

FINAL PROGRAM

INNOVATIVE TECHNOLOGIES & MATERIALS IN STEEL STRUCTURES

ISSS-2019

The 10th International Symposium on
STEEL STRUCTURES

November 13-16, 2019

RAMADA PLAZA JEJU, Jeju, Korea



Organized by
Korean Society of Steel Construction

In cooperation with
International Journal of Steel Structures (IJOSS)
(<http://www.springer.com/journal/13296>)

The 10th International Symposium on Steel Structures Mobile Application Installation Readme



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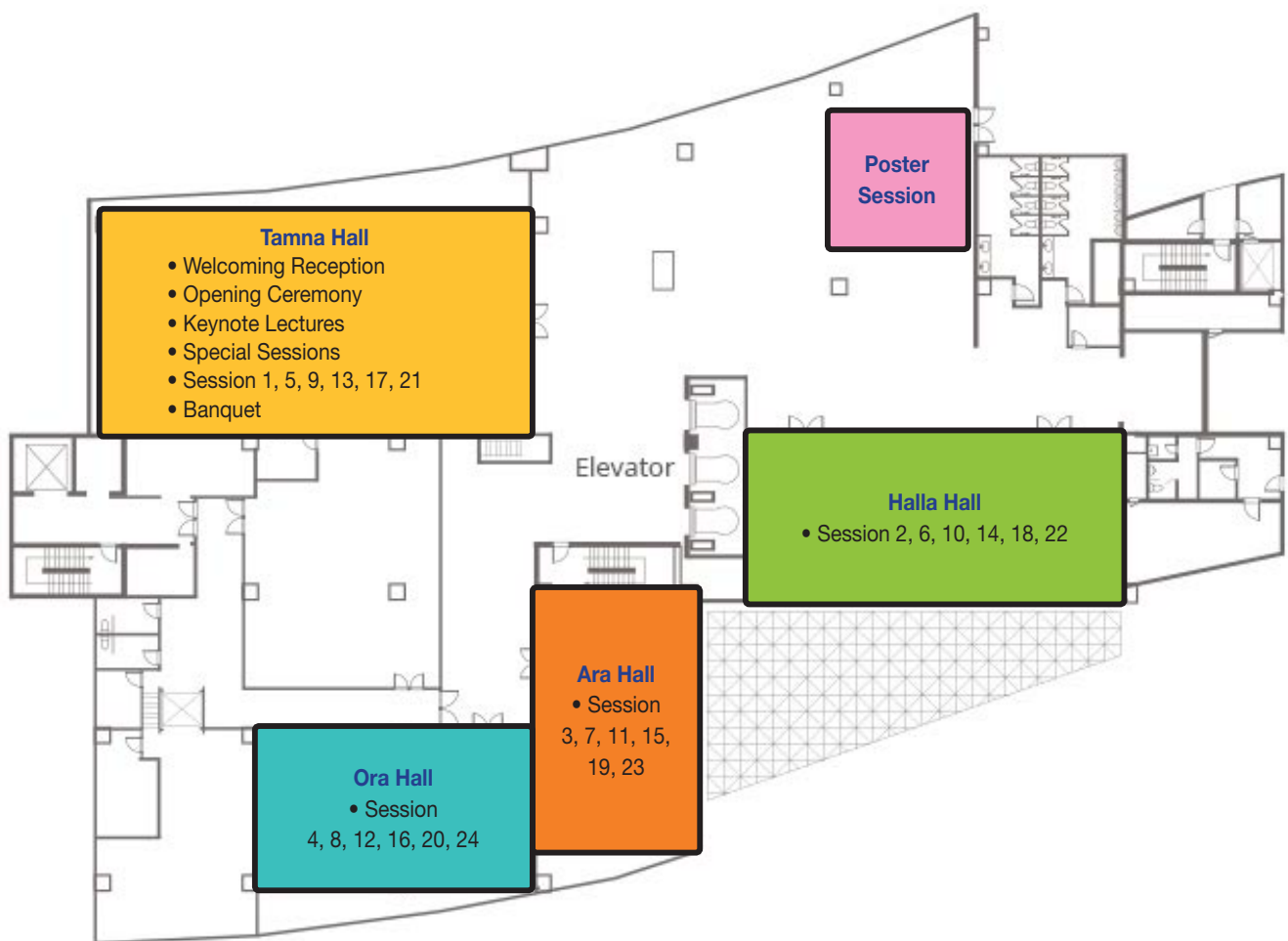
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8F, RAMADA PLAZA JEJU



ISSS-2019

WELCOME MESSAGE

On behalf of the Korean Society of Steel Construction (KSSC), it is our great pleasure to have this opportunity to welcome you all to Jeju, Korea to participate in the 10th International Symposium on Steel Structures, ISSS-2019. The main objective of this symposium is to provide an international forum for the presentation of recent advances on various aspects of steel construction and its applications to steel structures.

The theme of this symposium “Innovative Technologies & Materials in Steel Structures” has attracted interesting keynote papers and special papers from around the world, covering steel bridge design in harmony with concrete in recent Korea, strategies for mitigating fire hazard in steel bridges, seismic vulnerability assessment of steel petrochemical steel pipe-racks, design and welding of beam-to-column connections for super high-strength steel materials, seismic steel research and design in the United States, design, construction and maintenance of a landscape steel footbridge, high strength steel structures in China and giga steel.

The technical program of the symposium consists of presentations of 6 keynote lectures, 2 special sessions, 82 invited papers by each session organizer, and 115 general technical papers related to steel structures for fire safety, connections, steel & composite structures, steel bridges, hybrid structures, smart structures, railway bridge etc. and 7 presentations from related industries.

We would like to take this opportunity to express my deepest gratitude to the members of the international advisory committee, local advisory committee, steering committee, scientific committee and local organizing committee for their valuable contributions and hard works. We are also grateful to invited speakers and session organizers for their contributions and efforts which make the symposium a very successful one. All the general participants deserve our appreciation for their helpful submissions. Special thanks are offered to sponsors for their generous financial support, without which this symposium would not have been possible.

We would like to thank you for joining ISSS-2019 in Jeju. We hope that you will find the symposium to be both enjoyable and stimulating. Many of you have made long journeys to be here. If you have spare time after the symposium, please take the opportunity to visit some of the beautiful places in Jeju. We hope that you will have a very pleasant and wonderful time during your stay in Jeju, Korea.

Jeju, Korea

November 13-16, 2019



Doobyong Bae
Symposium Chairman of ISSS-2019

Byong J. Choi
Chairman of Local Organizing
Committee of ISSS-2019



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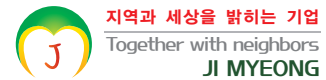
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SYMPOSIUM INFORMATION

VENUE

RAMADA PLAZA JEJU
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Website: <http://www.ramadajeju.co.kr>

SECRETARIAT OFFICE

• BEFORE AND AFTER SYMPOSIUM

Secretariat of ISSS-2019
Korean Society of Steel Construction (KSSC)
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Tel: +82-2-400-7108, Fax: +82-2-400-7104
E-mail: iss@mail.kssc.or.kr

• DURING SYMPOSIUM (November 13-15, 2019)

Secretariat Room of ISSS-2019
8F, RAMADA PLAZA JEJU

REGISTRATION

Registration Desk will be open in the lobby of 8F, RAMADA PLAZA JEJU. It is recommended that all participants stop by the registration desk upon their arrival at the venue to collect their conference materials.

• OPERATION DATE & TIME

- November 13, Wednesday : 16:00~18:00
- November 14, Thursday : 08:00~18:00
- November 15, Friday : 08:30~16:00

ON-SITE REGISTRATION FEE

Categories	Fee
General (Full)	USD 700 (KRW 700,000)
General (Partial)	USD 600 (KRW 600,000)
Student	USD 300 (KRW 300,000)
Banquet Coupon	USD 100 (KRW 100,000)

Full Registration: covers attendance at the conference, refreshments, two lunches and banquet.

Partial Registration: covers attendance at the conference, refreshments, and two lunches except banquet.

LUNCH

Lunch is available at the restaurant, Tammora, 1F, RAMADA PLAZA JEJU.

OPENING CEREMONY

The Opening Ceremony will be held between 08:30 and 09:00 in Tamna Hall on November 14, 2019.

