4 **EVALUATING THE EFFECT OF MULTIPLE VERTICAL ORTHOGONAL BAFFLES ON SLOSHING PHENOMENON IN RECTANGULAR TANKS SUBJECTED TO 3-DIMENSIONAL EARTHQUAKE EXCITATIONS**
M. HOSSEINI, P.FARSHADMANESH

A-1-5 **EXPANSION JOINT SEISMIC DAMAGE EVALUATION ON CURVED BRIDGES EQUIPPED WITH FRICTION PENDULUM SYSTEMS**
J. LOPEZ GIMENEZ, T. HAYASHIKAWA, T. MATSUMOTO, X. HE

A-1-6 **SLOPED ROLLING-TYPE ISOLATION DEVICES FOR SEISMIC PROTECTION OF EQUIPMENT AND FACILITIES**
S.J WANG, J.S. HWANG, K.C. CHANG, C.Y SHIAU, W.C LIN

A-2: Structural Health Monitoring (SHM)
Room 2 (Sep. 11, 11:30-13:00)
Chair: Dr. Jun LI

A-2-1 **TEMPERATURE FIELD AND ITS EFFECTS ON A LONG-SPAN STEEL CABLE-STAYED BRIDGE BASED ON MONITORING DATA**
YI ZHOU, LIMIN SUN, SHOUWANG SUN

A-2-2 **AN IN-SITU EXPERIMENT OF F-BENT DOUBLE DECKED FREEWAY BRIDGE**
YU-CHI SUNG, YI-TSUNG CHIU , TA-HSIN CHANG , TZU-KANG LIN , KUO-CHUN CHANG

A-2-3 **DEVELOPMENT OF A RELATIVE DISPLACEMENT SENSOR FOR STRUCTURAL HEALTH MONITORING**
J. LI, H. HAO, K. FAN

A-2-4 **WAVE PROPAGATION ANALYSIS OF CRACKED LEVY PLATE**
T. YIN, H. P. ZHU

A-2-5 **A PROBABILISTIC APPROACH FOR DAMAGE DETECTION UTILIZING INCOMPLETE MODAL DATA**

T. YIN, H. P. ZHU

A-2-6 **MONITORING OF TRAFFIC AXLE LOADS IN ORTHOTROPIC STEEL DECK STRUCTURES**

K. SUZUKI, S. YOSHIKAWA

A-3: Construction Management

Room 3 (Sep. 11, 11:30-13:00)
Chair: Prof. S.L. TANG

A-3-1 **USE OF BIM FOR CONSTRUTABILITY ANALYSIS IN CONSTRUCTION**

HUI-HSUAN, YANG, MENG-HSING, LEE, FU-CIH, SIAO, YU-CHENG, LIN

A-3-2 **SIMPLIFIED CPM/LOB METHODOLOGY FOR CONSTRUCTION SCHEDULING MANAGEMENT**

SHUH JUNG , YI-HENG LIN , YU-CHENG LIN , LUNG-CHUANG, WANG

A-3-3 **THE DEVELOPMENT OF WEB-BASED INTEGRATING MANAGEMENT INFORMATION SYSTEM IN CONSTRUCTION LAB**

WENG-FONG CHEUNG , YU-CHENG LIN

A-3-4 **QUALITY MANAGEMENT FROM QA TO TQM IN THE HONG KONG CONSTRUCTION INDUSTRY**

S.L. TANG, L.J. CHEN

A-3-5 **DIAGNOSTICS OF STEEL ROOF STRUCTURES OF SPORT STADIUMS**

M. KARMAZÍNOVÁ, J. MELCHER, J. LÁNÍK

A-3-6 **A CASE STUDY OF WEIGHING FOR MULTIPLE TERMS OF OBJECTIVE FUNCTION FOR THE APPROACH OF MULTIPLE OBJECTIVE OPTIMIZATION**

WONGWANISHWATANA W., BOONYACHUT S.

A-4: Disaster Prevention

Room 4 (Sep. 11, 11:30-13:00)
Chair: Dr. Lessandro Estelito GARCIANO

A-4-1 **ON SEISMIC DAMAGE PREDICTION OF WOODEN HOUSE USING AVERAGE SHEAR WAVE VELOCITY, AVS30**

H. NISHIKAWA, T. TAKATANI

A-4-2 **CROWD REFUGE SIMULATION TAKING INTO ACCOUNT DIFFERENCE IN HEIGHT FROM TSUNAMI HAZARD**

Y. KISHI, T. KITAHARA, K. KUBO

A-4-3 **RISK-BASED SEISMIC DESIGN OF RC BRIDGE PIER TO MINIMIZE THE POST-DISASTER FUNCTIONALITY LOSS OF ROAD NETWORKS**

Y. NOGAMI, S. ARIMA, M. AKIYAMA

A-4-4 **MAPPING THE VULNERABILITY OF LOW-COST HOUSE ROOFS IN MALATE, METRO MANILA DUE TO EXTREME WIND SPEEDS**

L. GARCIANO, I. ALVAREZ, J. COLOBONG, C. DECAL, A. TAN

A-4-5 **A COMPUTER-AIDED SEMI-QUANTITATIVE SEISMIC RISK ASSESSMENT TOOL FOR SAFE SCHOOL BUILDINGS**

A. ORETA, K. BRIZUELA

A-4-6 **STUDY ON INSURANCE AMOUNT OF PROFESSIONAL LIABILITY FOR ENGINEERING DESIGN SERVICES**

CHING-FA WENG, SY-JYE GUO

A-5: Analytical and Design Methods

Room 5 (Sep. 11, 11:30-13:00)
Chair: Prof. Biljana SCEPANOVIC

A-5-1 **REPAIRED CHROMOSOME IN GENETIC ALGORITHM FOR STEEL STRUCTURE OPTIMIZATION**

P.SUPROBO, P. AJI, M. GHOZI

A-5-2 **NUMERICAL STUDY ON SHEAR STRENGTH DEGRADATION AFTER FLEXURAL YIELDING OF RC MEMBER SUBJECTED TO CYCLIC LOADING**

H. FURUHASHI, H. NAKAMURA, Y. YAMAMOTO

A-5-3 **FORECAST OF COLLAPSE MODE IN ECCENTRICALLY PATCH LOADED STEEL I-GIRDERS BY MEANS OF ARTIFICIAL NEURAL NETWORKS**

B. ŠĆEPANOVIĆ, M. KNEŽEVIĆ, D. LUČIĆ, O. MIJUŠKOVIĆ

A-5-4 **OBJECT-ORIENTED PROGRAMMING FOR TOPOLOGY DESIGN OF TRUSSES BY A GENETIC ALGORITHM**

K. THEERAKITTAYAKORN, P. NANAKORN, P. PAKLACKSAME, T. MEKSANG, C. WANGSITTIKUL

A-5-5 **A PROPOSAL FOR COMPRESSIVE DESIGN STRENGTH OF STAINLESS STEEL PLATES**

Y. MIYAZAKI, S. NARA

A-5-6 **CALCULATION FORMULA FOR A MAXIMUM BENDING MOMENT AND A MAXIMUM DEFLECTION OF THE TRIANGULAR SLAB WITH CONSIDERING EFFECT OF SUPPORT CONDITION SUBJECTED TO UNIFORM LOAD**

K. NOMURA, S. MOROOKA

A-6: Composite Structure

Room 6 (Sep. 11, 11:30-13:00)
Chair: Prof. Buntara Sthenly GAN

A-6-1 **INVESTIGATION ON TCC SYSTEMS USING SELF-COMPACTING CONCRETE**

FARZAD MOSHIRI, RIJUN SHRESTHA, KEITH CREWS

A-6-2 **ANALYSIS OF PILED RAFT FOUNDATIONS IN CLAYEY SOILS USING FINITE ELEMENT AND ANALYTICAL METHODS**

P. WULANDARI

A-6-3 **ANALYSIS ON SHEAR FAILURE BEHAVIOUR OF PHC-PILE**

CHENG JU, H. NAKAMURA , S. KOMURA, Y. SHIRATORI

A-6-4 **OPTIMIZATION ON FOOTING LAYOUT DESIGN FOR RESIDENTIAL HOUSE WITH PILES FOUNDATION**

BUNTARA .S. GAN, NGUYEN DINH KIEN

A-6-5 **EXPERIMENTAL STUDY OF FULL-SCALE STEEL-WOOD HYBRID SHEAR WALLS**

L. LI

A-6-6 **ENGINEERING PROPERTIES OF CONCRETE INCORPORATING SCRAP RUBBER TIRE AS AGGREGATE REPLACEMENT WITH PALM OIL FUEL ASH AS PARTIAL REPLACEMENT OF ORDINARY PORTLAND CEMENT**

MOHAMMAD ISMAIL, P. FOROUZANI, OMOLBANIN FARAHMANDPOUR, I.O. HASSAN, TAHA MEHMANNAVAZ ,TALIAT OLA YUSUF, AINUL HAEZAH NORUZMAN

B-1: Seismic Control & Seismic Isolation

Room 1 (Sep. 11, 14:30-16:00)

Chair: Dr. Anil WIJEYEWICKREMA

B-1-1 **MITIGATION MEASURES FOR EXPANSION JOINT EFFECTS ON SEISMIC PERFORMANCE OF BRIDGE STRUCTURES**

SHEHATA E. ABDEL RAHEEM, T. HAYASHIKAWA

B-1-2 **PRESENTING A NEW APPROACH BASED ON INERTIA FORCES TO CONTROL THE VIBRATION OF STRUCTURES**

A. MOUSAVI, M. HOSSEINI

B-1-3 **SEISMIC RESPONSE OF CURVED GRILLAGE GIRDER VIADUCTS WITH BASE ISOLATION SYSTEM IN COLD REGION**

ZHIPING GAN, TOSHIRO HAYASHIKAWA, TAKASHI MATSUMOTO, XINGWEN HE

B-1-4 **ANALYSIS OF SHAKE-TABLE TESTS OF A FULL-SCALE BUILDING ISOLATED BY LEAD-RUBBER BEARINGS**

Q. DONG, T. OKAZAKI, M. MIDORIKAWA, K. RYAN, E. SATO, T. SASAKI

B-1-5 **RESPONSE OF BASE-ISOLATED BUILDINGS SUBJECT TO NEAR-FAULT GROUND MOTION CONSIDERING SEISMIC POUNDING**

D. R. PANT, A. C. WIJEYEWICKREMA

B-1-6 **FUNDAMENTAL STUDY ON DYNAMIC BEHAVIOR OF SLIDING BEARING WITH TRIGGER FOR BRIDGE STRUCTURES**

T. KANATA, M. MATSUMURA, Y. NAKANISHI, T. YAMAGUCHI

B-2: SHM Models & Sensors

Room 2 (Sep. 11, 14:30-16:00)

Chair: Prof. Nam-Sik KIM

B-2-1 **PARAMETER IDENTIFICATION USING MODEL UPDATING TECHNIQUE FOR HIGH SPEED RAILWAY BRIDGE**

D.U. PARK, N.S. KIM, S.I. KIM, Y.K. WOO

B-2-2 **DETECTION OF RAILWAY BALLAST DAMAGE UNDER A CONCRETE SLEEPER BASED ON IMPACT HAMMER TEST**

H. F. LAM, Q. HU, J.H. YANG

B-2-3 **OPTIMAL SENSOR PLACEMENT FOR DAMAGE DETECTION OF DISTRIBUTED-PARAMETER STRUCTURES BASED ON INFORMATION ENTROPY**

T. YIN, H. P. ZHU

B-2-4 **APPLICATION OF SMART SENSORS FOR BRIDGE VIBRATION MEASUREMENT UNDER LOW TEMPERATURE ENVIRONMENT**

A. OKAMOTO, R. WATASAKI, K. PAN, Y. MIYAMORI, S. MIKAMI

B-2-5 **THE GPS CAMERA APPLICATION FOR THE EFFICIENCY IMPROVEMENT OF THE BRIDGE INSPECTION**

T. KAMADA, F. KATSUKI, M. NAKAGAWA

B-2-6 **ACTIVE SOLAR SYSTEMS FOR ENERGY EFFICIENT FACADE STRUCTURES**

T. SAMARDZIOSKA, A. TROMBEVA-GAVRILOSKA, L. GOXHA

B-3: Construction Management &Data Based Maintenance

Room 3 (Sep. 11, 14:30-16:00)

