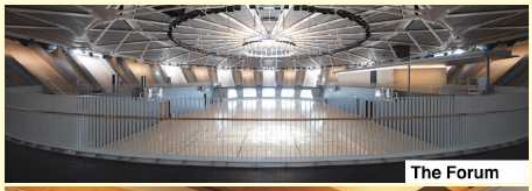
JPCI NEWSLETTER

No.7, September 2014

Japan Prestressed Concrete Institute

JPCI AWARD

Award for Outstanding Structures



The Forum

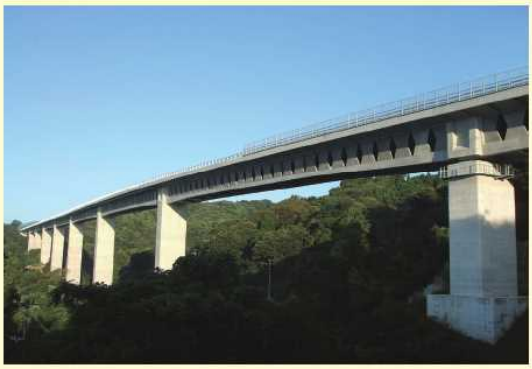
The Nursery

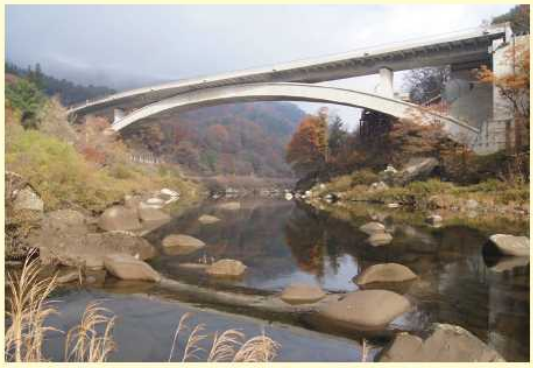
● The Forum and the Nursery at "Haneda Chronogate"

Location: Ōta ward, Tokyo
[The Forum]
Structural Type: precast/prestressed concrete and steel structure
Number of Stories: 2 floors above ground
Building use: gymnasium
Floor Space: 2,504.07m^2
Total floor space: 1,876.99m^2
[The Nursery]
Structural Type: precast/prestressed concrete and wood structure
Number of Stories: 1 floor above ground
Building use: Nursery
Floor Space: 1,114.26m^2
Total floor space: 488.53m^2
Design: Nikken Sekkei Ltd.
Construction: Kajima Corporation

● Terasako Choucho Bridge

Location: Miyazaki
Structural Type: 10-span continuous butterfly web bridge
Bridge Length: 712.5m
Span: 58.6m+87.5m+7@73.5m+49.2m
Width: 9.26m (effective width)
Design: Kyushu Branch, West Nippon Expressway Co., Ltd.
Sumitomo Mitsui Construction Co., Ltd.
Construction: Sumitomo Mitsui Construction Co., Ltd.



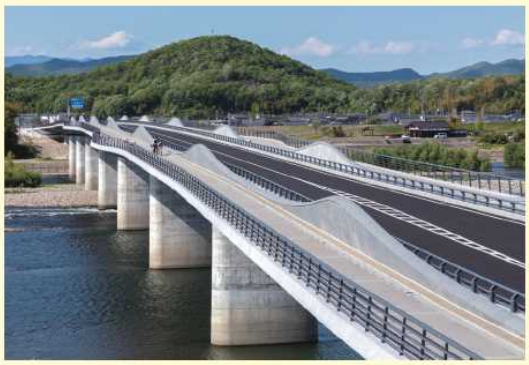


● Agematsu Bridge

Location: Nagano Pref.
Structural Type: concrete arch bridge,direct foundation
Bridge Length: 199.0m
Span: Arch Span 155m
Girder Span 24.8m+28.0m,28.5m+29.0m+33.8m
Width: 12.0m (effective width)
Design: Sumitomo Mitsui Construction Co., Ltd.
Construction: Sumitomo Mitsui Construction Co., Ltd.

● Kakamigahara Bridge

Location: Gifu
Structural Type: 10-span continuous fin-back bridge
Bridge Length: 594.0m
Span: 54.9m+8@60.0m+55.9m
Width: 17.1～21.1m (total width)
Design: Nippon Engineering Consultans Co., Ltd.
Bridge & Structure Institute, Inc.
Construction: Shimizu/Maeda Joint Venture
Shimizu/Ichikawa/Daiyuu/Gotou Joint Venture

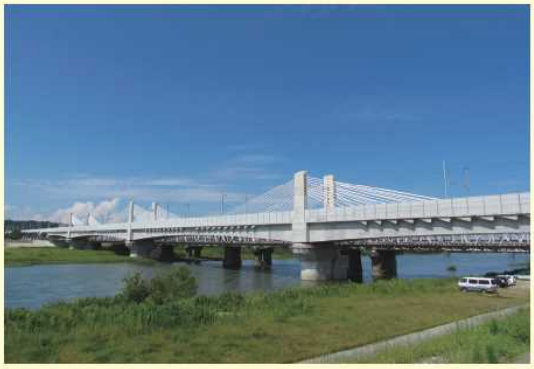


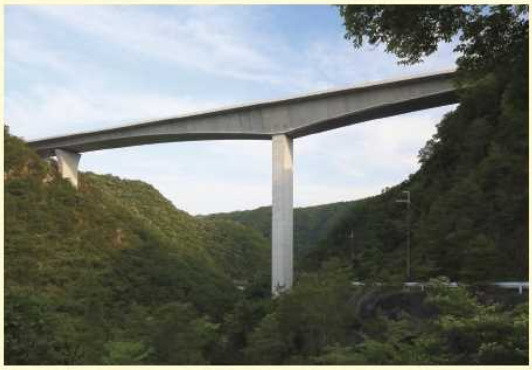
● Hyogo Prefectural Awaji Medical Center