TIME AND VENUE FOR EACH PRESENTATION

Session	Time	Venue
Keynote Lecture	30 min.	Tamna Hall
Special Session	30 min.	Tamna Hall
Oral Presentation	15 min.(including discussions)	Tamna Hall, Halla Hall, Ara Hall, Ora Hall
Poster Presentation	2 days	Tamna Hall Foyer

AVAILABLE VISUAL EQUIPMENTS

Beam Projector, Laptop

SYMPOSIUM OVERVIEW

November 13, Wednesday				
16:00-	Registration			(Tamna Hall Foyer, 8F)
18:00-19:30	Welcoming Reception			(Tamna Hall, 8F)
November 14, Thursday				
08:00-	Registration			(Tamna Hall Foyer, 8F)
08:30-09:00	Opening Ceremony			(Tamna Hall, 8F)
09:00-09:30	Keynote Lecture 1: Chia-Ming Uang			
09:30-10:00	Keynote Lecture 2: Luigi Di Sarno			
10:00-10:30	Keynote Lecture 3: Woo-jong Kim			
10:30-11:00	Special Session 1: Gang Shi			
11:00-11:20	Coffee Break			(Tamna Hall Foyer, 8F)
	Tamna Hall	Halla Hall	Ara Hall	(Ora Hall)
11:20-12:50	Session 1 Advances in Fire Safety Design	Session 2 Monitoring, IoT, ICT, 3D, Machine learning	Session 3 Bolted and Welded Shear Connections	Session 4 Advanced Technology in Bridge
12:50-13:50	Lunch			(Tammora, 1F)
13:50-15:50	Session 5 Connections	Session 6 Advances in Steel & Composite Structures	Session 7 Behavior of Materials and Members	Session 8 Construction and Maintenance of Bridges I
15:50-16:10	Coffee Break			(Tamna Hall Foyer, 8F)
16:10-18:10	Session 9 Dynamics	Session 10 Advances in Hybrid Structures	Session 11 Vibrations	Session 12 Construction and Maintenance of Bridges II
18:30-	Banquet			(Tamna Hall, 8F)
November 15, Friday				
08:30-	Registration			(Tamna Hall Foyer, 8F)
09:00-09:30	Keynote Lecture 4: Venkatesh Kodur			(Tamna Hall, 8F)
09:30-10:00	Keynote Lecture 5: Tsuyoshi Tanaka			
10:00-10:30	Keynote Lecture 6: Qilin Zhang			
10:30-11:00	Special Session 2: Yonkyun Song			
11:00-11:20	Coffee Break			(Tamna Hall Foyer, 8F)
	Tamna Hall	Halla Hall	Ara Hall	Ora Hall
11:20-12:50	Session 13 Smart Structures	Session 14 Open Deck Railway Bridge Rehabilitation	Session 15 Fire-Resistant Structures	Session 16 Stainless Steel
12:50-13:50	Lunch			(Tammora, 1F)
13:50-15:50	Session 17 Light Gauge Structures	Session 18 Composite Structures	Session 19 Stability	Session 20 Connections
15:50-16:10	Coffee Break			(Tamna Hall Foyer, 8F)
16:10-18:10	Session 21 Fatigue	Session 22 Advanced Steel Applications	Session 23 Steel Bridge Rehabilitation	Session 24 Damage Assessment
November 16, Saturday				
Post-Symposium Tour				

Poster(Tamna Hall Foyer, 8F)

TECHNICAL PROGRAM

KEYNOTE LECTURES

- Lecture 1: Historical Perspective on Seismic Steel Research and Design in the United States
Chia-Ming Uang (University of California, USA)
(November 14, Tamna Hall)
- Lecture 2: Seismic Vulnerability Assessment of Steel Petrochemical Steel Pipe-racks: Current Practice and Research Needs
Luigi di Sarno (University of Liverpool, UK)
(November 14, Tamna Hall)
- Lecture 3: Steel Bridge Design in Harmony with Concrete in Recent Korea
Woo-jong Kim (DM Engineering Co., Ltd, Korea)
(November 14, Tamna Hall)
- Lecture 4: Strategies for Mitigating Fire Hazard in Steel Bridges
Venkatesh Kodur (Michigan State University, USA)
(November 15, Tamna Hall)
- Lecture 5: Design and Welding of Beam-to-Column Connections for Super High-Strength Steel Materials
Tsuyoshi Tanaka (Kobe University, Japan)
(November 15, Tamna Hall)
- Lecture 6: Applications of Some New Technologies in Design, Construction and Maintenance of a Landscape Steel Footbridge
Qilin Zhang (Tongji University, China)
(November 15, Tamna Hall)

SPECIAL SESSIONS

- The 10th ISSS Special Session for Young Engineers :**
Recent Research Advances and Design Code of High Strength Steel Structures in China
Gang Shi (Tsinghua University, China)
(November 14, Tamna Hall)
- The 10th ISSS Special Session for Future Giga Steel Industry :**
Manufacturing and Application Issues of Giga Steel
Yonkyun Song (POSCO, Korea)
(November 15, Tamna Hall)

ORGANIZED SESSIONS

- Session 1: Advances in Fire Safety Design
Organized by Anthony Abu (University of Canterbury, New Zealand)
(November 14, Tamna Hall)

- Session 2: Monitoring, IoT, ICT, 3D, Machine learning
Organized by Takumi Ito (Tokyo University of Science, Japan)
(November 14, Halla Hall)
- Session 3: Bolted and Welded Shear Connections
Organized by Lip H. Teh (University of Wollongong, Australia)
(November 14, Ara Hall)
- Session 6: Advances in Steel & Composite Structures
Organized by Yong Du (Nanjing Tech University, China)
(November 14, Halla Hall)
- Session 7: Behavior of Materials and Members
Organized by Satoshi YAMADA (Institute of Innovative Research, Tokyo Institute of Technology, Japan)
(November 14, Ara Hall)
- Session 8: Construction and Maintenance of Bridges I
Organized by Eiki Yamaguchi (Kyushu Institute of Technology, Japan)
(November 14, Ora Hall)
- Session 10: Advances in Hybrid Structures
Organized by Yong Du (Nanjing Tech University, China)
(November 14, Halla Hall)
- Session 12: Construction and Maintenance of Bridges II
Organized by Eiki Yamaguchi (Kyushu Institute of Technology, Japan)
(November 14, Ora Hall)
- Session 13: Smart Structures
Organized by Eun Soo Choi (Hongik University, Korea)
(November 15, Tamna Hall)
- Session 14: Open Deck Railway Bridge Rehabilitation
Organized by Sanghyun Choi (Korea National University of Transportation, Korea)
(November 15, Halla Hall)
- Session 23: Steel Bridge Rehabilitation
Masahiro Sakano (Kansai University, Japan), Kab- Soo Kyung (Korea Maritime and Ocean University, Korea)
(November 15, Ara Hall)

GENERAL SESSIONS

- Session 4: Advanced Technology in Bridge
(November 14, Ora Hall)

TECHNICAL PROGRAM

Session 5: Connections
(November 14, Tamna Hall)

Session 9: Dynamics
(November 14, Tamna Hall)

Session 11: Vibrations
(November 14, Ara Hall)

Session 15: Fire-Resistant Structures
(November 15, Ara Hall)

Session 16: Stainless Steel
(November 15, Ora Hall)

Session 17: Light Gauge Structures
(November 15, Tamna Hall)

Session 18: Composite Structures
(November 15, Halla Hall)

Session 19: Stability
(November 15, Ara Hall)

Session 20: Connections
(November 15, Ora Hall)

Session 21: Fatigue
(November 15, Tamna Hall)

Session 22: Advanced Steel Applications
(November 15, Halla Hall)

Session 24: Damage Assessment
(November 15, Ora Hall)