Chair: Dr. Tingyu AN

B-3-1 **ENHANCING WORKER ONSITE SAFETY MANAGEMENT USING RFID TECHNOLOGY IN CONSTRUCTION**

NAN-HAI LO, YU-CHENG LIN

B-3-2 **ENHANCING VISUAL UNIT BATH SETUP IMPLEMENTATION USING BIM APPROACH**

CHAO-YUNG HUANG, REN-HAO YE, CHIA-CHING HONG, WAN-TING CHANG, JUN-XIONG CHANG, YU-CHENG LIN

B-3-3 **DEVELOPING BIM-BASED SHOP DRAWING AUTOMATED SYSTEM INTEGRATED WITH 2D BARCODE IN CONSTRUCTION**

YU-CHIH SU, YI-CHUAN HSIEH, MENG-CHUNG LEE, CHIH-YUAN LI, YU-CHENG LIN

B-3-4 **2D BARCODE-BASED PROPERTIES BREAKDOWN REPORTING AND MAINTAINING MANAGEMENT SYSTEM**

YEN-PEI CHEN , YU-CHENG LIN

B-3-5 **PROPOSAL OF BRIDGE MANAGEMENT SYSTEM USING CLOUD COMPUTING FOR LOCAL GOVERNMENT**

H. FURUTA, K. NAKATSU, K. TAKAHASHI, K. ISHIBASHI

B-3-6 **DEVELOPMENT OF MOBILE BIM-ASSISTED DEFECT MANAGEMENT SYSTEM FOR QUALITY INSPECTION OF BUILDING PROJECTS**

JUN-XIONG, CHANG, YU-CHIH SU, YU-CHENG, LIN

B-4: Connection of Steel Structure

Room 4 (Sep. 11, 14:30-16:00)
Chair: Prof. Hiroshi TAGAWA

B-4-1 **EVALUATION OF THE EFFECT TRANSVERSE FILLET WELD AT NOSE OF FLANGE PLATE IN MOMENT CONNECTION BETWEEN I BEAMS AND BOX COLUMNS**

ARDESHIR DEYLAMI, MOJTABA AKBARI

B-4-2 **PANEL ZONE IN THE FLANGE PLATE CONNECTION TO BOX COLUMN**

A. DEYLAMI, M. TEHRANIZADEH, M. GHOLAMI

B-4-3 **STUDY ON BOLTED BEAM-TO-COLUMN CONNECTIONS STIFFENED WITH STEEL MEMBER ASSEMBLIES**

H. TAGAWA, Y. LIU

B-4-4 **LOCAL STRESS BEHAVIOR AT CLOSED RIB TO CROSSBEAM CONNECTIONS IN ORTHOTROPIC STEEL BRIDGE DECKS**

K. KATO, T. HANJI, K. TATEISHI, S.M. CHOI, S. HIRAYAMA

B-4-5 **STRUCTURAL PERFORMANCE OF CONTINUITY CONNECTION FOR DECKED BULB TEE GIRDER**

S.W. JI, C.S. SHIM, D.W. KIM, H.U. BAE

B-4-6 **ASSESSMENT FOR SEISMIC PERFORMANCE OF HEADED BAR ANCHORING IN INTERNAL BEAM-COLUMN JOINTS**

KER-CHUN LIN, KAI-NING CHI, CHIEN-KUO CHIU

B-5: Fiber Reinforced Concrete

Room 5 (Sep. 11, 14:30-16:00)
Chair: Dr. Pang-jo CHUN

B-5-1 **IMPROVED IMPACT RESISTANCE OF LAYERED STEEL FIBER REINFORCED CONCRTE BEAM**

Y. S. YOON, J. Y. LEE, I. Y. JANG, D. J. HWANG

B-5-2 **DAMPING PROPERTIES OF POLYVINYL ALCOHOL FIBRE REINFORCED CONCRETE**

A. NOUSHINI, B. SAMALI, K. VESSALAS

B-5-3 **INFLUENCE OF POLYVINYL ALCOHOL FIBRE ADDITION ON FRESH AND HARDENED PROPERTEIES OF CONCRETE**

A. NOUSHINI, B. SAMALI, K. VESSALAS

B-5-4 **FLEXURAL AND TENSILE CHARACTERISTICS OF POLYVINYL ALCOHOL FIBRE REINFORCED CONCRETE (PVA-FRC)**

A. NOUSHINI, K. VESSALAS, B. SAMALI

B-5-5 **EXPERIMENTAL STUDY ON SHEAR BEHAVIOR OF PP-ECC BEAMS WITH DIFFERENT STIRRUP RATIOS**

R. ZHANG, K. MATSUMOTO, J. NIWA, T. HIRATA, Y. ISHIZEKI

B-5-6 **SHEAR BEHAVIOUR OF COMPOSITE SLAB REINFORCED WITH STEEL FIBRE CONCRETE TOPPING**

N. N. SARBINI, I. S. IBRAHIM, A. A. SAIM

B-6: Concrete Structure

Room 6 (Sep. 11, 14:30-16:00)

Chair: Dr. Nguyen Duc TUNG

B-6-1 **DEFORMATION-BASED APPROACH FOR DETERMINATION OF THE EFFICIENCY OF THE CONFINEMENT IN R/C MEMBERS**

N. V. TUE, N. Đ. TUNG

B-6-2 **A NEW MODEL FOR CONCRETE IN COMPRESSION CONSIDERING THE GROWTH OF THE DAMAGE ZONE**

N. V. TUE, N. Đ. TUNG

B-6-3 **MODELING THE LOAD-DISPLACEMENT RESPONSE OF CONCRETE WITH MULTI-INCLUSION-CYLINDRICAL AGGREGATES INCORPORATING THE AGGREGATE-DISTANCE EFFECT AND CONFIGURATION**

A. L. HAN, S. TUDJONO, J. PURNOMO

B-6-4 **SHEAR CAPACITY OF REINFORCED HIGH-STRENGTH CONCRETE BEAMS WITHOUT WEB REINFORCEMENT**

S.V.T.J. PERERA, H. MUTSUYOSHI

B-6-5 **RELIABILITY ESTIMATE OF RC STRUCTURES IN A MARINE ENVIRONMENT USING MARKOV MODEL AND SEQUENTIAL MONTE CARLO SIMULATION**

K. TAKENAKA, T. HAGINO, M. AKIYAMA, I. YOSHIDA

B-6-6 **ASSESSING TRANSVERSE REINFORCEMENT FOR ENHANCED PERFORMANCE OF 200MPA ULTRA-HIGH-STRENGTH CONCRETE COLUMNS**

Y. S. YOON, H. O. SHIN, S. H. LEE, D. J. HWANG

C-1: Seismic Performance Evaluation

Room 1 (Sep. 11, 16:30-18:00)

Chair: Dr. Tsukasa MIZUTANI

C-1-1 **PROBABLISTIC ASSESSMENT OF STRAIN HARDENING RATIO EFFECT ON BRBFS RESIDUAL DRIFT DEMAND**

A.DAYLAMI, M.A.MAHDAVIPOUR

C-1-2 **OUT-OF-PLANE REATION OF RC STRUCTURAL WALLS IN NON-PRINCIPAL BENDING DIRECTIONS**

ZHONGWEN. ZHANG , BING LI

C-1-3 **INFLUENCE OF BEAM FLANGE THICKNESS ON SEISMIC PERFORMANCE OF FLANGE PLATE CONNECTIONS**

A.R. ZANGOUIE, A. DEYLAMI

C-1-4 **COMPARISON OF NUMERICAL FRAGILITY CURVES FOR THIN RC WALLS USED IN LIMA, PERU CONSIDERING VARIATIONS OF GROUND MOTION DATASETS**

L.G. QUIROZ, Y. MARUYAMA

C-1-5 **ANALYSIS OF DAMAGE ON SHINAKANSEN VIADUCT CAUSED BY THE GREAT EAST JAPAN EARTHQUAKE BASED ON NONLINEAR DYNAMIC ANALYSIS**

T. MIZUTANI, Y. NARAZAKI, Y. FUJINO

C-1-6 **ASSESSMENT METHOD OF SEISMIC PERFORMANCE FOR CORRODED REINFORCED CONCRETE BUILDINGS**

C. -K. CHIU, F. -C. TU

C-2: Bridge Engineering & Structural Dynamics

Room 2 (Sep. 11, 16:30-18:00)

Chair: Prof. Hiroshi KATSUCHI

C-2-1 **A DUAL-FUNCTION ELECTROMAGNETIC DAMPER FOR BRIDGE STAY CABLE VIBRATION MITIGATION AND ENERGY HARVESTING**

W.A.SHEN, S.ZHU

C-2-2 **STUDY ON SIMPLIFICATION OF GIRDER STRUCTURE IN SUSPENSION BRIDGE**

H. KATSUCHI, H. YAMADA, S. YAMAZAKI

C-2-3 **FULL-SCALE EXPERIMENTAL VERIFICATION OF SEMI-ACTIVE CONTROL ON CABLE -MR DAMPER SYSTEM**

HONGWEI HUANG, JIANGYUN LIU, LIMIN SUN

C-2-4 **DYNAMIC RESPONSE EVALUATION ON CURVED TWIN I-GIRDER BRIDGE USING VEHICLE-BRIDGE COUPLED VIBRATION ANALYSIS**

X. HE, T. SHIMODA, T. HAYASHIKAWA, M. KAWATANI, T. MATSUMOTO

C-2-5 **EVALUATION OF EFFECTIVENESS OF COUNTERMEASURES TO REDUCE BRIDGE VIBRATION CAUSED BY SHINKANSEN**

L.M. SUN, T. HAYASHIKAWA, X. HE, M. KAWATANI, T. MATSUMOTO, W.P. XIE

C-2-6 **VIBRATION OF THERMO-ELASTICALLY DAMPED IMPERFECT RING GYRO**

SEOK-JOO KANG, JUNG-HWAN KIM, JI-HWAN KIM

C-3: Data Based Maintenance

Room 3 (Sep. 11, 16:30-18:00)

Chair: Prof. Tzu-Ping LO

C-3-1 **CURRENT USE OF BUILDING INFORMATION MODELLING WITHIN AUSTRALIAN AEC INDUSTRY**

AHMED ALABDULQADER, KRIENGSAK PANUWATWANICH, JEUNG-HWAN DOH

C-3-2 **HIDDEN MARKOV MODEL CONSIDERING THE INCONSISTENCIES OF OBSERVATION PERIOD**

B. MIYAZAKI, K. OBAMA, K. KAITO

C-3-3 **DATA MANAGEMENT OF FIELD INSPECTION FOR HIGHWAY BRIDGES BASED ON ADVANCED DATA MINING TECHNIQUE**

A. MIYAMOTO, H. EMOTO

C-3-4 **MULTI-PERIOD EVALUATION MODEL FOR THE SATISFACTION DEGREE IN PROPERTY MANAGEMENT**

T.P. LO, P.C. LEE

C-3-5 **THE APPLICATION OF MIND MAPPING IN MAINTENANCE KNOWLEDGE MANAGEMENT AND SHARING IN PRACTICE**

WEN-CHIEH HO, YU-CHENG LIN

C-3-6 **THE REGULATIONS FOR REPAIR WORK ON LANDMARKED BUILDINGS - IN THE CASES OF 1930S' HIGH-RISE HOUSING IN NEW YORK CITY**

CHUTSEN LIAO, YUJOU JUAN, WENHSIUNG LAI, KAUNHUNG LIN

C-4: Fatigue of Steel Structure

Room 4 (Sep. 11, 16:30-18:00)

Chair: Prof. Takeshi HANJI

C-4-1 **FATIGUE STRENGTH OF LONGITUDINAL WELDED JOINTS WITH STEEL CORRUGATED PLATES**

Z.Y. WANG, Q.Y. WANG, Y.Q. ZHANG

C-4-2 **FATIGUE RELIABILITY ANALYSIS OF SUSPENSION BRIDGES UNDER RAILWAY, HIGHWAY AND WIND LOADING**

Z.W. CHEN, Y. L. XU

C-4-3 **DYNAMIC LOADING TESTS CARRIED OUT AFTER REPAIR WORKS OF THE YODOGAWA BRIDGE**

L. H. ICHINOSE, Y. NATSUAKI, K. MASUDA, M. SAKANO

C-4-4 **NON-DESTRUCTIVE TESTS APPLIED DURING REPAIR WORKS OF THE YODOGAWA BRIDGE**

L. H. ICHINOSE, Y. KOHNO, K. MASUDA, M. SAKANO

C-4-5 **FATIGUE STRENGTH OF WELDED JOINTS USING STEELS FOR BRIDGE HIGH PERFORMANCE STRUCTURES (SBHS)**

T. HANJI, K. TATEISHI, S. ONO, Y. DANSHITA, S.M. CHOI

C-4-6 **FATIGUE BEHAVIOR OF RECTANGULAR BUILT-UP HOLLOW SECTION JOINT MADE OF HIGH STRENGTH STEEL S690**

M.S. ZHAO, S.P. CHIEW, C.K. LEE

C-5: Fiber Reinforced Concrete & Carbon Nanotube

Room 5 (Sep. 11, 16:30-18:00)

Chair: Prof. Hiroyuki SHIMA

C-5-1 **AGE EFFECT ON PIEZOELECTRIC PROPERTIES OF CEMENT-BASED PIEZOELECTRIC COMPOSITES CONTAINING SLAG**

H. H. PAN, C.K. CHIANG, R.H. YANG, Y.H. WU, C.S. CHANG

C-5-2 **A COMPARATIVE STUDY ON EPOXY NANOCOMPOSITES REINFORCED BY CARBON NANOTUBES: EFFECT OF FABRICATION METHODS**

A. H. KORAYEM, S. CHUAH, G. P. SIMON, X. L. ZHAO, W. H. DUAN

C-5-3 **THE MECHANICAL PROPERTIES OF HYBRID FIBRE REINFORCED COMPOSITE CONCRETE**

F.A. OTHMAN, M.I. GHAZALI, A. JAMERAN, I.S. IBRAHIM

C-5-4 **ELASTIC AND PLASTIC DEFORMATION OF CARBON NANOTUBES**

H. SHIMA, M. SATO

C-5-5 **EXPERIMENTAL EVALUATION OF DYNAMIC PROPERTIES OF FIBRE REINFORCED POLYMER MODIFIED CONCRETE**

N. GHOSNI , B. SAMALI

C-5-6 **DUCTILITY AND STRENGTH OF REINFORCED CONCRETE BEAMS INTRINSICALLY REINFORCED WITH POLYPROPYLENE FIBRES**

N. GHOSNI , B. SAMALI , K. VESSALAS

C-6: Corrosion of Concrete

Room 6 (Sep. 11, 16:30-18:00)

Chair: Dr. Takeshi IYODA

C-6-1 **RESTRAINING OF CHLORIDE INDUCED CORROSION IN RC STRUCTURES USING ION EXCHANGE RESIN**

M. N. HAQUE, H. MUTSUYOSHI , N. INOUE, S. MATSUSHITA, O. SANADA

C-6-2 **SHEAR CAPACITY OF RC BEAMS CONTAINING CORRODED LONGITUDINAL BARS**

X. XUE, H. SEKI, Z. W. CHEN

C-6-3 **EVALUATION ON PREDICTION ERROR OF CORROSION INITIATION TIME DEPENDING ON NUMBER OF CONCRETE CORES**

K. FURUYA, H. YOKOTA, K. HASHIMOTO, E. KATO

C-6-4 **PROBABILITY FOR CARBONATE STRESS CORROSION CRACKING IN REBARS AND PC RODS IN THE CARBONAETE CONCRETE**

N. YAMANAKA, Y.OKAMURA, K.TAKEWAKA

C-6-5 **NUMERICAL ANALYSIS OF INFLUENCING FACTORS ON CORROSION-INDUCED CONCRETE CRACKING WITH RBSM**

D. QIAO , H. NAKAMURA , M. KUNIEDA, N. UEDA

C-6-6 **STUDY ON THE CHLORIDE DIFFUSION COEFFICIENT CALCULATED FROM A SIMPLE ACCELERATED CHLORIDE PENETRATION TEST USING ELECTRICITY**

T. IYODA, Y. HARASAWA, Y. HOSOKAWA

D-1: Seismic Design

Room 1 (Sep. 12, 11:00-12:30)

Chair: Dr. Ahmed Mohammed Youssef MOHAMMED

D-1-1 **MINIMUM DESIGN LIMIT OF PARTIAL CAPACITY DESIGN FOR REGULAR MOMENT RESISTING FRAME**

I. MULJATI, B. LUMANTARNA

D-1-2 **ASSESSMENT OF DAMAGE INDEX OF RC FRAME AT VARIOUS PERFORMANCE LEVELS**

SEYED ALI MOUSAVI

D-1-3 **AN INNOVATIVE SEISMIC DESIGN FOR REPAIRABLE REGULAR STEEL BUILDINGS BY USING ROCKING MOTION AND CIRCUMFERENTIAL ENERGY DISSIPATING COLUMNS AT BASE LEVEL**

MAHMOOD HOSSEINI, YOUNES MOUSAVI TIRABADI, NAGHD ALI HOSSEINZADEH

D-1-4 **SIMPLIFIED PERFORMANCE-BASED SEISMIC DESIGN APPROACH FOR DEVELOPING COUNTRIES, SYRIA AS CASE STUDY**

A. ALHOURANI, M. ONUKI, J. DANG, T. KOIKE

D-1-5 **SEISMIC EVALUATION OF RC COLUMNS CONSIDERING EQUIVALENCY OF CIRCULAR AND SQUARE CROSS-SECTIONS**

AHMED MOHAMMED YOUSSEF MOHAMMED, ALI AHMED, KOICHI MAEKAWA

D-1-6 **SEISMIC DAMAGE PREDICTION OF WATER SUPPLY SYSTEM WITH PML INDEX**

O. MARUYAMA, R. KOMATSU

D-2: Deterioration of Bridges

Room 2 (Sep. 12, 11:00-12:30)

Chair: Prof. Eiki YAMAGUCHI

D-2-1 **EXPERIMENTAL STUDY ON THE LOAD CARRYING CAPACITY OF THE STEEL GIRDER END WITH THE CORROSION DAMAGE**

Y. TAMBA, K. HASHIMOTO, K. SUGIURA, D. TANAKA

D-2-2 **DEGRADATION OF LOAD-CARRYING CAPACITY OF STEEL I-GIRDER END DUE TO CORROSION**

E. YAMAGUCHI, T. AKAGI

D-2-3 **STRENGTH EVALUATION FOR A CORRODED DAMAGED STEEL GIRDER END CONSIDERING ITS COLLAPSE MECHANISM**

M. USUKURA, T. YAMAGUCHI, Y. SUZUKI , Y. MITSUGI

D-2-4 **EXPOSURE TEST RESULTS FOR UNDERGROUND STRUCTURES DAMAGED BY ASR**

T. KOHNO, T. NANAZAWA, S. NAKATANI, T. YAMAMOTO, T. MIYAGAWA

D-2-5 **A NONLINEAR FINITE ELEMENT ANALYSIS OF CONCRETE RAILWAY SLEEPER DAMAGED BY ICE EXPANSION**

S.-J. LEE, G. ZI

D-2-6 **DYNAMIC RESPONSE OF STRUCTURES LOADED BY OUTSIDE BLASTS**

S. W. ALISJAHBANA, W. WANGSADINATA

D-3: Construction Management

Room 3 (Sep. 12, 11:00-12:30)

Chair: Dr. Katsutoshi OHDO

D-3-1 **STRUCTURE OF RISK TRANSFER IN INDONESIAN PUBLIC ROAD PROJECTS**

ELIZA ROSMAYA PURI, TSUNEMI WATANABE

D-3-2 **STUDY ON FALL PROTECTION FOR ASSEMBLING AND DISMANTLING WORKS OF SYSTEM SCAFFOLDS**

K. OHDO, S. TAKANASHI, Y. HINO, H. TAKAHASHI

D-3-3 **LOAD-CARRYING CAPACITIES OF ISOLATED TOWER SCAFFOLDS USED IN CONSTRUCTION**

JUI-LIN PENG, CHUNG-MING HO, CHEN-YU CHEN, YEONG-BIN YANG

D-3-4 **EXPLORING CRITICAL CONFLICT ISSUES BETWEEN PUBLIC OWNERS AND CONTRACTORS DURING CONSTRUCTION PHASE**

V. PEANSUPAP, S. TACHI

D-3-5 **BUILDING STAKEHOLDER RELATIONSHIPS IN BIOMASS ENERGY INDUSTRY IN RURAL CHINA**

WANG LINGLING, WATANABE TSUNEMI

D-3-6 **USING THERMAL IMAGING OF THE FACE TO MONITOR CONSTRUCTION FOREMAN'S PERFORMANCE**

WEN-TA HSIAO, HSIAN-TANG WU, TAO-MING CHENG, CHIH-HUNG CHIANG, YOU-JU CHEN

D-4: Special Sesson 1: Composite Sandwich Structures for Structural Engineering and Construction

Room 4 (Sep. 12, 11:00-12:30)

Chair: Dr. Allan MANALO

D-4-1 **GLUE-LAMINATED COMPOSITE SANDWICH BEAMS FOR STRUCTURAL ENGINEERING AND CONSTRUCTION**

A. MANALO, G. MARANAN, G.V. ERP

D-4-2 **STUDY ON FUNDAMENTAL MECHANICAL PROPERTIES OF INNOVATIVE COMPOSITE SANDWICH STRUCTURES AND THEIR ENGINEERING APPLICATION**

W. Q. LIU, H. FANG, Y. FANG, J. WANG, Y. J. QI, L. WAN

D-4-3 **WEAK-AXIS BENDING BEHAVIOR OF A PULTRUDED GFRP BRIDGE DECK**

SIN-ZEON PARK, KEE-JEUNG HONG, SUNG-WOO LEE

D-4-4 **PERFORMANCE EVALUATION OF MASONRY SHEAR WALLS STRENGTHENING BY TWO DIFFERENT FRPS**

M.A. RAHMAN, T. UEDA

D-4-5 **A STUDY OF STRUCTURAL MATERIAL QUANTITIES OF HIGH-RISE RESIDENTIAL BUILDINGS**

S.B. KIM, M.S. KIM, J. CHOI, H. KIM, D.J. KIM, Y.H. LEE

D-4-6 **COMPARATIVE STUDY OF THE INTERLOCKING BLOCK AND CLAY BRICK MASONRY BUILDING**

N. CHAIMOON, C. LERTSATITTHANAKORN, K. CHAIMOON

D-5: Composite Material & Concrete Material

Room 5 (Sep. 12, 11:00-12:30)

Chair: Dr. Yuya SAKAI

D-5-1 **INVESTIGATION OF MECHANICAL PROPERTIES OF A NEW TYPE OF ACID RESISTANT CONCRETE**

SH. SALEK, B.SAMALI, G. ADAM

D-5-2 **ON THE DEVELOPMENT OF HIGH VOLUME VOLCANIC MUD MORTAR AND CONCRETE**

ANTONI, D. HARDJITO, L. CHANDRA, T. H. WIDODO

D-5-3 **MECHANICAL PERFORMANCE OF EXPANSIVE CONCRETE IN UNIAXIAL TENSION TEST WITH DIFFERENT CEMENT TYPES, AGES, AND CURING CONDITIONS**

H.IIJIMA, Y. SAKAI, T. KISHI

D-5-4 **DESIGN & DEVELOPMENT OF CONCRETE USING WASTE FOUNDRY SAND AS PARTIAL REPLACEMENT OF FINE AGGREGATE**

R. SIDDIQUE, GS. DHANOA

D-5-5 **EFFECT OF MICRO-STRUCTURE AND MINERALOGICAL COMPOSITION ON THE WATER DEMAND AND SUPER PLASTISIZER CONTENT OF TERNARY BLENDED SELF-CONSOLIDATING PASTE**