POSTER SESSIONS

November 14-15, Tamna Hall Foyer

November 14, Thursday

08:00	Registration			
	Opening Ceremony			
08:30-09:00	Opening Address Welcoming Address Congratulatory Address	Byong J. Choi (Chairman of LOC, Korea) Doobyong Bae (Symposium Chairman of ISSS-2019, Korea) Kyung Jae Shin (President of KSSC, Korea)		
		Chair : Young-Kyu Ju (Korea University, Korea)		
09:00-09:30	Keynote Lecture1	Historical Perspective on Seismic Steel Research and Design in the United States <i>Chia-Ming Uang (University of California, USA)</i>		
09:30-10:00	Keynote Lecture2	Seismic Vulnerability Assessment of Steel Petrochemical Steel Pipe-racks: Current Practice and Research Needs <i>Luigi Di Sarno (University of Sannio, Italy / University of Liverpool, UK)</i>		
10:00-10:30	Keynote Lecture3	Steel Bridge Design in Harmony with Concrete in Recent Korea <i>Woo-jong Kim (DM Engineering Co., Ltd, Korea)</i>		
10:30-11:00	Special Session1	Recent Research Advances and Design Code of High Strength Steel Structures in China <i>Gang Shi (Tsinghua University, China)</i>		
11:00-11:20	Coffee Break			
Time	Session 1(Tamna Hall)	Session 2(Halla Hall)	Session 3(Ara Hall)	Session 4(Ora Hall)
11:20 - 12:50	Advances in Fire Safety Design Chairs: Anthony Abu (Univ. of Canterbury, New Zealand) Jun Won Kang (Hongik Univ., Korea)	Monitoring, IoT, ICT, 3D, Machine learning Chairs: Takumi Ito (Tokyo Univ. of Sci., Japan) Yoichiro Hashizume (Tokyo Univ. of Sci., Japan)	Bolted and Welded Shear Connections Chairs: Lip H. Teh (Univ. of Wollongong, Australia) Tae Soo Kim (Hanbat Natl. Univ., Korea)	Advanced Technology in Bridge Chairs: Dong-Ho Choi (Hanyang Univ., Korea) Mkihito Hirohata (Osaka Univ., Japan)
11:20-11:35	Severity Measures in Probabilistic Structural Fire Design <i>Hyunseok Park, Anthony Abu, Peter Moss</i>	Data Analysis to Detect Continuous Deformations of Architecture Using Machine Learning <i>Yoichiro Hashizume, Sakuya Kishi, Takashi Nakajima, Soichiro Okamura, Kenjiro Mori, Takumi Ito</i>	Net Section Capacity of High Strength Steel Bolted Connections with or without Staggered Bolts <i>Xue-Mei Lin, Michael C.H. Yam, Kwok-Fai Chung, Angus C.C. Lam</i>	Nominal Flexural Resistance Considering Ductility Ratio of Compact Composite I-Girder Sections Using HSB460 Steel Under Negative Bending <i>Ji-Hoon Lim, Dong-Ho Choi</i>
11:35-11:50	Equivalent Fire Severity in Deep Steel Beams <i>Jonathon MacIntyre, Anthony Abu, Peter Moss, Daniel Nilsson</i>	Study on Damaged Position Detection in Buildings Using Unsupervised Learning <i>Takayuki Kishimoto, Takashi Nakajima, Yoichiro Hashizume, Takumi Ito, Soichiro Okamura</i>	Bearing Strength of Multi-Bolt Lap Connection in High Strength Steel Considering Bolt Hole Misalignment <i>Yi-Fan Lyu, Yan-Bo Wang, Guo-Qiang Li</i>	Numerical Parametric Analysis of An Integral Bridge with Lateral Stiffness By Strut and Abutment Backfill <i>Jae-Young Kwak, Je-Hyuk Ann, Byung H. Choi</i>
11:50-12:05	Damage Evaluation of Composite Beams Under Fire Conditions <i>Moon Soo Kang, Jun Won Kang, Seong-Hoon Kee, Byong-Jeong Choi</i>	3D Monitoring and Damage Detection Method for Damaged Steel Frames After Seismic Disasters <i>Yasuhiro Beppu, Kenjiro Mori, Ayumu Ushigome, Takumi Ito</i>	Block Shear Strength of Lean Duplex Stainless Steel (STS329FLD) Double-Shear Bolted Connections <i>BoKyung Hwang, SeongKyu Hong, JeongYeon Kim, TaeSoo Kim</i>	Effectiveness of Laser-Arc Hybrid Welding in Fabrication of Steel Bridge Members <i>Kuya Morioka, Mikihiro Hirohata, Naoyuki Matsumoto, Koutarou Inose</i>
12:05-12:20	Thermal Insulation Performance of PCM Infilled Hybrid Floor System Based on Small-Scale Heating Tests <i>Min Jae Park, Young K. Ju</i>	A Fundamental Study on Heat Generation Characteristic of Steel Member During Inelastic Behavior and Thermoelectric Conversion <i>Eriko Iwasaki, Takumi Ito, Kenjiro Mori, Takahiro Yamamoto, Takashi Nakajima, Masahiro Motosuke, Yoichiro Hashizume</i>	Bearing Capacity of Ultra High Strength Steel Bolted Connections After Fire <i>Yong-Hyun Cho, Lip H. Teh, Ben Young</i>	Paint Coating Removal Technique for Bolted Joints By Portable Heating Device <i>Mikihiro Hirohata, Daiki Toyoshima, Hideyuki Konishi</i>
12:20-12:35	A Study on The Collapse Behavior of PEB Building Through Fire Experiment <i>So-Young Kim, Kyung-Jae Shin, Hee-Du Lee, Jong-Hun Woo, Su-Woong Lee</i>	Development of IoT Monitoring System for Damage Detection of Building Structures and Feasibility Study on A Single-Story House <i>Natsuhiko Sakiyama, Takuji Yamamoto, Yoichiro Hashizume, Takashi Nakajima, Takumi Ito</i>	Advanced Finite Element Modelling on Welded Stud Shear Connections in Composite Slabs with Profiled Steel Decking Having Various Geometrical Configurations <i>Min-Hui Shen, Kwok-Fai Chung, Jing-Zhong Tong</i>	Compressive Loading Test of Corroded Girder End in Steel Riveted Highway Bridge <i>Kanto Ishikawa, Jun Murakoshi, Kuniei Nogami, Yusuke Kishi, Shoichi Komine, Naofumi Hosomi</i>
12:35-12:50	An Experimental Study on The Fire Resistance of Wall-Slab Connection At High Temperature <i>Su-Hyeon Lee, Byong-Jeong Choi, Cheol-Kyu Kang, Jun-Won Kang, Seong-Hoon Kee</i>	Nonlinearity Detection Method of Shaking Table Test with Steel Frame Using Second Time Derivative of Absolute Acceleration <i>Masaki Wakui, Kazuki Buto, Jun Iyama, Eiichi Sato</i>	Simulation of Bearing Strength of Untightened Cold-Formed Steel Bolted Connections <i>Aziz Ahmed, Lip H. Teh, Refat A. Bhuiyan</i>	
12:50-13:50	Lunch			

Time	Session 5(Tamna Hall)	Session 6(Halla Hall)	Session 7(Ara Hall)	Session 8(Ora Hall)
13:50 - 15:50	Connections Chairs: Kyungkoo Lee (Dankook Univ., Korea) Nobuhiko Tatsumi (Tokyo Inst. of Tech., Japan)	Advances in Steel & Composite Structures Chairs: Yong Du (Nanjing Tech Univ., China) Gang Zhang (Chang'an Univ., China)	Behavior of Materials and Members Chairs: Satoshi YAMADA (Inst. of Innovative Research, Tokyo Inst. of Tech., Japan), Yu Jiao (Tokyo City Univ., Japan)	Construction and Maintenance of Bridges I Chairs: Chien Kuo Chiu (Nat'l Taiwan Univ., of Sci. and Tech., Taiwan) Taweep Chaisomphob (Thammasat Univ., Thailand)
13:50 - 14:05	Experimental Study of CFT Moment Connections Through Vertical Diaphragm <i>Kyungtae Kim, Young-Gi Kim, Taejin Kim, Jong-Ho Kim</i>	Experimental Study on Load Capacity of High Strength Concrete Encased Columns with Large Slenderness Under Static Force <i>Honghui Qi, Yong Du, J.Y. Richard Liew</i>	Experimental Study of Exposed-Type Column Bases with Double Yield Mechanism <i>Feng-Zhi Wang, Yao Cui, Hao Li</i>	Corrosion Investigation of Main Cable Consisted of Strand Ropes Used for Over 50 Years on An Actual Suspension Bridge <i>Kazuhiro Miyachi, Koji Kinoshita, Yoshitomo Yano, Yosuke Hatasa, Kazuya Tamada</i>
14:05-14:20	Experimental Investigation on A Full-Scale Modular Building Unit with Post-Tensioned Connections <i>Dam-I Jung, Bong-Ho Cho, Doo-Yong Lee, Jae-Sub Lee, Chan-Woo Jung</i>	Damage Performance and Acoustic Emission Characteristic for Concrete Filled Square Steel Tube Columns Under Axial Compression <i>Jianguang Yue, Cunpeng Qian, Hua Fang</i>	Numerical Investigation on Beam-To-Column Connections Subjected to Combined Flexure and Tension <i>Hayato Asada, Tsuyoshi Tanaka</i>	Shear Lag in Stiffened Box Girder Under Concentrated Load <i>Eiki Yamaguchi, Naoto Kittaka</i>
14:20-14:35	Continuation Method For Design Of Eccentrically Loaded Weld Group <i>Sung-Yong Kim, Jong-Hyun Jung, Cheol-Ho Lee</i>	Parametric Analysis on Hysteresis Performance and Restoring Force Model of LYP Steel Plate Shear Wall with Two-Side Connections <i>Ya-Qi Suo, Sheng-Gang Fan, Cheng-liang Liu, Yun-Long Han, Yang Guo, Run-Min Ding</i>	Experimental Study on Plastic Deformation Capacity of Composite Beam <i>Hirochika Kodaka, Norihito Miki, Shoichi Kishiki, Yoshihiro Iwata, Satoshi Yamada, Takashi Hasegawa</i>	Effectiveness of Buckling Restrained Damper on Seismic Behavior of Truss Bridge <i>Purevdorj Sosorburam, Eiki Yamaguchi</i>
14:35-14:50	Ultimate Strength of Gusset Plate-Tube Joints Subjected to Shear and Moment <i>Woo-Bum Kim</i>	Evaluating Failure of Continuous Steel-Concrete Composite Bridge Girders Under Localized Hydrocarbon Exposure <i>Gang Zhang, Chao-jie Song, Shuanhai He, Qiao Huang</i>	Extremely Low Cycle Fatigue Behavior of Structural Steel <i>Thaileang Touch, Satoshi Yamada, Takanori Ishida, Yu Jiao</i>	A Numerical Study on Overall Buckling Strength of Welded Box Section Columns Made of Sbh400 <i>Daisuke Matsu, Hiroki Takezawa, Kiyoshi Ono, Hideyuki Kasano</i>
14:50-15:05	Experimental Investigation on Shear Capacity of Rivets <i>Qingtian Su, Sizhe Wang, Xu Jiang</i>	Direct Strength Method for Stainless Steel Lipped Channel Columns Undergoing Local Buckling <i>Mei-He Chen, Sheng-Gang Fan, Ya-Qi Suo</i>	Numerical Analysis of Welded Flange-Bolted Web Beam-To-Column Connection Considering Bolts Slip <i>Dong-Seok Lee, Satoshi Yamada, Yu JIAO, Shoichi Kishiki, Takanori Ishida</i>	A Numerical Study on Local Buckling Strength of Simply Supported Plates Made of SBHS400 <i>Kotaro Sobajima, Kiyoshi Ono, Seiji Okada</i>
15:05-15:20	Behavior and Strength of Combined Bolted-Welded Lap Joints with High-Strength Steel <i>Dae-Kyung Kim, Cheol-Ho Lee</i>	Parametric Analysis on Elastic Buckling Performance of Low Yield Point Steel Plate Shear Wall with Two-Side Connections <i>Sheng-Gang Fan, Yang Guo, Yun-Long Han, Cheng-Liang Liu, Ting Zhu</i>	A Concise Hysteresis Model of High Performance 590MPa Steel Grade Considering The Bauschinger Effect <i>Satoshi Yamada, Dong-Seok Lee, Yu JIAO, Takanori Ishida, Shoichi Kishiki</i>	An Experimental Study on Stress-Strain Characteristic of Electric Resistance Welded Steel Pipes <i>Hitoshi Ozoe, Taiki Inamori, Kiyoshi Ono</i>
15:20-15:35	Structural Behavior of Pin Detailed Connection with Concrete Slab <i>Nobuhiko Tatsumi, Shoichi Kishiki</i>	Nonlinear Analytical Model for CFDST Stub Columns with Corrugated Steel Tubes <i>Yong Fang, Chang-Yong Liu, Yu-Yin Wang, Hua Yang</i>	Study on Cumulative Deformation Capacity of Steel Beam-To-Column Connections Based on Numerical Analysis <i>Yu Jiao, Satoshi Yamada</i>	Artificial-Intelligence-Based Cable Force Control in Cantilever Erection of Cable-Stayed Bridges <i>Yu-Chi Sung, Eng-Huat Teo, Chun-Ying Wang, Kuo-Hung Chao</i>
15:35-15:50	Research on The Shear Resistance of Headed Studs in Push-Out Test with Cracked Concrete <i>Disheng Zou, Qingtian Su</i>		Finite Element Analysis of Value-Added Exposed Column Base Connections <i>Yao Cui, Yangzi He, Fengzhi Wang, Hao Li</i>	Optimum Fatigue Life Management Through Updating Process with Inspection Information <i>Baixue Ge, Sunyong Kim</i>
15:50-16:05	Seismic Performance of H-Shaped Beam-To-Rectangular Tubular Section Column Connections Using Slotted Diaphragm <i>Joo-Ho Jin, Hee-Sun Seo, Ji-Mo Koo, Seong-Hoon Hwang, Koo-Yun Park, Kyung-Koo Lee</i>		Experimental Study on Cyclic Behaviors of A High Ductility Twinning Induced Plasticity Steel <i>Kim Eng Chouery, Liang-Jiu Jia, Man-Chao He, Min Xia</i>	
15:50-16:10	Coffee Break			

TECHNICAL PROGRAM

November 14, Thursday

Time	Session 9(Tamna Hall)	Session 10(Halla Hall)	Session 11(Ara Hall)	Session 12(Ora Hall)
16:10 - 18:10	Dynamics Chairs: Jaehoon Bae (Korea Univ., Korea) Jun Iyama (Univ. of Tokyo, Japan)	Advances in Hybrid Structures Chairs: Yong Du (Nanjing Tech Univ., China) Jianguang Yue (Nanjing Tech Univ., China)	Vibrations Chairs: Cheol-Ho Lee (Seoul Nat'l Univ., Korea) Takeshi Hanji (Nagoya Univ., Japan)	Construction and Maintenance of Bridges II Chairs: Eiki Yamaguchi (Kyushu Inst. of Tech., Japan) Yeun Chul Park (Seoul Nat'l Univ., Korea)
16:10-16:25	A Experimental Study on The Hysteresis Behavior and Energy Dissipation According to Trapezoidal Corrugated Steel Plate <i>Don-Woo Lee, Mi-Na Yoo, Su-Deok Shon, Seung-Jae Lee</i>	Experimental Study on The Behaviours of High Strength Concrete Encased Steel Columns <i>Jian Zhu, Yong Du, Richard Liew</i>	Local Strain Based Low Cycle Fatigue Assesment of Gusset Plates in Steel Truss Bridges Under Earthquake <i>Chao Jiang, Takeshi Hanji, Kazuo Tateishi, Masaru Shimizu</i>	Development of A Large-Scale Steel Bridge Model for Providing Visual Understanding of Structural Framing and Detail <i>Koji KINOSHITA, Yuta SAKURAI, Hideaki HATANO, Minoru KUNIEDA, Keitetsu ROKUGO</i>
16:25-16:40	A Study on The Structural Performance According to Ceiling Bracket of The Restrained Moment Connection Modular System <i>Don-Woo Lee, Eui-Shin Kawk, Su-Deok Shon, Seung-Jae Lee, Chang-Hoon Kang</i>	Out-of-Plane Stability of Fixed Concrete-Filled Steel Tubular Arches Under Uniformly Distributed Loads <i>Chang-Chun Yuan, Chang-Yong Liu, and Qing Hu</i>	Hysteretic Behavior of Origami-Inspired Steel Plate Shear Wall <i>Wang Shuting, Lu Jinyu, Lu Ding, Qiao Xudong</i>	Experimental Verification for Effect of General Corrosion on Fatigue Strength <i>Lee-Sak An, Yeun Chul Park, Ho-Kyung Kim</i>
16:40-16:55	Real-Time Detection of Beam-End Fractures Based on Strain Measurements During Earthquakes <i>Jun Iyama, Takashi Hasegawa, Hiroto Nakagawa, Yosuke Kaneshiro</i>	Axially Compressive Behavior of Circular Concrete-Filled Steel Tube with Notch <i>Haijia Huang, Lanhui Guo, Hongda Li, Sumei Zhang</i>	Finite Element Analysis of Flexural Yielding Steel Strip Damper Subjected to Cyclic Load <i>Robel Wondimu Alemayehu, Jae-hoon Bae, Chang-Hwan Lee, Young K. Ju</i>	Development of Maintenance System for Highway/ Expressway in Thailand Using Mobile Laser Scanning <i>Taweep Chaisompob, Ekarin Lueangvilai, Tran Thanh Ha, Satoshi Annaka</i>
16:55-17:10	Radius-Cut Coke-Shaped Strip Dampers Subjected to Cyclic Loading <i>Jae-hoon Bae, Chang-Hwan Lee, Minjae Park, Jaeho Ryu, Youngsik Kim, Young K. Ju</i>	Experimental Study of Cft Column Reinforced with Aramid and Polyester FRPs <i>Tae-Hun Lee, Won-Ho Choi, Sung-Mo Choi</i>	Correction Factors for Predicting Critical Wind Velocity of Vortex-Induced Vibration <i>Seungtaek Oh, Jung Sik Kong</i>	Study on Benefit-Cost Ratio Analysis of Retrofit Strategies for Bridge Maintenance <i>Chien-Kuo Chiu, Eiki Yamaguchi, Daniel Santoso</i>
17:10-17:25	Prototype Development of A Readily-Deployable Pressure and Vibration Measurement System for Civil Infrastructures <i>Tae-Hun Kim, Oh-Sung Kwon, Ho-Kyung Kim</i>	Bolted End-Plate Splice Method for Composite Column (BB Splice for PSRC Column) <i>Jong-Jin Lim, Dae-Kyung Kim, Seung-Hwan Lee, Tae-Sung Eom</i>	Experimental Study on Full Scale Moment Resisting Frame Subjected to Multiple Set of Cyclic Loading Histories <i>Keita Kotaki, Takanori Ishida, Randy Tenderan, Shoichi Kishiki, Satoshi Yamada</i>	Analyzing Rust Constituent Produced By Mixture of Chloride Anti-Freezing Agent and Corrosion Inhibitor in Existing Bridge <i>Yosuke Hatasa, Koji Kinoshita, Rina Hasuike, Kazuhiro Miyachi</i>
17:25-17:40	Safety Verification of Tension-Only Braced-Frame Structures Subjected to Multiple Aftershocks <i>Shotaro Nakada, Shoichi Kishiki</i>	Experimental Investigation of Axial Compression Behavior of Encased Composite Columns with High-Strength Angles <i>Tae-Sung Eom, Jin-Won Kim</i>	Pounding Effects Upon Pier Responses in A Multi-Span Simply Supported Steel Girder Bridge Under Earthquakes Considering Foundation Conditions <i>Ho-Seong Mha, Jeong-Hun Won, Sang-Hyo Kim, Sung Bo Kim</i>	Applicability of Leeb Hardness Test for Estimating Change in Mechanical Properties of Fire-Damaged Steel Members <i>Jun Ito, Mikihiro Hirohata</i>
17:40-17:55		Productivity Enhanced Composite Structural System in Singapore and South Korea <i>Jaewook Jeong, Seunghwan Lee</i>	Evaluation of Equivalent Static and Dynamic Analysis Method for Seismic Design of Non-Structural Elements <i>Su-Chan Jun, Cheol-Ho Lee, Sung-Yong Kim, Seung-Ho Lee</i>	Analysis of The Total System Performance of Cable-Stayed Bridge with Floating Tower According to The Inclined Tendon Arrangement <i>Minseo Jang, Yun Woo Lee, Seungjun Kim, Young-Jong Kang</i>
17:55-18:10		Numerical Modeling and Analysis on Concrete-Filled Steel Tubes Incorporating High-Strength Steel <i>Chengliang Tu, Yongjiu Shi</i>	Energy Absorption Capacity and Damage Distribution in Torsional-Systems Using Energy-Based Design Approach <i>Bagheri Bahador, Shin Seung-Hoon, Oh Sang-Hoon</i>	A Study on The Long-Term Measurement Data Analysis of Existing Cable Stayed Bridge Using ARX Model <i>Yun-Woo Lee, Min-Seo Jang, Seung-Jun Kim, Young-Jong Kang</i>
18:10-18:25			Measurement of Bolt Tension of Friction Damper Using Manufactured Load Cell <i>Hye-Min Shin, Dae-Geun Kim, Min-Ki Lee, Ye-Jin Jang, Kyung-Jae Shin</i>	
18:30	Banquet			