MOHAMMAD ISMAIL , I.O.HASSAN, A.S. ABDULRAHMAN, P. FOROUZANI, A.H. NORUZMAN, T. O. YUSUF

D-5-6 **CHARACTERISATION OF THE PORE STRUCTURE OF PORTLAND CEMENT-CARBON NANOTUBE COMPOSITES COMPARED WITH CEMENT PASTES**

A. MACLEOD, F. COLLINS, W. H. DUAN

D-6: Deterioration of Concrete

Room 6 (Sep. 12, 11:00-12:30)

Chair: Prof. Meng-Hao TSAI

D-6-1 **SULFATE TRANSFER IN CONCRETE UNDER SUSTAINED COMPRESSIVE LOAD**

H.L. WANG, X.Y. SUN, F. XUE

D-6-2 **LOW-CTCLE FATIGUE FAILURE MECHANISM OF WIND TURBINE FOUNDATION DUE TO VIBRATION OF UPPER STRUCTURE**

K. YONETSU, C. FUJIYAMA

D-6-3 **AN INVESTIGATION ON LONG-TERM EXCESSIVE DEFORMATION OF UNDERGROUND RC CULVERTS COUPLED WITH SOIL FOUNDATION**

X. X. ZHU, M. KUNIEDA, K. MAEKAWA

D-6-4 **EFFECT OF BAR CUTOFF ON THE ARCH AND CATENARY ACTIONS OF RC BEAMS UNDER GRAVITATIONAL LOADINGS**

MENG-HAO TSAI, JUN-KAI LU, BO-HONG HUANG

D-6-5 **EFFECT OF FLY ASH TYPE ON ASR EXPANSION OF POTENTIAL REACTIVE AGGREGATES**

S. SUJJAVANICH, K.WON-IN, C.LERKSAHAKUL,T.THAMMAPANONT,S.SUWANPANASIL, W.WONGKAMCHAN, H. YOKOTA

D-6-6 **PROPERTIES OF FLY ASH GEOPOLYMER CONCRETE IN SEAWATER ENVIRONMENT**

M. OLIVIA, H. NIKRAZ

E-1: Seismic Retrofit

Room 1 (Sep. 12, 14:00-15:30)

Chair: Prof. Eunsoo CHOI

E-1-1 **THE COMPARISON OF THE SEISMIC PERFORMANCE OF BRBF AND EBF BRACED STRUCTURES WITH IRREGULARITY IN HEIGHT**

ARDESHIR DEYLAMI , MOSTAFA FEGHHI

E-1-2 **AN INNOVATIVE DESIGN FOR REPAIRABLE REGULAR STEEL BUILDINGS BY USING A 4-CELL CONFIGURATION STRUCTURE WITH SOME INCLINED COLUMNS AT BASE LEVEL, EQUIPPED WITH DOUBLE-ADAS DEVICES, AND SECURITY CABLES AT CORNERS**

MAHMOOD HOSSEINI, SAEEDEH BOZORGZADEH

E-1-3 **SEISMIC STRENGTHENING OF A NON-DUCTILE REINFORCED CONCRETE FRAME WITH SOFT-STORY MECHANISM USING BUCKLING-RESTRAINED BRACES**

AMNART KHAMPANIT, SUTAT LEELATAVIWAT

E-1-4 **SEISMIC EVALUATION OF AN EXISTING OVERPASS STEEL BRIDGE BY TIME HISTORY ANALYSIS FOR ITS RETROFIT DESIGN**

M. HASHEMNEJAD ABRASI, M. HOSSEINI, SH. TAVOUSI TAFRESHI

E-1-5 **EVALUATION OF SEISMIC PERFORMANCE OF RC COLUMNS RETROFITTED BY SMA WIRE JACKETS THROUGH FRAGILITY ANALYSIS**

E. CHOI, S.H. PARK, J. LEE, C. JUNG, Y. EO , Y.S. CHUNG

E-2: SHM and Maintenance of Concrete Structure

Room 2 (Sep. 12, 14:00-15:30)

Chair: Dr. Atsushi SUTOH

E-2-1 **SMART FRP SYSTEMS WITH EMBEDDED FBG FOR STRUCTURAL MONITORING AND RETROFITTING**

K. HOLSCHEMACHER, S. KÄSEBERG

E-2-2 **STRUCTURAL CHARACTERISTICS OF A HISTORICAL REINFORCED CONCRETE TEMPLE BUILDING, HIGASHI-HONGANJI HAKODATE BETSUIN**

K. ISHII, M. KIKUCHI, K. SHIRAI

E-2-3 **PROBABILISIC MODEL FOR DAMAGE ACCUMULATION IN CONCRETE TUNNEL LINING USING INSPECTION DATA**

A. SUTOH, O. MARUYAMA, H. TANAKA, T. SATO

E-2-4 **CLOSE-RANGE STEREO REGISTRATION FOR CONCRETE CRACK MONITORING**

M. NAKAGAWA, F. KATUKI, Y. ISOMATU, T. KAMADA

E-2-5 **A STOCHASTIC MODEL FOR DESCRIBING TEMPORAL VARIATION OF DAMAGE ACCUMULATION IN TUNNEL LINING CONCRETE**

OSAMU MARUYAMA, ATSUSHI SUTOH, HIROAKI KANEKIYO, TAKASHI SATOH, HIROAKI NISHI

E-2-6 **ON THE DETERIORATION TENDENCY OF BRIDGE SLABS AFTER REPAIR WORK (IN THE CASE OF A LOCAL AUTONOMY)**

HIROYUKI SUGIMOTO, NAOTAKA SHIBUYA

E-3: Construction Management

Room 3 (Sep. 12, 14:00-15:30)

Chair: Prof. Po-Han CHEN

E-3-1 **ESTIMATING PROJECT S-CURVE BASED ON PROJECT ATTRIBUTES AND CONDITIONS**

L.-C. CHAO

E-3-2 **A BIM-BASED FRAMEWORK FOR SELECTION OF COST-EFFECTIVE GREEN BUILDING DESIGN**

PO-HAN CHEN, LONG CHAN, YU-YI CHEN

E-3-3 **A PROSPECT GAME THEORY MODEL FOR BIDDING PRICE DECISION**

M. Y. CHENG, C. C. HSIANG

E-3-4 **CUTTING PATTERN GENERATION FOR REINFORCEMENT BARS USING INTENSIVE SEARCH ALGORITHM**

V. BENJAORAN, S. BHOKHA

E-3-5 **THE IMPACT OF CONSIDERATION OF PAYMENT CONDITIONS IN CASH FLOW FORECASTING ON FINANCING COSTS IN CONSTRUCTION**

WISITSAK TABYANG, VACHARAPOOM BENJAORAN

E-3-6 **IMPACT OF CONSTRUCTION SEQUENCE ON STUCTUAL SEISMIC PERFORMANCE – A VIRTUAL LOAD METHOD**

X. ZHAO, P.W. DONG

E-4: Special Sesson 2: Shear Connectors in Steel-Concrete Hybrid Structures

Room 4 (Sep. 12, 14:00-15:45)

Chair: Prof. Hiroshi SHIMA

E-4-1 **AN EXPERIMENTAL STUDY ON PENETRATING REBAR EFFECT ON SHEAR RESISTANCE OF PERFOBOND STRIP**

N. M. HAI, A. NAKAJIMA, M. HASHIMOTO, Y. SUZUKI

E-4-2 **EXPERIMENTAL STUDY ON SHEAR FORCE-SLIP RELATIONSHIP OF HEADED STUD CONNECTORS UNDER CONTROLLED SHEAR AND AXIAL FORCES**

Y. TAIRA, S. SAITO, T. WATANABE, Y. MIZOE, H. SHIMA, A. NAKAJIMA, K. FURUICHI

E-4-3 **ANALYSIS ON EFFECT OF BIAXIAL LOAD ACTION ON HIGH CYCLE FATIGUE STRENGTH OF GROUP STUDS SHEAR CONNECTOR**

C. XU, K. SUGIURA

E-4-4 **PERFORMANCES OF L-SHAPE SHEAR CONNECTOR SUBJECTED TO STRUT COMPRESSIVE FORCE IN STEEL-CONCRETE COMPOSITE STRUCTURES**

R. SOTY, H. SHIMA

E-4-5 **MECHANICAL BEHAVIOR OF STUD SHEAR CONNECTOR UNDER SUSTAINED SHEAR AND COMPRESSION FORCES**

T. MAKI, R. WATANABE

E-4-6 **FUNDAMENTAL STUDY ON EXPERIMENTS FOR TORQUE SHEAR TEST TO EVALUATE BONDING STRENGTH OF STEEL-CONCRETE JOINT**

M. YAMADA, I. SAIKI, A. KUROSAWA, T. IWAKUMA

E-4-7 **INFLUENCE OF BOUNDARY CONDITION TO PUSH-OUT TEST OF HEADED STUD SHEAR CONNECTOR**

R. TAKAHASHI, S. SAITO

E-5: Concrete Material

Room 5 (Sep. 12, 14:00-15:30)

Chair: Dr. Chalermchai WANICHLAMLERT

E-5-1 **AN INVESTIGATION ON THE EFFECT OF CEMENT AND SILICA FUME ON PROPERTIES OF SELF-COMPACTING CONCRETE**

FARZAD MOSHIRI, ARASH ATASHNAMA,MOHAMMADREZA PANAHI, RASOUL GHAREBAGHI, JAVID MAHLOUJI

E-5-2 **PERFORMANCE OF POLYMER-CONCRETE COMPOSITES EXPOSED TO SEVERE ENVIRONMENT**

F. NABAVI, S. NEJADI, B. SAMALI

E-5-3 **EXPERIMENTAL STUDIES ON BASIC PROPERTIES OF CONCRETE USING TiO_2 AS ADMIXTURE**

M. HASEBE, H. EDAHIRO

E-5-4 **THE ROLE OF EXPANDING ADMIXTURE IN THE DEVELOPMENT OF STRENGTH OF PREPACKED CONCRETE**

A.S.M. ABDUL AWAL, SHAHRIN MOHAMMAD, DIANAH MAZLAN

E-5-5 **SHORT INVESTIGATION ABOUT DEVELOPMENT OF STRENGTH MORTAR CONTAINING PALM OIL FUEL ASH (POFA) AND PULVERIZE FUEL ASH (PFA)**

T. MEHMANNAVAZ, S. R. SUMADI, M. A. R. BHUTTA, P. FOROUZANI, M. SAMADI , S. M. SAJJADI, O. FARAHMANDPOUR

E-5-6 **RE-DOSING SUPERPLASTICIZER TO REGAIN SLUMP ON CONCRETE WITH FLY ASH**

R. H DHAKAL , C. WANICHLAMLERT

E-6: Deterioration of Concrete

Room 6 (Sep. 12, 14:00-15:30)
Chair: Dr. Tetsushi KANDA

E-6-1 **THE ENDOCHRONIC MODEL FOR THE MECHANICAL BEHAVIORS OF CONCRETE UNDER CYCLIC LOADING**

HSIN-HAN WU, JUN-KAI LU, MENG-HAO TSAI

E-6-2 **EFFECT OF OPTIMIZING CURING CONDITION AND CONSTITUTIVE MATERIALS ON IMPROVING SHRINKAGE CRACKING RESISTANCE OF BFS BLENDED CEMENT CONCRETE EXPOSED TO HOT ENVIRONMENT**

T. KANDA, H. MOMOSE, K. ISHIZEKI, K. IMAMOTO, C. KIYOHARA

E-6-3 **EVALUATION OF EFFECT OF HEAT CONDUCTION OF REBAR BY USING RBSM-TRUSS NETWORK MODEL**

T. UNNO, H. NAKAMURA, Y. YAMAMOTO, M. KUNIEDA, N. UEDA

E-6-4 **EXPERIMENTAL STUDY ON PUNCHING SHEAR OF LIGHTWEIGHT CONCRETE SLAB**

K.S. YOUM, H.K. JEON, Y.S. PARK, S.H. LEE, J. MOON

E-6-5 **THE INFLUENCE OF THE CHANGE IN COEFFICIENT OF THERMAL EXPANSION ON THE STRAIN BEHAVIOR OF MORTAR DURING FREEZE-THAW CYCLES**