November 15, Friday

8:30	Registration			
		Chair : Kyungsik Kim (Cheongju Univ., Korea)		
09:00-09:30	Keynote Lecture4	Strategies for Mitigating Fire Hazard in Steel Bridges Venkatesh Kodur (Michigan State University, USA)		
09:30-10:00	Keynote Lecture5	Design and Welding of Beam-to-Column Connections for Supper High-Strength Steel Materials Tsuyoshi Tanaka (Kobe University, Japan)		
10:00-10:30	Keynote Lecture6	Applications of Some New Technologies in Design, Construction and Maintenance of a Landscape Steel Footbridge Qilin Zhang (Tongji University, China)		
10:30-11:00	Special Session2	Manufacturing and Application Issues of Giga Steel Yonkyun Song(POSCO, Korea)		
11:00-11:20	Coffee Break			
Time	Session 13(Tamna Hall)	Session 14(Halla Hall)	Session 15(Ara Hall)	Session 16(Ora Hall)
11:20-12:50	Smart Structures Chairs: Eun Soo Choi (Hongik Univ., Korea) Jong-Han Lee (Inha Univ., Korea)	Open Deck Railway Bridge Rehabilitation Chairs: Sanghyun Choi (Korea Nat'l Univ. of Transportation, Korea) HyoungBo Sim (Incheon Nat'l Univ., Korea)	Fire-Resistant Structures Chairs: Venkatesh Kodur (Michigan State Univ., USA) Xuhong QIANG (Tongji Univ., China)	Stainless Steel Chairs: Ho Seong Mha (Hoseo Univ., Korea) Ying Hu (Chongqing Univ., China)
11:20-11:35	Vibration Control of Pipes Using Dual Rubber Springs Smart Damper Yunkyu Ha, Eunsoo Choi, Tae Yeong Kim, Seong Jun Park, Yeon Seong Lee, Du Hyun Kim, Alireza Ostadrahimi	Some of The Results of Monitoring of Stress-Strain State of Railroad Bridges Steel Superstructures Andrey Yashnov	Evaluation of The Lateral Torsional Buckling Behavior of Stepped Beams At Midspan Exposed to Fire Shane Alolod, Xuan Tung Nguyen, Mabel Catuira, Jong-Sup Park	Experimental Investigation on Cold-Formed Ferritic Stainless Steel Hollow Sections Zhe Lu, Ying Hu
11:35-11:50	Self-Centering Devices Using Dual SMA Rings with Symmetric Behavior Eunsoo Choi, Yun Kyu Ha, Tae Yeong Kim, Seong Jun Park, Yeon Seong Lee, Du Hyun Kim, Woo Bum Kim	Lateral-Torsional Buckling Analysis of Discretely Braced I-Girders with Sliding Track Panels for Railway Bridges Je-Hyuk Ann, Jae-Young Kwak, Jin-Young Lee, Byung H. Choi	Stability of Braced Frame Structure Under Standard and Design Fire Exposure Svetha Venkatachari, Venkatesh K.R. Kodur, Mohannad Z. Naser	Finite Element Analysis on Buckling Strength of The Stainless Steel Tubular Column Under Axial Compression Sung-Soo Kim, Tae-Soo Kim, Jeong-Yeon Kim, Bo-Kyung Hwang
11:50-12:05	Smart Dampers Using Magnets and Precompressed Rubber Springs Eunsoo Choi, Yun Kyu Ha, Tae Yeong Kim, Seong Jun Park, Yeon Seong Lee, Du Hyun Kim, Seung Woo Ha	Tuning Effects of Train-Induced Resonant Vibrations on Steel Railway Bridges J.D. Yau, L. Fryba, S. Urushadze	Fire Severity Measures in Probabilistic Structural Fire Design Hyunseok Park, Anthony Abu, Peter Moss	Experimental Study of Slip Factors in Stainless Steel Preloaded Bolted Connections Yueyan Gu, Jiachang Wang, Baofeng Zheng, Ganping Shu, Qinglin Jiang
12:05-12:20	Steel Construction and Construction Management Through 3D Scanning Technology and Building Information Modelling (BIM) Tae Hyuk Kim, Byoung-Do Lee, Kwang-Ryang Chung	Fatigue Performance Analysis of Tension Clamp with Field Construction and Operation Status Chang-Beom An, Hyoung-Bo Sim, Yeun-Chul Park, Man-Cheol Kim	Thermal Performance of Steel Eccentrically Braced Frames Subjected to Fire Conditions Jong Wan Hu, Rachel Chicchi, Iman Mansouri, Seyed Javad Mortazavi, Jae-Joung Kim	Structural Component Experiments of The Distributed Underwater Monitoring System: Floating Buoy and Underwater Base Station Ho-Seong Mha, Hak-Lim Ko, Won-Jung Yoon, Je-Hyeong Jang, Yeon-Seung Lee
12:20-12:35	Hysteretic Behavior of Steel-Assembled Buckling-Restrained Braces Dong-Hyeon Shin, Byung-Ick Yoon, Hyung-Joon Kim	Development of Track Components for CWR Construction on An Open Deck Railway Bridge SooHo Chae, Inchul Back, Sanghyun Choi	A Simplified Approach for Evaluating The Temperature Profile of Composite Beams Exposed to Fire Using Impact-Echo Testing Seong-Hoon Kee, Jun Won Kang, Byong-Jeong Choi	Tests of Stainless-Clad Bimetallic Steel Welded Circular Section Columns Pingyu Zhao, Huiyong Ban, Yixiao Mei, Yongjiu Shi
12:35-12:50	Incorporating Laser Ultrasonic Propagation Imaging Method and Data Mining Algorithms for Bolt Looseness Automatic Diagnosis Dai Quoc Tran, Kassahun Demissie Tola, Ju-Won Kim, Byoungjoon Yu, Seunghye Park	Axial Rail Stress Analysis of An Open Deck Railway Bridge Using Displacement Control SooHo Chae, Sanghyun Choi	Behaviour of Full High Strength Steel Extended Endplate Connections At Ambient Temperature and After Fire Xuhong Qiang, Yifei Shen, Xu Jiang, Qilin Zhang, Frans S.K. Bijlaard	Comparison of Hysteretic Behavior of Austenintic Stainless Steel (STS316L) and Carbon Steel Slit Damper BoKyung Hwang, YoungJu Kim, JinWon Kim, TaeSoo Kim
12:50-13:05	Dynamic Seismic Responses of Circular RC Bridge Columns Retrofitted and Repaired with Shape Memory Alloys Donghyuk Jung, Bassem Andrawes	Track Buckling Analysis of Ballastless Plate Girder Bridge Jiho Moon		
12:50-13:50	Lunch			