E. SICAT, F. GONG, D. ZAWEI, T. UEDA

F-1: Seismic Analysis

Room 1 (Sep. 12, 16:00-17:30)
Chair: Prof. Kadid ABDELKRIM

F-1-1 **MODELING OF ENERGY DISSIPATION SUBSIDIARY PIERS FOR A LONG SPAN CABLE-STAYED BRIDGE**

LIMIN SUN, JUN WEI

F-1-2 **SEISMIC RESPONSE ANALYSIS OF CURVED GRILLAGE VIADUCT WITH STEEL BEARING SUPPORTS AND HEIGHT PIERS**

Q. TIAN, T. HAYASHIKAWA, T. MATSUMOTO, X. HE, D. BAI

F-1-3 **ULTIMATE STATE OF THIN-WALLED HOLLOW CIRCULAR STEEL COLUMNS SUBJECTED TO BI-DIRECTIONAL HORIZONTAL SEISMIC FORCES AND TRI-DIRECTIONAL SEISMIC MOMENTS**

M. ASSAD. ALAMIRI , YOSHIAKI. GOTO

F-1-4 **SEISMIC BEHAVIOR SUBJECTED TO GROUND MOTION AND FAULT DISPLACEMENT OF HALF-THROUGH STEEL ARCH BRIDGE**

E. CAHYA, T. YAMAO, A. KASAI

F-1-5 **NONLINEAR FINITE ELEMENT ANALYSIS OF RC INFILLED FRAMES**

A. KADID, A.ZINE, D.YAHIAOUI

F-1-6 **DYNAMIC RESPONSE CHARACTERISTICS OF THE TALL NOISE BARRIER ON RAILWAY STRUCTURES DURING SEISMICITY**

M. TOKUNAGA, M. SOGABE, T. WATANABE, T. SANTO, S. TAMAI

F-2: Bridge Slab
Room 2 (Sep. 12, 16:00-17:30)
Chair: Prof. Chikako FUJIYAMA

F-2-1 **PSEUDO-CRACKING APPROACH TO FATIGUE LIFE ASSESSMENT OF EXISTING RC BRIDGE DECKS BASED ON CRACK INSPECTION DATA**

X. J. TANG, C. FUJIYAMA, X. H. AN, K. MAEKAWA

F-2-2 **MEASUREMENT AND ANALYSIS OF RC DECK DEFORMATION AFTER 27 YEARS OF SERVICE**

T. SHIMADA, T. MATSUMOTO, T. HAYASHIKAWA, X.HE

F-2-3 **STATISTICAL SELECTION OF DETERIORATION FACTORS IN RC SLAB OF URBAN EXPRESSWAY**

D. MIZUTANI, K. KAITO

F-2-4 **FATIGUE-BASED STRUCTURAL BEHAVIOR OF RC BRIDGE SLABS WITH DIFFERENT LOADING HISTORIES**

Y. HIRATSUKA, M. SENDA, C. FUJIYAMA, K. MAEKAWA

F-2-5 **CALCULATION FORMULAS OF DESIGN BENDING MOMENTS ON THE OUNDARIES OF SLABS PART2: APPLICATION OF THE SAFETY-MARGIN FROM RC STANDARD TO OTHER SHAPED SLABS**

Y. IMAI, T. TSUJII, S. MOROOKA, K. NOMURA

F-2-6 **CALCULATION FORMULAS OF THE DESIGN BENDING MOMENTS ON BOUNDARIES OF SLABS PART1: APPLICATION OF THE MEAN-WIDTH FROM RC STANDARD TO OTHER SHAPED SLABS**

T. TSUJII, Y. IMAI, S. MOROOKA, K. NOMURA

F-3: Construction Management & Strucrual Design
Room 3 (Sep. 12, 16:00-17:30)
Chair: Prof. Nguyen Viet TUE

F-3-1 **RELATIVE DISPLACEMENT CONTROL FOR HORIZONTALLY CURVED COMPOSITE BRIDGES DURING CONSTRUCTION**

K. KIM, K. S. LEE, Y. J. KANG

F-3-2 **DEVELOPING A MODEL OF CONSTRUCTION SAFETY IN SAUDI ARABIA**

S. AL-HAADIR, K. PANUWATWANICH, R. STEWART

F-3-3 **UNDERSTANDING THE SIGNIFICANT ROLE OF LABOR SUBCONTRACTORS FOR THE FUTURE CHINESE CONSTRUCTION INDUSTRY**

T.Y. AN, T. WATANABE

F-3-4 **STRUCTURAL BEHAVIOR OF H-SHAPED BRACE REINFORCED WITH NON-WELDED COLD-FORMED ELEMENT**

SUNGMO CHOI , WONSIK, LEE , KYUNGJIN, OH, SANGWOO LEE, JIYOUNG MOON

F-3-5 **MODULAR CONSTRUCTIONS MADE OF UHPC**

N. V. TUE

F-3-6 **EFFECT OF REVISED DESIGN EARTHQUAKE GROUND MOTIONS CONSIDERING ZONES FACTORS ON NONLINEAR RESPONSE OF STEEL BRIDGE PIERS**

S. KITAICHI, K. ONO, S. OKADA

F-4: Special Sesson 3: Innovative Base Isolation Systems for Earthquake Disaster Mitigation

Room 4 (Sep. 12, 16:00-17:30)

Chair: Prof. Tao WANG

F-4-1 **STUDY ON MECHANICAL PROPERTIES OF BIDIRECTIONAL ROLLING BASE ISOLATION BEARINGS**

LT. DING, T. WANG

F-4-2 **EFFECT OF BASE ISOLATION ON SEISMIC FRAGILITY OF ABOVEGROUND LNG STORAGE TANKS**

T.-H. LEE, W.-S. CHOI, T.-S. HAN

F-4-3 **SOIL-STRUCTURE INTERACTIONS OF A SEISMICALLY ISOLATED CONTAINMENT BUILDING IN NUCLEAR POWER PLANTS**

K.-J. HONG , J.-H. LEE , S.-G. CHO, J.-K. SONG, S.H. CHOI, S. PARK

F-4-4 **EVOLUTION OF CRYSTAL STRESS DISTRIBUTION ON ELASTOPLASTIC DEFORMATION OF POLYCRYSTALLINE SOLIDS**

S.-Y. CHUNG, T.-S. HAN

F-4-5 **DEVELOPMENT OF A SLIDING BEARING SYSTEM FOR SEISMIC ISOLATION IN VERTICAL DIRECTION**

S. CHOI, J. BAEK, Y. LEE, I. BANG

F-4-6 **A STUDY ON DYNAMIC RESPONSE OF A CURVED VIADUCT SYSTEM WITH INTEGRATED SLIDING BEARING IN CONSIDERATION OF THE DIRECTION OF EARTHQUAKE**

DI BAI, T. HAYASHIKAWA, TAKASHI MATSUMOTO, XINGWEN HE, QIN TIAN

F-5: Concrete Material

Room 5 (Sep. 12, 16:00-17:30)

Chair: Dr. Michael HENRY

F-5-1 **RELATIONSHIP BETWEEN THRESHOLD PORE SIZE AND AIR PERMEABILITY, WATER PERMEABILITY, AND GAS PERMEATION**

Y. SAKAI, C. NAKAMURA, T. KISHI

F-5-2 **THE USE OF PLASTIC MINERAL WATER BOTTLES AND SCRAPPED TIRE RUBBER FOR IMPROVING THE PERFORMANCE OF MIXED ASPHALT CONCRETE**

D. D. M. HUWAE, J. TANIJAYA

F-5-3 **STUDY OF UTILIZATION WASTE LATHE ON INCREASING COMPRESSIVE STRENGTH AND TENSILE STRENGTH CONCRETE**

IRWAN LIE KENG WONG, FRANS PHENGKARSA, SURIANO BUYUNG

F-5-4 **OBSERVATION OF RECYCLED AGGREGATE STRUCTURE USING X-RAY CT**

M. HENRY, T. SUGIYAMA, T. IYODA, K. SATO

F-5-5 **VERIFICATION OF SELF-HEALING MECHANISM IN OPC INCORPORATING CARBONATE**

H. IKOMA, T.H. AHN, T. KISHI

F-5-6 **RELIABILITY ESTIMATION OF RECYCLED AGGREGATE CONCRETE STRUCTURE SUBJECTED TO CARBONATION**

T.M. KEA, M. AKIYAMA

F-6: Composite Structure

Room 6 (Sep. 12, 16:00-17:30)
Chair: Prof. Naoshi UEDA

F-6-1 **ANALYTICAL EVALUATION OF SHEAR FAILURE BEHAVIOR OF SHCC BEAM BY CONSIDERING SHEAR TRANSFER BEHAVIOR**

N. UEDA, Y. X. ZHANG, H. NAKAMURA, M. KUNIEDA

F-6-2 **RESIDUL PERFORMANCE OF REINFORCED CONCRETE COLUMNS UNDER BLAST LOADING**

H. CHOI, M.S. KIM, E. JO, H. KIM, D.J. KIM, Y.H. LEE

F-6-3 **MICROSTRUCTURAL COMPOSITION OF HARDENED CEMENT PASTE EXPOSED TO FIRE**

J. J. KIM, H.-K. JEON, S.-H. LEE, Y.-H. LEE, D.-W. RYU, K.-S. YOUM

F-6-4 **HOMOGENIZATION OF COMPOSITE BEAMS WITH PERIODIC MICROSTRUCTURES**

I. SAIKI, K. YARI, M. YAMADA, A. SETOGAWA, T. IWAKUMA

F-6-5 **BIAXIAL FLEXURAL FATIGUE RESPONSES OF CIRCULAR CONCRETE PLATES**

G. ZI, J. KIM

F-6-6 **EXPERIMENTAL AND NUMERICAL STUDIES FOR EFECT OF TAPER LAYERED CFRPS ON STRENTHENING RC BEAMS**

N. KIM, Y. KIM, Y. SHIN, H.S. KIM

G-1: Seismic Analysis & Design

Room 1 (Sep. 13, 11:00-12:30)
Chair: Prof. MItsuo KAWATANI

G-1-1 **SEISMIC DESIGN APPROACH FOR STEEL PIPELINES CROSSING ACTIVE FAULTS**

N. HASEGAWA, T. IMAI, J. KITAGAWA, T. KOIKE

G-1-2 **NONLINEAR SEISMIC RESPONSE ANALYSIS OF HIGH-SPEED RAILWAY VIADUCTS CONSIDERING TRAIN LOAD**

M. KAWATANI, S. MATSUMOTO, X. HE, Y. HASHIMOTO

G-1-3 **ANALYTICAL EVALUATION ON STRUCTURAL SEISMIC PERFORMANCE OF CORRODED RC COLUMNS SUBJECTED TO HIGHER AXIAL COMPRESSION**

K.SHIBATA, S.HOMMA, N.CHIJIWA , K.MEAKAWA

G-1-4 **EFFECTS OF NEAR-FIELD EARTHQUAKES ON ELEVATED CYLINDRICAL WATER TANKS**

KAVEH SOLEYMANI, MAHMOOD HOSSEINI

G-1-5 **EFFECTS OF LATERAL LOAD PATTERNS ON THE SEISMIC BEHAVIOR OF RC BRIDGES BY INCREMENTAL DYNAMIC ANALYSIS**

P. CHOMCHUEN, V. BOONYAPINYO

G-1-6 **NUMERICAL ANALYSIS AND REINFORCEMENT EFFECT EVALUATION ON SEISMIC RESPONSE OF SHINKANSEN VIADUCTS UNDER DYNAMIC TRAIN LOAD**

X. HE, Y. KATASE, H. HISASHI, M. KAWATANI, T. HAYASHIKAWA, C.W. KIM, T. MATSUMOTO

G-2: SHM and Maintenance

Room 2 (Sep. 13, 11:00-12:30)