TECHNICAL PROGRAM

November 15, Friday

Time	Session 17(Tamna Hall)	Session 18(Halla Hall)	Session 19(Ara Hall)	Session 20(Oru Hall)
13:50-15:50	Light Gauge Structures Chairs: Seungjun Kim (Daejeon Univ., Korea) Satoshi YAMADA (Inst. of Innovative Research, Tokyo Inst. of Tech., Japan)	Composite Structures Chairs: Xianglin Yu (Tsinghua Univ., China) Donghyuk Jung (Pusan Nat'l Univ., Korea)	Stability Chairs: Kyungsik Kim (Cheongju Univ., Korea) Takashi Hara (Inst. of Tech., Tokuyama College, Japan)	Connections Chairs: Kangmin Lee (Chungnam Nat'l Univ., Korea) Changyong Liu (Harbin Inst. of Tech., China)
13:50-14:05	Experimental Study on The Structural Performance of Prefabricated Panel That Can Be Used for Cold-Formed Steel Shear Wall System <i>Doo-Yong Lee, Bong-Ho, Cho, Dam-I, Jung, Jae-Sub Lee</i>	Investigation of Buckling Behavior of Slender Web Steel Beam Strengthened with Composite Materials <i>Angus, Chi-Chiu Lam, Michael, Chi-Ho Yam, Cheng Fang</i>	Ultimate Behaviors Of Stiffened Panels Built-Up With High Performance Steel Capable Of Extremely Large Strain-Hardening <i>Kyungsik Kim</i>	Cyclic Loading Test for Concrete-Filled U-Shaped Steel Beam to Concrete-Filled Steel Tube Column Connections <i>Xing Xu, Rui Cheng, Han qing Sun, Rui qi Liu</i>
14:05-14:20	Cyclic Plasticity Model of High Strength Structural Steels <i>Fangxin Hu</i>	Research on Axial Compression Performance of Strength-Gradient Composite Columns with Built-In High-Strength Concrete Filled Steel Tube <i>Jing Ji, Dian-You Yu, Liang-Qin Jiang, Yin-Chun Liu, Mao-Mao Yang, Hua-Yu Song, Li Jiang</i>	Lateral Cyclic Loading Experiment For Seismic Performance Of Two-Stories Rc Structure Frame Retrofitted By External Steel Cylinder Damper <i>Byeong-Jin, Park, Tea-Hun, Lee, Sang-Hoon, Oh, Sung-Mo Choi</i>	Structure Behavior of The Bolted Joints in Metal Construction <i>Miku Kurosawa, Shoichi Kishiki, Nobuhiko Tatsumi</i>
14:20-14:35	Experimental Study on Load Carrying Capacity Enhancement of System Supports Considering Full Installation of Bracing Members <i>Nam-Gwon Jang, Jeong-Hun Won, Seung Hyeon Shin, Ye Ji Na, Ho-Seong Mha</i>	Research on Seismic Performance of Strength-Gradient Composite Columns with Built-In High-Strength Concrete Filled Steel Tube <i>Jing Ji, Dian-You Yu, Liang-Qin Jiang, Yang Wang, Mao-Mao Yang, Hua-Yu Song, Li Jiang</i>	Effect Of The Torsional Rigidity Of The Flange On The Elastic Shear Buckling Of The Web Panel <i>Dae-Hyeok Kim, Sang-Yun Han, Min-Seo Jang, Jong-Min Kim, Young-Jong Kang</i>	Cyclic Loading Test About The Beam-To-Column Connection with T-Stub Type Slit Damper <i>Hae-Yong Park, Sang-Hoon Oh</i>
14:35-14:50	Dynamic Behaviors of A Submerged Deck Under Wave Excitations <i>Ho-Seong Mha, Jeong-Hun Won, Won Jung Yoon, Jae Seol Shim, Je Hyeong Jang</i>	Numerical Study on A Complete Circumferential Surface Crack in A Pipe Strengthened with CFRP <i>Zhuxuan Li, Tao Chen, Zican Xia</i>	Numerical Investigation On Behavior Of Cold-Formed Built-Up Open-Section Columns With G-Section Under Axial Compression <i>Han qing Sun, Rui Cheng, Xing Xu, Chao Hu</i>	Investigating Seismic Behavior of WUF-W Connections According to Three Different Access Hole Configurations Using Fea <i>Sang Whan Han, Jung-ho Hyun, Eun Seon Cho, Jin-Won Kim</i>
14:50-15:05	Evaluating Buckling Strength of HSB460 Steel Tubular Columns <i>Seong-Wook Han, Yeun Chul Park, Ho-Kyung Kim, Doobyong Bae</i>	Seismic Behavior of Fully Prefabricated CFDST Frames with Beam-Only-Connected Steel Plate Shear Walls <i>Yi Hu, Junhai Zhao</i>	Free Torsional Rigidity And Its FEM Verification Of Concrete-Filled Elliptical Steel Tubular Beams <i>Wen-fu Zhang, Ming-hao Zhang, Wei Yan, Qing Xu, Ying-chun Liu</i>	Fundamental Characteristics of Driving Pin and Its Effects on Structural Components <i>Anisa Jasmine Apriyadi, Nobuhiko Tatsumi, Shoichi Kishiki, Eiichi Watanabe, Yukichi Okada</i>
15:05-15:20	Blast Response of Concrete-Filled Steel Tubular Columns Strengthened with CFRP <i>Jing Dong, Jun-hai Zhao, Guo-wei Wang</i>	Strength Evaluation of Angle Type Shear Connectors in Composite Beams <i>Jun-Seop Lee, Kyung-Jae Shin, Min-Ki Lee, Chul-Ho Yoo</i>	Analytical Solution For Lateral-Torsional Buckling Of I-Beams Under Combination Of Uniformly Distributed Load And Concentrated Load At Mid-Span <i>Wen-fu Zhang, Wei Yan, Ying-chun Liu, Bin Huang, Zhao-ming Hang</i>	An Experimental Study on The External Strong and Weak Axis Connection of Modular System <i>Daehee Jang, Keunyeong Oh, Kangmin Lee</i>
15:20-15:35	Effect of Repairment of Existing Tall Building By Attaching Dampers <i>Atsushi Sugawara, Satoshi Yamada, Takanori Ishida</i>	Finite Element Model on Mechanical Behavior of Unit-Typed Composite Shear Wall with Double Steel Plates and Infill Concrete <i>LIU Dong, SHI Yongjiu, YU Xianglin, TU chengliang, XU Yue</i>	Joint Coupler For Wedge Binding Scaffold System <i>Takashi Harai, Katsukiyo Shimomura, Tatsuo Kurisu</i>	Seismic Performance Evaluation of The Internal Strong and Weak Axis Connection of Modular System Using H-Shape Steel <i>Daehee Jang, Sunghyun Park, Kangmin Lee</i>
15:35-15:50	Global Performance Analysis of The Cable-Stayed Bridges with Floating Towers Under The Harsh Wave Conditions <i>Seungjun Kim, Minseo Jang, Yunwoo Lee, Deokhee Won, Young-Jong Kang</i>	Experimental and Theoretical Investigations on The Shear-Bond Behavior of High Performance Composite Slabs <i>Xiang-Lin Yu, Yong-Jiu Shi, Yaoguang Peng, Kunjian Lin, Dong Liu</i>	Designing Efficient Free-Form Lattice Structure Considering Imperfection Sensitivity <i>Ruoqiang Feng, Fengcheng Liu</i>	Static Behavior of High-Strength Steel Rhs X-Joints Including Chord Stress Effect <i>Seon-Hu Kim, Cheol-Ho Lee, Dong-Jin Shin</i>
15:50-16:10	Coffee Break			

Time	Session 21(Tamna Hall)	Session 22(Halla Hall)	Session 23(Ara Hall)	Session 24(Ora Hall)
16:10 - 18:10	Fatigue Chairs: Kyong-Ho Chang (Chung-Ang Univ., Korea) Koji Kinoshita (Gifu Univ., Japan)	Advanced Steel Applications Chairs: Hong-sik Ryu (POSCO, Korea) Hwangbo Seok (The Korean Structural Engineers Association, Korea)	Steel Bridge Rehabilitation Chairs: Masahiro Sakano (Kansai Univ., Japan), Kab-Soo Kyung (Korea Maritime and Ocean Univ., Korea) ※ 12 min. for each presentation	Damage Assessment Chairs: HyoungBo Sim (Incheon Nat'l Univ., Korea) Zhe Liu (Shandong Jianzhu Univ., China)
16:10-16:25	Effect of Welding Penetration Defect on Fatigue Crack Initiation of Cruciform Member <i>Kyong-Ho Chang, Shazia Muzafer, TaeHwan Um, Z.M Wang</i>	Design of Special Moment Frame using Pos-H <i>Hong-sik Ryu</i>	Recreation of Root Cracks in Transverse Welds Between Sole Plate and Bottom Flange <i>Takahide Hirai, L. H. Ichinose, Masahiro Sakano</i>	Influence of Post-Weld Heat Treatment with Induction Heating on Steel Members Repaired By Patch Plate Welding <i>May-Phyo Aung, Mikihiro Hirohata</i>
16:25-16:40	Fatigue Strength of Out-Of-Plane Gusset Welded Joints Under Variable Amplitude Loading in Long Life Region <i>Yuki Banno, Koji Kinoshita</i>	Development of P-Box Column to RC Beam Connection <i>Jin-won Kim</i>	Fatigue Behavior of Riveted Beams Removed From Amarube Bridge <i>Yuichi Shiraishi, Masahiro Sakano</i>	Experimental Study of Corner Joint of High-Performance Steel Fabricated By Submerged Arc Welding <i>Yuta Kibishi, Satoshi Yamada, Yuko Shimada, Takanori Ishida, Hiromi Shimokawa, Satoshi Aoyagi</i>
16:40-16:55	Fatigue Crack Propagation Analysis of Longitudinal Welded Joint Containing Blowholes <i>Cut Atika Putri, Kazuo Tateishi, Takeshi Hanji, Masaru Shimizu</i>	Structural Characteristics and Site Application Examples of Box-type Semi-Slim Floor Composite Beams <i>Kyongsoo Yom</i>	Non-Destructive Identification of Closed Fatigue Crack Opening-Closing Behavior By Phased Array Ultrasonic Testing <i>Kenji Obara, Koji Kinoshita, Takehisa Nohdo, Masahiro Kozuka</i>	Characterization of Rust Layer Formed on Carbon Steel Under Wet/Dry Cycle Conditions Exposed to Chloride/Non-Chloride Anti-Freezing Agent Solution <i>Rina-Hasuike, Koji-Kinoshita, Yosuke-Hatasa</i>
16:55-17:10	Finite Element Analysis of FRP-Strengthened Steel Plate with Semi-Elliptic Surface Crack <i>Zi-Can Xia, Tao Chen, Zhu-Xuan Li</i>	Nonlinear Analysis of Steel joint with Large Compression Force <i>Sang goo Lee</i>	Development of Fatigue Test System for Actual Sign Structures and Their Fatigue Characteristics <i>Kouki Murase, Koji Kinoshita, Kenji Obara, Masahiro Kozuka</i>	Seismic Vulnerability Analysis of Structure with Uneven Settlement of Foundation <i>Chao Bao, Fang-ze Xu, Xiao-tong Ma, Ming-jie Mao, Shang-rong Zhang, Li-xin Zhang</i>
17:10-17:25	Numerical Study on Fatigue Properties of CFRP-Repaired Steel Plates with Mixed-Mode Edge Crack <i>Cheng Yao, Tao Chen</i>	The Bending and Seismic Performance of Hybrid Forming Composite Beam (HyFo Beam) <i>Min jung Kang</i>	Effectiveness of Inspector'S First-Aid Works At Inspection Site As Proactive Maintenance <i>Midori Ando, Shigeaki Tsukamoto, Kinya Yamashita</i>	Damage Alarming for Large Circular Arch Steel Structure Under Ambient Excitation <i>Zhe Liu, Cheng-bo Wang</i>
17:25-17:40	Fatigue Crack Initiation Assessment of Load-Carrying Cruciform Welded Joints Under Low Cycle Actions <i>Yuko Ohashi, Takeshi Hanji, Kazuo Tateishi, Masaru Shimizu</i>	Top-Down Construction Example(CWS) : All at Once Excavation and Beam Installation of B1 & B2 Underground for Top-Down Construction <i>Su-min Jeon</i>	Simple Repair Technique of Fatigue Crack By Automatic Center Punch <i>Can Shen, Toshiyuki Ishikawa, Kentaro Yamada</i>	Investigation of Fatigue Strength Improvement of Welded Joints on The Sign Structures By Impact Crack Closure Retrofit Treatment <i>Masahiro Kozuka, Koji Kinoshita, Kenji Obara</i>
17:40-17:55	Estimation of Fatigue Crack Propagation Behavior in Steel Plate Subjected to Out of Plane Bending <i>Kentaro Horio, Kazuo Tateishi, Masaru Shimizu, Takeshi Hanji</i>	Floor Live Load Improvements, LOW TECH! <i>Wooyoung Kang</i>	Study on The Reinforcement Method with Polymar Cement Mortar for Steel Column <i>Takeaki Kubo, Nozomu Taniguchi, Weiwei Lin, Shinya Satake</i>	Estimation of Beam Deflection Based on Terrestrial Laser Scanning Data Using Genetic Algorithm <i>Michael Bekele Maru, Donghwan Lee, Soojung Shin, Hau Van Quach, Seunghee Park</i>
17:55-18:10	Development of Method for Fatigue Reliability Assessment Considering Multiple Crack Coalescence <i>Jun-Yong Park, Yeun Chul Park, Ho-Kyung Kim</i>		Evaluation of Optimal Condition for Removing Paint Using Clean Laser System <i>Jin-Eun Park, Kab-Soo Kyung, Myeong-Gi Moon, Kang-Hoon Koh, Ik-Sang Yun</i>	Fundamental Experiment for Damage Detection of Steel Finger Type Expansion Joints Based on Passing Sound <i>Sanako Kato, Koji Kinoshita, Shoichi Taga, Yutaro Umekawa, Hisatada Suganuma, Masahiro Kozuka</i>
			Reduction of Stress Concentration At Stop-Hole By Bolting A Crack <i>Toshiyuki Ishikawa, Shogo Kiyokawa, Wataru Nakatsuji</i>	

TECHNICAL PROGRAM

Poster Session (Tamna Hall Foyer)

9:00 November 14 – 16:10 November 15	1	Force-Displacement Relationship of A Butterfly-Shaped Beams Based on Gene Expression Programming <i>Alireza Farzampour, Iman Mansouri, Seyed Javad Mortazavi, Jong Wan Hu</i>	10	Comparison of Scour Risk Assessments About Different Offshore Wind Turbine Support Structures <i>Young-Jin Kim, Dong-Hyawn Kim</i>	19	Evaluation of In-Plane Strain Following Ability of Non-Welding Building Hardware <i>Su-Deok Shon, Don-Woo Lee, Seung-Jae Lee</i>
	2	Uav-Based Deformation Monitoring Method of Buildings As Preliminary Safety Evaluation <i>Jong-Hoon Lee, Jae-Hoon Bae, Young-Kyu Ju</i>	11	A Study on Live Load Deflection Criteria of Long-Span Steel Bridges <i>Eui-Seung Hwang, Ki-Jung Park, Do-Young Kim, Young-Chul Kwon</i>	20	Elastic Flexural Capacity and Ductility of Hybrid-Strength End-Plate Connection <i>Chen Jia, Yongsong Shao, Jianwei Li, Yongchao Wang</i>
	3	Structural Risk Analysis of High-Rise Buildings in Korea Through Simulation of Disaster Risk Evaluation <i>Go-Eun Kim, Tae-Young Kim, Boo-Seong Kang, Young-Kyu Ju</i>	12	Flexural Strength of U-Flanged Truss Steel Beam <i>Sung-Jin Ahn, Young-Ho Kim, Myoung-Ho Oh, Myeong-Han Kim</i>	21	Analytical Study on The Response Characteristics Analysis of Dual Frame-Type Seismic Retrofit System <i>Sang-Hoon Oh, Kwang-Yong Choi, Young-Ju Kim, Hong-Sik Ryu</i>
	4	Structural Performance and Efficiency of Novel System for Piloti-Type Building <i>Gifari Zulkarnaen, Robel Wondimu Alemayehu, Young-Kyu Ju</i>	13	Analysis of U-Flanged Truss Hybrid Beam Focusing on Its Flexural Capacity <i>Sung-Jin Ahn, Young-Ho Kim, Myoung-Ho Oh, Myeong-Han Kim</i>	22	Hysteretic Properties of Chevron Eccentrically Braced Steel Frames Using Steel Slit Links with Sma <i>Joo-Woo Kim, Seung-Han Yoon</i>
	5	Cyclic Loading Test of Novel Buckling-Restrained Braces Infilled with PCM <i>Seok-Ho Hong, Robel Wondimu Alemayehu, Gifari Zulkarnaen, Young-Kyu Ju</i>	14	The Influence of Panel Zone Shear Deformation on I-Section Column Steel Frames with Box-Strengthened Panel Zone Connection <i>Sisi Chao, Linfeng Lu, Guanqi Lan, Kangsheng Li, Pin Lv</i>	23	Stiffness Reduction Factors of End-Plate Connection for Peb Using Finite Element Analysis <i>Jun-Seop Lee, Kyung-Jae Shin, Chul-Ho Yoo, Gee-Hyuk Kwon, Da-Hun No</i>
	6	Thermal Insulation of Steel-Polymer Hybrid Floor System <i>Beoul-Yi Kim, Tian YunQi, Min-Jae Park, and Young-Kyu Ju</i>	15	Experimentally Parametric Analysis on The Post-Fire Seismic Performance of Steel Reinforced Concrete Columns <i>Guang-Yong Wang, Dong-Ming Zhang, Zhang Chao</i>	24	Experimental Study on Flexural Performance of Composite U-Tube Flange H-Beam Structure <i>In-Rak Choi, Young-Hoon Kim, Suk-Jae Jung, Jae-Hwan Lee</i>
	7	A Seismic Performance of Steel Hysteretic Damper Depending on The Number of Slits <i>Min-Cheol Kim, Dong-Keon Kim</i>	16	Dynamic Response Prediction of Building Structures Using Deep Learning <i>Hyun-Su Kim, Na-Ra Jang, Min-Woo Lim, Yun-Su Jang, Woo-Min Choi</i>	25	Reduction Effect of Quantity-Safety Distance by Increased Earth-Cover for the Ammunition and Explosives Storage Facilities <i>Seungsu Han, Jihye Kwon, Sungkon Kim</i>
	8	Seismic Performance of Steel Frames Equipped with A New Hybrid Steel-Friction Damper <i>Iman Mansouri, Chang-Hwan Lee, Nadia M. Mirzai, Jong Wan Hu</i>	17	Probabilistic Fatigue Life Assessment of Offshore Wind Turbine Tripod Type Support Structure <i>Gee-Nam Lee, Dong-Hyawn Kim</i>	26	Improvement of Protective Performance by applying Sacrificial Members <i>Jihye Kwon, Seungsu Han, Sungkon Kim</i>
	9	Seismic Performance Evaluation of Medium Voltage Metal Clad Switchgear <i>Young-Su Yu, Joo-Dong Kim, Ho-Jin Heo, Min-Hyung Kim, Joon-Yeon Kim</i>	18	Response Spectrum Analysis of Bridges Supported By Double Skinned Composite Tubular Columns <i>Jeong-Hwa Lee, Nam-Joo Byun, Deok-Hee Won, Jong-Min Kim, Young-Jong Kang</i>	27	Suspension Footbridge Form-Finding with Laplacian Smoothing Algorithm <i>Zhuoju Huang, Jiemin Ding</i>