Chair: Dr. Kai-Chun CHANG

G-2-1 **A NUMERICAL STUDY OF EFFECTS OF BRIDGE DETERIORATION, AND CHANGES IN SUPPORTING CONDITIONS ON NATURAL FREQUENCIES**

P. CHUN, A. AONO, S. MORI, M. OHGA

G-2-2 **STABILITY DIAGRAM AIDED MULTIVARIATEAR ANALYSIS FOR IDENTIFYING THE MODAL PARAMETERS OF A STEEL TRUSS BRIDGE SUBJECTED TO ARTIFICIAL DAMAGE**

K.C. CHANG, C.W. KIM, S. KITAUCHI

G-2-3 **EXPERIMENTAL INVESTIGATION ON DYNAMIC CHARACTERISTICS OF RC BRIDGE MODEL UNDER DIFFERENT VIBRATION LEVELS**

R. AL SEHNAWI , A. NAKAJIMA , R. TAKESHIMA, H. AL SADEQ, K. SAITO

G-2-4 **DETECTION OF CORROSION-INDUCED DAMAGE IN REINFORCED CONCRETE BEAMS BASED ON STRUCTURAL DAMPING IDENTIFICATION**

S. SHAHZAD, H. YAMAGUCHI, R. TAKANAMI, S. ASAMOTO

G-2-5 **MIXED POISSON DETERIORATION MODEL: APPLYING FOR PEELING/FALLING OF CONCRETE**

K. OBAMA, K. KAITO, K. KOBAYASHI

G-2-6 **APPLICATION OF DETERIORATION MONITORING SYSTEM TO CONCRETE SUPERSTRUCTURE OF OPEN-TYPE WHARF**

E. KATO, Y. KAWABATA, M. IWANAMI

G-3: Bridge Engineering

Room 3 (Sep. 13, 11:00-12:30)

Chair: Prof. Shih-Hsun YIN

G-3-1 REDUNDANCY OF CONTINUOUS TWO-GIRDER STEEL-CONCRETE COMPOSITE HIGHWAY BRIDGES

W. LIN, T. YODA, T. SAIGYO, K. ARAKI, Y. KUMAGAI

G-3-2 STUDIES ON NEW FORMS OF PORTABLE BRIDGES FOR DISASTER RELIEF

S. H. YIN, J. H. LIN, P. S. HUANG

G-3-3 DESIGN OF SLENDER AESTHETICAL CONCRETE BRIDGES - CHALLENGES AND CONSIDERATIONS

U. G. JENSEN, T. S. HANSEN

G-3-4 PARAMETRIC MODELLING FOR MODULAR PREFABRICATED BRIDGES

DONG KI CHUNG, SEONG JUN PARK, CHANG SU SHIM, KI BONG KIM

G-3-5 TRIAL CONSTRUCTION OF A ROAD BRIDGE USING ULTRA-HIGH PERFORMANCE CONCRETE RIBBED DECK

S.Y. PARK, S.T. KIM, J.R. CHO, K. CHO, B.S. KIM

G-3-6 A STUDY ON MODELING OF STRESS-STRAIN RELATIONSHIP AND PANEL POINTS OF STEEL TRUSS BRIDGES USED IN DYNAMIC RESPONSE ANALYSIS

A.MICHITANI, K. ONO, N. NISHIMURA

G-4: Bridge Engineering & Tall Buildings

Room 4 (Sep. 13, 11:00-12:30)

Chair: Dr. Tomonori NAGAYAMA

G-4-1 AN EXPERIMENTAL STUDY ON MECHANICAL PROPERTIES AND CONSTITUTIVE EQUATION OF SBHS500

S. HASHIMOTO, K. ONO, S. OKADA

G-4-2 AN EXPERIMENTAL STUDY ON MECHANICAL PROPERTIES OF SBHS700 AND APPLICATION OF SBHS700 TO STIFFENED PLATES

K. HAMAMURA, K. ONO, M. MATSUMURA, T. TARUI, S. KODA

G-4-3 GRADE CLASSIFICATION OF CORROSION DAMAGE ON THE SURFACE OF WEATHERING STEEL MEMBERS BY DIGITAL IMAGE PROCESSING

P. CHUN, K. FUNATANI, S. FURUKAWA, M. OHGA

G-4-4 VIRTUAL WORK SENSITIVITY METHOD FOR THE OPTIMIZATION DESIGN OF TALL BUILDINGS

T.Y.YU, X. ZHAO

G-4-5 SUSTAINABLE STRUCTURAL ENGINEERING FOR COMPLEX-SHAPED TALL BUILDINGS

K. MOON

G-4-6 OPTIMAL STRUCTURAL CONFIGURATIONS FOR TALL BUILDINGS
K. MOON

G-5: Composite Structure (FRP)
Room 5 (Sep. 13, 11:00-12:30)
Chair: Dr. Yusuke KURIHASHI

G-5-1 FE MODELING OF THE PEEL BEHAVIOR OF EXTERNALLY BONDED FRP REINFORCEMENT FROM A CONCRETE SUBSTRATE
J.G. DAI, Y.L. BAI, J.G. TENG, L.DE LORENZIS, W.Y. GAO

G-5-2 STRENGTHENING EFFECTS OF BONDING AFRP PLATE ON FLEXURAL CAPACITY OF RC BEAMS FOR SUBMERGED APPLICATION
Y. KURIHASHI, H. MIKAMI, M. KOMURO, N. KISHI

G-5-3 CFRP LAMINATES TO STRENGTHEN REINFORCED CONCRETE FLAT SLABS AGAINST PROGRESSIVE COLLAPSE
KAI QIAN, BING LI

G-5-4 SIZE EFFECT ON SHEAR CAPACITY OF REINFORCED CONCRETE BEAMS STRENGTHENED BY FRP U-SHAPE JACKET
L. NGUYEN-MINH, T. TRAN-QUOC, D. HO-DUC, C. HO-HUU, M. T. TRINH-LAM, O. W. KEONG, M. ROVŇÁK

G-5-5 PROPOSING A SIMPLE METHOD FOR ASSESSING CONCRETE PUMPABILITY
Y. YAMADA, S. HASHIMOTO, Y. EMOTO, H. HAZEHARA

G-6: Composite Structure
Room 6 (Sep. 13, 11:00-12:30)
Chair: Prof. Changsu SHIM

G-6-1 THE EXPERIMENTAL ANALYSIS OF BUBBLEDECK SLAB USING MODIFIED ELLIPTICAL BALLS
L. V. HAI, V. D. HUNG, T. M. THI, T. NGUYEN-THOI, N. T. PHUOC

G-6-2 COLUMN TEST OF CONCRETE-FILLED STEEL TUBES WITH REINFORCED LATTICE ANGLE
J. CHEN, F. XU, WL. JIN, Y. YE

G-6-3 EVALUATION OF STRUCTURAL PERFORMANCE OF PRECAST MODULAR PIER CAP
D.W. KIM, C.S. SHIM

G-6-4 FINITE ELEMENT ANALYSIS OF CIRCULAR CONCRETE-FILLED FILLED STEEL TUBE (CFST) UNDER VARIOUS LOADING CONDITION
J. MOON, H.-J. KO, M. H.-E. LEE

G-6-5 SARUCTURAL RERPERMANCE OF WELDED BUILT-UP SQUARE CFT COLUMN WITH STEEL FIBER
S.H. KIM, M.W. KANG, K.S. YOM, S.M. CHOI

H-1: Seismic Analysis & Soil-Structure Interaction

Room 1 (Sep. 13, 14:00-15:30)
Chair: Prof. Chang Wei HUANG

H-1-1 HIGH PERFORMANCE COMPUTING OF DYNAMIC STRUCTURAL RESPONSE ANALYSIS FOR THE INTEGRATED EARTHQUAKE SIMULATION

P. LATCHAROTE, Y. KAI

H-1-2 DYNAMICAL BEHAVIOUR OF STEEL TOWERS BY NUMERICAL SIMULATION

H.A. SÁNCHEZ SÁNCHEZ, C. CORTES SALAS

H-1-3 ANALYSIS ON SEISMIC PERFORMANCE OF ENERGY DISSIPATION SUBSIDIARY PIERS CONSIDERING FOUNDATION EFFECTS

ZAIRONG WANG, LIMIN SUN, WEN XIE, WEI CHENG

H-1-4 EVALUATING THE EFFECTS OF PERIOD OF STRUCTURES ON SOIL-STRUCTURE INTERACTION

S.MOHASSEB, M. S. RAZZAGHI, P. AZHIR GOLTAPEH

H-1-5 THE EFFECT OF SOIL-STRUCTURE INTERACTION ON SEISMIC ASSESSMENTS FOR BRIDGES

C. W. HUANG, H. H. HUNG, C. C. CHEN, K. K. JENG

H-2: Vibration Based SHM

Room 2 (Sep. 13, 14:00-15:30)
Chair: Prof. Chul-Woo KIM

H-2-1 IDENTIFYING CHANGES IN DYNAMIC CHARACTERISTICS DUE TO FRACTURE OF A DIAGONAL MEMBER OF A 9-SPAN CONTINUOUS STEEL TRUSS BRIDGE FROM TRAFFIC-INDUCED VIBRATIONS

S. KITAUCHI, C.W. KIM, K.C. CHANG, K. SUGIURA

H-2-2 A STRUCTURAL DAMAGE DETECTION PROPOSAL USING TRAFFIC-INDUCED BRIDGE VIBRATION ANALYSIS AND GA OPTIMIZATION

X. HE, T. HOSOKAWA , T. HAYASHIKAWA, M. KAWATANI, T. MATSUMOTO, C.W. KIM

H-2-3 BASIC STUDY ON DAMAGE LOCALIZATION OF STEEL BRIDGES BASED ON THE CHANGES OF MODAL AMPLITUDE

N. KOUSO, Y. MIYAMORI, S. MIKAMI, T. OSHIMA, T. SAITO

H-2-4 ENERGY-BASED DAMPING ESTIMATION OF STEEL BRIDGES AND ITS APPLICABILITY TO DAMAGE DETECTION

A.J. DAMMIKA, H. YAMAGUCHI, K. KAWARAI, T. YOSHIOKA, Y. MATSUMOTO

H-2-5 DAMAGE IDENTIFICATION OF A BELT-CONVEYOR SUPPORT STRUCTURE USING LOCAL VIBRATION MODES: NUMERICAL STUDY

T. NAGAYAMA, A. HONARBAKHSH, Y. FUJINO, K. HISAZUMI, T. TOMINAGA

H-2-6 INDIRECT MEASUREMENT OF BRIDGE FREQUENCIES BY A HAND-DRAWN CART
Y. B. YANG, W. F. CHEN, H. W. YU, C. S. CHAN

H-3: Failure and Buckling of Steel Structure

Room 3 (Sep. 13, 14:00-15:30)
Chair: Prof. Yong-Lin PI

H-3-1 EFFECTS OF THERMAL LOADING ON NON-LINEAR IN-PLANE BUCKLING OF SHALLOW CROWN-PINNED STEEL ARCHES
Y.-L. PI, M.A. BRADFORD, Y.-L. GUO, C. DOU

H-3-2 INVESTIGATION OF BUCKLING EFFECTS ON BEHAVIOR OF STEEL FRAME STRUCTURE
H.AFZALI, T. YAMAO, A. KASAI

H-3-3 COMPRESSIVE-TO-TENSILE STRENGTH RATIO OF BUCKLING-RESTRAINED BRACES USING STEEL-AND-MORTAR PLANKS
T. WAKAYAMA, T. OURA, M. MIDORIKAWA, M. IWATA, R. IIZUKA, M. MURAI, T. ASARI

H-3-4 PATCH LOADING – STABILITY ANALYSIS WITH EXACT IN-PLANE STRESS FUNCTIONS
O. MIJUSKOVIC, B. SCEPANOVIC, B. CORIC

H-3-5 BEHAVIOR AND STRENGTH OF COLD-FORMED STEEL LIPPED C-SECTION WITH TRACK UNDER COMPRESSION
W. HIRANMARN,P. PREMTHAMAKORN , P. CHOMCHUEN, N. NUTTAYASAKUL