SOCIAL PROGRAM

WELCOMING RECEPTION

A Welcoming Reception will be held in the Tamna Hall(8F) and Lobby(8F) to provide the opportunity for participants to socialize in a relaxed atmosphere from 18:00-19:30 on Wednesday, November 13, 2019.

BANQUET

The Conference Banquet scheduled at 18:30 on November 14, 2019 in the Tamna Hall(8F) will provide the opportunity to enhance your friendship with attendees from throughout the world.

POST – SYMPOSIUM TOUR

Tour Desk

Date: November 14~15, 2019

Location: 8F, Ramada Plaza Jeju

Contact Person: Seungdeok Han, 010-2858-0072

Course

Time	Place	Personnel	Included	Fare
08:40	08:40 Hotel Waiting 09:00 Hotel Departure	Minimum Participation Required: at least 20	Entrance Fee, Vehicle, Guide, Lunch, Water	69,000KRW per 1person (VAT not included by Credit Card)
09:30~10:30	Jeju Dream Tower			
10:30~11:40	Mysterious Road Halla Arboretum			
12:00~13:00	Lunch(Beef Hotpot)			
14:00~15:20	Yumin Art Museum Agora Glass House Seopjikoji			
15:40~17:00	Seongsan Ilchulbong			
~18:00	Airport Arrival			

■ Jeju Dream Tower

Located at the heart of Jeju City, Jeju Dream Tower Integrated Resort is a must-visit landmark. Jeju Dream Tower Integrated Resort is comprised of 6 basement floors and 38 floors above ground.

The twin tower hotels are positioned so that one tower is perfect north-south facing, and other is east-west facing. Every of the 1,600 rooms are above Jeju Island's height restriction of 55 meters and have perfect panoramic and unblocked views. The Public Plaza attraction is located at the front of the resort building facing Nohyeung Rotary, and the VIP Plaza is at the back of building. A large 4,290 m² pool deck is located on the rooftop of the podium level on 8F.



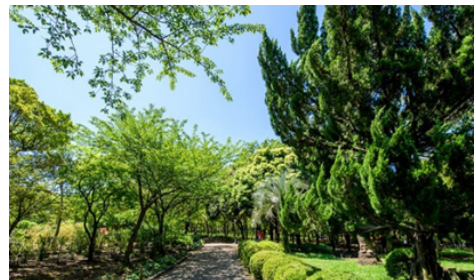
■ Mysterious Road

It is called the Jeju Mysterious Road or Dokkaebi Road. It earned its name because when you place a car on this steep road, the car does not roll down but it goes up, defying gravity. This is actually an optical illusion, in which the surroundings trick the eye and make the road look like it is tilted in the opposite direction.



■ Halla Arboretum

In Halla Arboretum, which is located at Yeon-dong, Jeju-si, near Road No. 1100 at the foot of Gwagwi Oreum Volcanic Cone, 1,100 species of plants, ranging from native trees to subtropical plants, have been planted and displayed. Not only does it serve as a great educational and research facility to students and experts alike, but it also serves as a theme tourist attraction that is beloved by many tourists. The size of its forest is about 165,289m² and the forest trail is 1.7km long.



■ YuminArt Museum

Yumin Art exhibits the glass craft work of Art Nouveau, the craft and design movement that struck the entire Europe for about 20 years from 1894.

You can enjoy the work of major Art Nouveau artists from Nancy, France who mostly worked with naturalist materials and inspirations, such as Emile Galle, the Daum Brothers, Eugene Michel, and Rene Lalique.



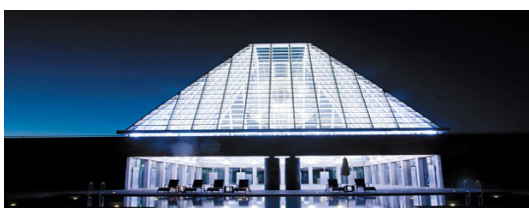
Architect : Ando Tadao

■ Agora

Agora is the members' club house designed and named by Mario Botta, a Swiss architect.

Architectural characteristics of Mario Botta: Geometric shapes, light incoming through large windows, and facade comprised of grooved strips.

Agora offers a unique space where the rooms are underground and only the glass pyramid stands above the ground. There is a square in the center of the building with rooms around it, so the pyramid ceiling above the open square brings the sunlight into the space.



Achitect : Mario bota

SOCIAL PROGRAM

■ Glass House

Ando, a world-class architect who presents the beauty of new modern designs.

The view of Jeju from high-end restaurants, terrace, and observation deck. This place satisfies your five senses with fast food on the first floor and an observation deck restaurant and terrace garden for the view of both sunrise and sunset on the second floor.



Architect : Ando Tadao

■ Seopjikoj

Seopjikoji, which is located at the east coast of Jeju Special Self-Governing Province, is a beautiful coastline filled with canola flowers during the spring, with Seongsan Ilchulbong Peak rising up in the background. You can find Sinyang Sandy Beach at the entrance, while the end will let you see the traditional beauties of Jeju, such as a vast land filled with canola flowers growing on the hill, Jeju donkies grazing peacefully, beautiful rock cliffs, and the legendary Seonbawi Rock standing in the middle of the ocean.



■ Seongsan Ilchulbong (UNESCO World Natural Heritage)

Seongsan Ilchulbong Peak, which is 180m above sea level, erupted underwater in the ocean about 5,000 years ago, which makes it a very rare case among the many craters in Jeju Island.

A scene in the movie 'Lee Chang-ho's Baseball Team' (directed by Lee Chang-ho) was filmed here.

Though people used to farm in the area, it is now a natural habitat for 200 types of vegetation such as silvergrass, vine, Pseudosasa japonica, and giant angelica as well as a natural habitat for a variety of wild animals.





RAMADA PLAZA JEJU

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FROM JEJU INTERNATIONAL AIRPORT TO RAMADA PLAZA JEJU

The distance between the airport and the hotel is app. 4.17 km and takes about 20 minutes by driving.

Classification	Service Lines	Distance	Required Time	Fee
Taxi	Airport - Hotel	4.17km	20 minutes	KRW 6,600

HOTEL SHUTTLE BUS

Hotel Shuttle Bus will be operated as below schedule.

※ The schedule can be changed depending on the situation

November 14, Thursday (From Jeju International Airport to Ramada Plaza Jeju)

- Departure Time : 8:00, 9:00, 10:00
- Departure Place : Parking Lot "C10" of Jeju International Airport

November 15, Friday (From Ramada Plaza Jeju to Jeju International Airport)

- Departure Time : 18:30, 19:10
- Departure Place : Ramada Plaza Jeju



사단
법인 **한국강구조학회**
KOREAN SOCIETY OF STEEL CONSTRUCTION

SECRETARIAT OF ISSS-2019

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