H-3-6 HOUSING FOR POVERTY STRICKEN MASSES
DR. ABDUL AZIZ ANSARI, DR. GHOUS BUX KHASKHELY

H-4: Structural Analysis

Room 4 (Sep. 13, 14:00-15:30)
Chair: Dr. Mikihito HIROHATA

H-4-1 FINITE ELEMENT SIMULATION OF CRACK WELDING WITH CONTACT PRESSURE EFFECT
THOMAS JIN-CHEE LIU

H-4-2 NUMERICAL SIMULATION OF WELDING DEFORMATION AND RESIDUAL STRESS BY FEM WITH SHELL ELEMENTS
M. HIROHATA, Y. ITOH

H-4-3 NUMERICAL ANALYSIS OF STEEL TUBULAR MEMBER RESPONSE TO SHIP BOW IMPACTS
J. TRAVANCA, H. HAO

H-4-4 AN ASSESSMENT OF LIMIT LOADS OF CRACKED STRUCTURES USING EXTENDED ISOGEOMETRIC ANALYSIS
LOC V. TRAN, V.P. NGUYEN, L.V. HAI, TRAN MINH THI, H. NGUYEN-XUAN

H-4-5 **FINITE ELEMENT ANALYSIS ON INDUCED STRESSES IN HORIZONTALLY CURVED BOX GIRDER FLANGE**

B.H. CHOI, Y.J. KANG, C.H. YOO

H-4-6 **IMAGE BASED MULTISCALE MODELING OF POROUS BIOMATERIALS**

JUDY P. YANG, J. S. CHEN, SHENG-WEI CHI

H-5: Composite Structure (FRP)
Room 5 (Sep. 13, 14:00-15:30)
Chair: Dr. Yusuke KURIHASHI

H-5-1 **DUAL CONFINEMENT OF CIRCULAR CONCRETE COLUMNS CONSISTING OF CFRP SHEETS AND STEEL TIES OR SPIRALS**

K. HOLSCHEMACHER, S. KÄSEBERG

H-5-2 **BIAXIALLY LOADED CFRP-CONFINED RECTANGULAR RC COLUMNS**

A. RAHAI, H. AKBARPOUR

H-5-3 **COMPARISON EXPERIMENTAL BEHAVIOUR OF RC COLUMN WITH AND WITHOUT CARBON FIBER POLYMER (CFRP) LAYER UNDER ECCENTRIC LOADING**

F. HATAMI, H. SAADAT, H.R. SABA

H-5-4 **EXPERIMENTAL INVESTIGATION OF MASONRY CALCAREOUS WALLS REPAIRED AND STRENGTHENED BY C-FRP**

L. ANANIA, A. BADALA', S. COSTA, G. D'AGATA, C.GIACQUINTA

H-5-5 **DEVELOPMENT OF GFRP AND UHF COMPOSITE GIRDERS**

I.S.K. WIJAYAWARDANE, H. MUTSUYOSHI, S.V.T.J. PERERA, Y. KANAYA

H-5-6 **NONLINEAR FREE VIBRATION OF CARBON NANOTUBE REINFORCED COMPOSITE BEAMS BASED ON THE THIRD ORDER BEAM THEORY**

F. LIN, Y. XIANG

I-1: Earthquake Engineering & Experimental Methods
Room 1 (Sep. 13, 16:00-17:30)
Chair: Dr. Yoshihisa MARUYAMA

I-1-1 **SHAKING TABLE TESTING OF A MULTI-STOREY POST-TENSIONED TIMBER BUILDING**

F.C. PONZO, A. DI CESARE, D. NIGRO, M. SIMONETTI, T. SMITH, S. PAMPANIN

I-1-2 **SEISMIC PERFORMANCE OF AN INNOVATIVE STEEL AND REINFORCED CONCRETE COMPOSITE BRIDGE PIER**

H. H. HUNG, P.H. WANG, Z.K. LEE, Y.C. SUNG, K.C. CHANG

I-1-3 **EXPERIMENTAL ANALYSIS OF BEAM-TO-COLUMN CONNECTION IN STEEL STORAGE RACKS USING CANTILEVER TEST AND PORTAL TEST METHOD**

N. ASAWASONGKRAM, P. CHOMCHUEN, P. PREMTHAMKORN

I-1-4 **OUT-OF-PLANE LOADING TESTS ON MASONRY WALLS STRENGTHENED WITH RESTRAINING AXIAL ELONGATION**

YULIA HAYATI, Y. SANADA, T. TOMONAGA, T. KANADA

I-1-5 **MODELING OF BRICK MASONRY INFILL AND APPLICATION TO ANALYSES OF INDONESIAN R/C FRAME BUILDINGS**

MAIDIAWATI, Y. SANADA

I-1-6 **EVALUATION OF SITE AMPLIFICATION CHARACTERISTICS BASED ON STATION CORRECTION FACTORS OF ATTENUATION RELATIONSHIP OF RESPONSE SPECTRUM**

YOSHIHISA MARUYAMA, MASAKI SAKEMOTO, FUMIO YAMAZAKI

I-2: Dynamics & Experiment

Room 2 (Sep. 13, 16:00-17:30)
Chair: Prof. Chien Ming WANG

I-2-1 **TRACK VIBRATIONS DURING ACCELERATING AND DECELERATING PHASES OF HIGH-SPEED RAILS**

K. K. ANG , T. M. THI, L. V. HAI

I-2-2 **SLOSHING EFFECT AND MITIGATION SOLUTION OF FLOATING OIL STORAGE TANK**

L.V. TUYEN, K.K. ANG, L.V HAI

I-2-3 **IDENTIFICATION OF LARGE AMPLITUDE GUST RESPONSES OF BUNDLE-CONDUCTORS WITH PROPER MODEL**

PV. HUNG,H. YAMAGUCHI, M. ISOZAKI

I-2-4 **HYDROELASTIC RESPONSE OF FLOATING JETTY AT KRABI, THAILAND**

C. M. WANG, R. P. GAO, M. M. PATHAK

I-2-5 **FUNDERMENTAL STUDY ON THE PERFORMANCES AND CHARACTERISTICS OF H IGH FUNCTION MORTAR INCLUDING NITRITE**

R. MATSUMOTO, H. HAZEHARA, M. SOEDA, S. HASHIMOTO, T.YAMATO

I-2-6 **THE FAST MULTIPOLE VIRTUAL BOUNDARY ELEMENT METHOD FOR SOLVING THIN PLATE PROBLEMS**

WEI SI

I-3: Bridge Engineering & Structural Dynamics

Room 3 (Sep. 13, 16:00-17:30)
Chair: Prof. Teruhiko YODA

I-3-1 **STUDY ON RESTORING FORCE CHARACTERISTICS AND DEFORMATION CAPACITIES OF THE FLEXIBLE REINFORCED CONCRETE PIER WITH I-SHAPE CROSS SECTION UNDER HORIZONTAL LOAD**

WENJUN GAO, HISANORI OTSUKA, JOON-HO CHOI

I-3-2 **COMPARATIVE STUDY ON CONTINUOUS STEEL-CONCRETE COMPOSITE BEAMS WITH NORMAL AND STEEL FIBER REINFORCED CONCRETE SLAB**

T. YODA, W. LIN, N. TANIGUCHI, H. KASANO, L. HEANG, H. GE

I-3-3 **AN EFFICIENT AND ACCURATE METHOD FOR GRADIENT COMPUTATION OF NONLINEAR SOIL-STRUCTURE INTERACTION (SSI) SYSTEMS**

Q. GU

I-3-4 **DYNAMIC SOIL-STRUCTURE INTERACTION ANALYSIS IN THE FINITE ELEMENT TIME DOMAIN WITH CONVOLUTIONAL PERFECTLY MATCHED LAYER AS THE BOUNDARY CONDITIONS**

BO-QING XU, HING-HO TSANG, S. H. LO

I-3-5 **STUDY ON VIBRATION INDUCED BY THE SHAKING TABLES ARRAY IN LARGE SCALE CIVIL LAB**

XIAOSONG REN, YUFEI TAO, BIN ZHOU

I-3-6 **A MODEL FOR PREDICTION OF ANISOTROPIC BEHAVIOR OF SOFT TISSUES UNDER LOADING**

K. CHAIMOON, M.M. ATTARD, P. CHINDAPRASIRT

I-4: Corrosion of Steel Structures

Room 4 (Sep. 13, 16:00-17:30)

Chair: Prof. Kazutoshi NAGATA

I-4-1 **A STUDY OF PERFORMING REAL-TIME HYBRID TESTING ON BRIDGE STRUCTURES BY USING NUMERICAL SIMULATION**

CHENG-YU YANG, TIAN-BO PENG, XUN-TAO YU

I-4-2 **SLIPPAGE TEST OF FRICTIONAL HIGH STRENGTH BOLTED JOINTS WITH ADHESIVES FOR CORRODED DAMAGED STEEL MEMBERS**

Y. TAMBA, S. YUKITO, T. YAMAGUCHI, H. SAKODA, A. HIGATANI, A. TABATA

I-4-3 **SEISMIC PERFORMANCE OF STEEL BRIDGE PIERS WITH CORROSION DAMAGES**

K. NAGATA, K. SUGIURA, K. HASHIMOTO, T. KITAHARA, H. OTAKE, N. NOMURA

I-4-4 **DETERIORATION CHARACTERISTICS OF SN-BEARING STEEL BY ACCELERATED EXPOSURE TESTS**

T. MORI, M. HIROHATA, T. KAMIMURA, Y. ITOH

I-4-5 **MULTI-TECHNOLOGY NDT INSPECTION AND MONITORING OF CORROSION IN STEEL BRIDGE MEMBERS**

G. V. MINESAWA, E. SASAKI

I-4-6 **EVALUATION FOR CORROSION STATE OF LOWER GUSSET PLATE CONNECTIONS ON STEEL TRUSS BRIDGE**

X.T.NGUYEN, K.NOGAMI, S.TAKAHASHI, M.KURIHARA, T.YODA, H.KASANO, J.MURAKOSHI, N.TOYAMA, M.SAWADA

I-5: Composite Structure (Joint & Steel-Concrete)

Room 5 (Sep. 13, 16:00-17:30)

Chair: Prof. Jia-Lin TSAI

I-5-1 **EXPERIMENTAL STUDY ON RC BEAMS USING MECHANICAL SPLICES WITH DIFFERENT QUALITY AND STAGGERING LENGTH**

DAC PHUONG NGUYEN, HIROSHI MUTSUYOSHI, TAKUYA OHNO

I-5-2 **EXPERIMENTAL STUDY ON SHEAR-SLIPPING BEHAVIOR OF PBL JOINT CONNECTION BETWEEN CONCRETE AND UFC HYBRID GIRDER**

P. WIROJJANAPIROM, K. MATSUMOTO, T. KITAMURA, K. KONO, J. NIWA

I-5-3 **SHEAR STRENGTH OF DRY JOINTS IN PRECAST CONCRETE MODULES**

IN-HWAN YANG, KYUNG-CHEOL KIM, YOUNG-JOON KIM

I-5-4 **INVESTIGATING MECHANICAL PERFORMANCES OF DOUBLE LAP COMPOSITE JOINT WITH STEPWISE PATCH**

JIA-LIN TSAI, WEN-YEN CHUANG

I-5-5 **BENDING STRENGTH ANALYSIS OF CENTRALLY-DEBONDED COMPOSITE SANDWICH BEAM USING TAGUCHI METHOD**

M. K. YEH, Y. W. CHIU

I-5-6 **STRENGTHENING OF DEFICIENT RC COLUMNS BY STEEL ANGLES AND BATTENS UNDER AXIAL LOAD**

N. AREEMIT, N. FAEKSIN, P. NIYOM, P. PHONSAK

Memory

Nishino Medal and Nishino Prize Award

During the period 1984-1985, Professor Fumio Nishino (1936-2007) and his colleagues at the Asian Institute of Technology established the organizational structure for the East Asia-Pacific Conference series on Structural Engineering and Construction (EASEC), an initiative that led to the first EASEC conference in Bangkok in January 1986. In the subsequent two decades EASEC has become a premier conference series having to date 12 conferences held in different cities in Asia. His contributions in founding and promoting EASEC had been enormous and the success of EASEC was heavily due to his enthusiastic and ceaseless efforts. In addition, he had worked actively and successfully in promoting the discipline of structural engineering and construction in the Asia region and beyond.

In recognition of his efforts, initiatives and achievements, the EASEC International Steering Committee proposes to establish two medals in the honor of Prof. Nishino, so that henceforth he will be remembered formally by the EASEC community every time the Conference is held. The awards and commendations will be made in two categories as follows:

The Nishino Medal: to be awarded at each future EASEC conference to a distinguished senior engineer who has been judged to have made internationally recognized contributions in the area of structural engineering and construction through research, development and/or professional practice in the Asia-Pacific region. The first awardee (2008) is Professor Worsak Kanok-Nukulchai, Thailand, and the second (2011) is Professor S. P. Chang, Korea.

The Nishino Prize: to be awarded concurrently at each future EASEC conference to a young engineer (age below 45 years) from the Asia-Pacific region who has made significant contributions and shown potential for great future achievements in the area of structural engineering and construction through research, development and/or practice. The first winners (2008) are Professor Xu Hui An, China and Mr. Chi-Heng Chiang, Taiwan. The second winners (2011) are Dr. S. K. Au, Hong Kong, and Dr. K. Nagai, Japan.

The award and prize will be presented during the opening ceremony of EASEC-13, Sapporo, Japan on September 11-13, 2013.

Memory

Arthur CHIU Memorial Lecture, ACML

Arthur N. L. Chiu was a strong advocate and supporter of EASEC's ideals of promoting the exchange of information and knowledge among structural and construction engineering professionals in East Asia. Dr. Chiu served on EASEC's International Steering Committee from its inception in 1984 until his untimely passing in 2006, and continually contributed to EASEC with his counsel, vision and friendship. He fostered initial ties with many of EASEC's original organizers and participants when he was a professor at the Asian Institute of Technology from 1966-68.

Professor Chiu was a world recognized expert in wind-engineering and structural dynamics having spent his entire career studying wind effects on full-scale structures and mitigating the effects of wind events. His interest in full-scale wind engineering began during his PhD work in which he studied wind hazard (characterizing the wind environment on structures), the response of a latticed steel tower to wind hazard and compared the results with design codes, creating a framework that continues to be used today. Dr. Chiu had the opportunity to perform full-scale investigations on such noted structures as U.S. Navy antenna (800 to 1,000 feet) in Cutler, Maine (USA), the old Shanghai Television Tower and Taipower towers on Taiwan. In addition to his full-scale investigations, Dr. Chiu worked on unique wind projects such as wind analyses on the original concept design of the U.S. Space Shuttle. In his later years, he devoted his efforts to advocating the reduction of wind-induced damage through better engineering and construction practices, and served as a member and president of the Applied Technology Council as a means to promote mitigation efforts across all hazards.

Dr. Chiu was a supporter of sharing knowledge and information across national boundaries. To promote such communication, he organized conferences and workshops in India, Thailand, Indonesia, Japan and Hawaii for the purpose of bring persons with different experiences and cultures together to collaborate on studying natural hazards and their effects on the built environment.

Dr. Chiu was born in Singapore and moved to the US to attend university. He received B.S and B.A. degrees from Oregon State University, his M.S. from the Massachusetts Institute of Technology and his Ph.D. from the University of Florida. He was licensed as both Professional Civil Engineer and Structural Engineer in the State of Hawaii. He began his teaching career in 1954 as an Instructor at the University of Hawaii, retiring as a Professor in 1995. During the intervening years, he also spent time at the Asian Institute of Technology as Professor and Chairman of the Structures Division.

Information about Sapporo

General Information

Local Currency

The local currency is Japanese Yen (JSD, ￥ , 円). You may exchange most international currencies at money exchanges at airports, in town, or at local banks.

Dialing Code

+81 is the dialing code of Japan.

While most newer mobile phone models can be used in Japan, many older phones may not work due to different technologies. Most importantly, there is no GSM network in Japan, so GSM-only phones do not work.

Time Zone

Japan is 9 hours ahead of UTC.

Electricity

The voltage in Japan is 100 Volt, which is different from North America (120V), Central Europe (220V) and most other regions of the world. Japanese electrical plugs have two, non-polarized pins, as shown below. They fit into North American outlets.

The frequency of electric current is 50 Hertz in Eastern Japan (including Tokyo, Yokohama, Tohoku, Hokkaido) and 60 Hertz in Western Japan (including Nagoya, Osaka, Kyoto, Hiroshima, Shikoku, Kyushu), however this frequency difference affects only sensitive equipment.

Weather in September

Sapporo is located in a sub-frigid zone and enjoys comfortable warm summers, although winters are cold and snowy. Summer days in July and August bring temperatures into the mid-twenties. Short sleeved shirts are suitable for the daytime but temperatures drop a little in the evenings and early mornings. In September the temperatures start to drop steadily, with light coats necessary in the dry and windy autumn.

Credit Cards

All the major credit cards (Visa, MasterCard, American Express) are accepted in hotels, and in most restaurants and shops.

Bank Service

Most banks are open from 9:00 to 15:00, and close on weekends and national holidays. ATMs tend to have longer operating hours and tend to be available on weekends and holidays. An increasing number of ATMs are available 24 hours.

Shopping Hours

In general, large shops and department stores are open daily from 10:00 to 20:00. Smaller stores and shops around tourist attractions may have shorter hours. Most stores are open on weekends and national holidays. Large chain stores open everyday, however smaller independent stores may close one day a week or one day a month.

Tips and Taxes

Tips: There is no custom of tipping in Japan.
Consumption Tax: Paid by consumers when they purchase goods and services. The rate is currently 5%. Shops and other service providers are required to include the consumption tax in the prices shown.

Emergency

The nationwide emergency phone numbers are:

Police: 110

Ambulance/Fire: 119

Public Transportation

The city of Sapporo is served by an extensive public transport system consisting of 3 subway lines, JR (Japan Railway) lines, a streetcar route and a substantial bus service. Major JR routes provide access into the city and connections to New Chitose Airport, as well as the suburbs and surrounding areas of Sapporo. The three subway lines, serving a total of 46 stations throughout Sapporo, link the main business, commercial, and entertainment areas as well as the central railway station, to all parts of the city. Regular streetcar and buses cover routes not serviced by the subways and convenient shuttle buses link shopping areas and event venues around the city. Various one-day or pre-paid passes covering all these services are available, making travelling within Sapporo even cheaper and more convenient.

Explore Hokkaido University!

It is rare anywhere in the world for a campus of approximately 180 hectares (stretching 2 km from north to south, and 1.6 km east to west) to be located in the center of a city with a population of two million people. Remarkably, the built environment covers a mere 12% of this extensive campus, with the remaining consisting of open spaces such as farms, green spaces, forests, creeks, and pathways.

These spaces include many woodland areas as well as architecture dating right back to the time of Sapporo Agricultural College, the predecessor of Hokkaido University. As such, the Hokkaido University campus assumes an important role as a spine of green space as well as water system in Sapporo, and functions as the 'lungs' of the city.

Often voted the most beautiful campus in Japan, Sapporo Campus is stunning through out the four seasons attracting tourists from all over Japan as well as from overseas.

Information Center

Located just inside the Hokkaido University main gates, this naturally lit center with café and outdoor patio is nestled appropriately in gorgeous green surrounds. It's the perfect spot for a coffee break, or place to drop in to source material on the university's history, or to obtain a map for touring around the campus. You also enjoy the unique souvenir shopping produced by the university.

Central Lawn

This area was preserved and is now known as the Central Lawn, offering a space that is characteristic and symbolic of the campus – and the university's most popular green space, covering 12,000sqm.

Bust of Dr. W.S. Clark

On the north-west corner of the Central Lawn is a statue of William S. Clark, the founding father of Hokkaido University. The first version of the statue was created in 1926 as part of the 50th anniversary of the university's foundation, with contributions from within and outside the university. Dr. Clark's famous phrase, 'Boys be Ambitious,' was inscribed on its base.

The Hokkaido University Museum

Want to know more about Dr. Clark, the Universities founder? Or about our Nobel Prize winner Akira Suzuki and his research? The mission of The Hokkaido University Museum is to collect, preserve, document, digitize and utilize for the purposes of research, regular exhibitions and educational programs, the scientifically significant specimens and historical documents which the University has been accumulating since its establishment in 1876 to the present day. As an institution devoted to research and education, the Museum exhibits the results of past and present research, and aims to provide the bases for future research, while supporting the training and education of both its own students and local citizens. It's well worth a visit!

The "Model Barn" Site

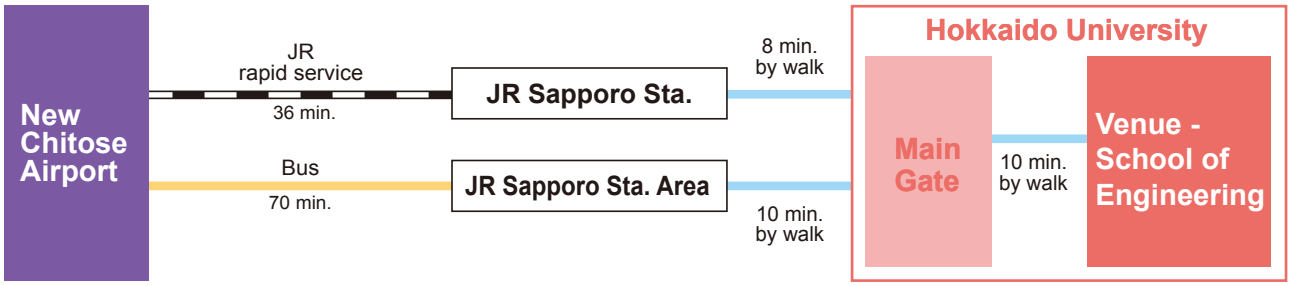
Arguably Hokkaido University's most important heritage buildings, a group of farm buildings situated on the northern side of the campus recommended to be constructed by Dr. W.S. Clark still exist today. The structures consist of a large dairy barn, a silo, corn storage barn, a building for threshing and hulling grain, a milk processing plant and a food processing plant. Of all the structures.These splendid buildings remain the oldest agricultural buildings in Hokkaido. The main barn is a two storied wooden structure with a large snow load bearing gabled roof. Today, it is preserved as an important cultural asset open for visitors and tourists.

Poplar Avenue

The poplar trees of 'Poplar Avenue' have become a proud symbol of Hokkaido University. The poplar was introduced to Hokkaido in the mid-Meiji era when its seeds were imported from the United States to develop windbreak forests. Unfortunately, public access to Poplar Avenue has been forbidden for decades due to the possible danger of the collapsing of these aged trees.

Travel Information

From Airport



Timetable of Transportation

JR Train	http://www2.jrhokkaido.co.jp/global/english/ttable/index.html
Bus	http://www.new-chitose-airport.jp/en/access/bus/

How to enjoy Sapporo?

Sapporo Info – an official smartphone app by the City of Sapporo!

English, Simplified Chinese, Traditional Chinese and Korean versions are available. It's free!
http://www.hbc.co.jp/rocket/sapporoinfo/pc/index_en.html

The app contains all about sapporo like attractions, food and more for tourists! You also can watch many videos. Once the content is downloaded, you can access it without being connected to the Internet (excluding the content based on location service and some streaming videos).
Why don't you enjoy staying in Sapporo with it?

For more details about Sapporo and sightseeing, please visit the following URL

Hokkaido Tourism Organization	http://en.visit-hokkaido.jp/
City of Sapporo	http://www.welcome.city.sapporo.jp/english/index.html
Sapporo Tourist Association	http://www.sta.or.jp/english/
Japan National Tourism Organization	http://www.jnto.go.jp/eng/
Official Tourism Guide for Japan Travel	http://www.japantravelinfo.com/top/index.php
Japan Travel Guide	http://www.japan-guide.com/e/e623.html
Sapporo Sightseeing Guide	http://www.welcome.city.sapporo.jp/english/

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