Location: Hyogo
Structural Type: PCaPC (Precast Pre-Stressed Concrete Structure)
Number of Stories: 8 stories
Building use: Hospital
Floor Space: 11,165m^2
Total floor space: 35,333m^2
Design: Hyogo Prefecture Government, Yasui Architects & Engineers, Inc.
Construction: Toda・Muramoto・Maekawa Joint Venture

● Jinzugawa Bridge

Location: Toyama
Structural Type: 4-span continuous prestressed concrete extradosed bridge
Bridge Length: 428m
Span: 86+128+128+86m
Width: 14.5m(main tower section) 13.7m(span section)
Design: Tonichi Engineering Consultants Inc.
Construction: Taisei Corporation Daiho Corporation
Nihonkaikenko Corporation JV





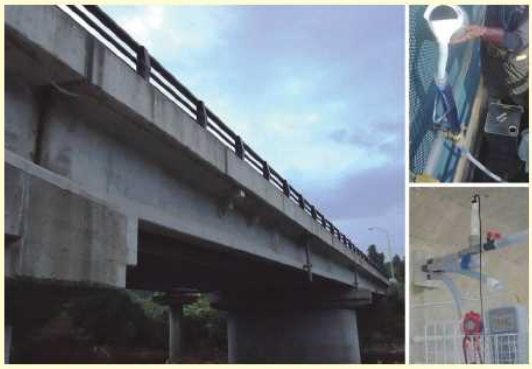
● Kawashimogawa Bridge

Location: Hyougo
Structural Type: 3-span continuous prestressed concrete box girder bridge
Bridge Length: 300m
Span: 120m+143m+37m
Width: 10.75m×2 (有効幅員)
Design: Kajima Corporation, P.S.Mitsubishi Corporation JV
Construction: Kajima Corporation, P.S.Mitsubishi Corporation JV

● **Ege Bridge**

Location:	Tokushima
Structural Type:	2-span continuous Steel-concrete composite truss structure extradosed bridge
Bridge Length:	130m
Span:	53.0m+75.8m
Width:	5.0m
Design:	Echo Construction Consultant
Construction:	Oriental Shiraishi , Nakagawa-kaihatsudoboku JV

Award for Outstanding Engineering Innovations



● **New Repair Method for Corroded PC-Tendons in Incomplete Grouting Area Using $LiNO_2$-Containing Solution – Re-Passive Method –**

Outline :	The $LiNO_2$-containing solution is filled up into incomplete grouting. It penetrates into small area between PC-tendons and corrosion products contaminated chloride ions on PC-tendons. So, the corrosion of PC-tendons is stopped.
Development :	Professor Hidenori Morikawa (Kobe University) P.S.Mitsubishi Construction Co., Ltd
Example :	Post-Tensioned PC Girder

● **PC external cable tension monitoring system for existing PC bridge**
Maintenance method for anticipated fracture of inner cable of PC I-girder bridge

Outline of the development:	This system detects fracture of inner cable by monitoring tension of external cable, and enables us to strengthen the bridge quickly by additional prestressing
Related structure:	Railway Bridge (San-yo Shinkansen)
Location:	Hiroshima
Structural type:	Prestressed concrete I-girder bridge
Bridge Length:	30.96 m
Design(strengthening):	JR West Japan Consultants Company
Construction(strengthening):	Kosei Corporation

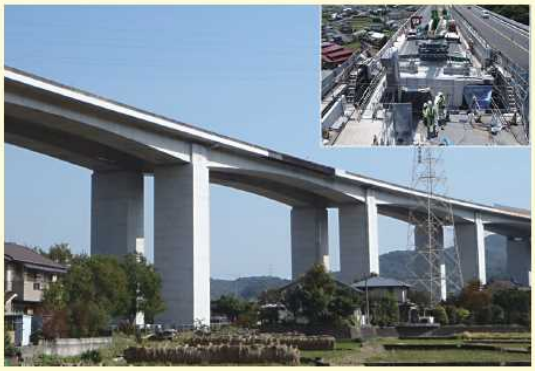
Award for Outstanding Accomplishments of Constructions

● Sekiguchi Viaduct (North Section)

Location: Kanagawa
Structural Type: 6-span continuous PC slab girder + 6-span continuous PC box girder +13-span continuous PC slab girder bridge
Bridge Length: 843.0m
Span: 25.65+26.50+2@29.00+2@28.00+40.00+4@47.50+43.00+34.00 +32.50+3@29.50+7@31.00+30.00m
Width: (Southbound line)10.510～19.628m(Effective width)
(Northbound line)10.510～19.999m(Effective width)
Design: Tokyo Branch, Central Nippon Expressway Co., Ltd.
Sumitomo Mitsui Construction Co., Ltd.
Construction: Sumitomo Mitsui Construction Co., Ltd.

● Repair work of Suzuta Bridge

Location: Nagasaki
Structural Type: 7-span continuous box girder bridge
Bridge Length: 484.8m
Span: 54.3+5@75.0+54.3m
Width: 9.25m×2 (effective width)
Work summary: Main girder part removal , concrete replacement , external cable reinforcement
Design: West Nippon Expressway Company Limited
Japan Bridge & Structure Institute, Inc.
Sumitomo Mitsui Construction Co.,Ltd.
Construction: Sumitomo Mitsui Construction Co.,Ltd.

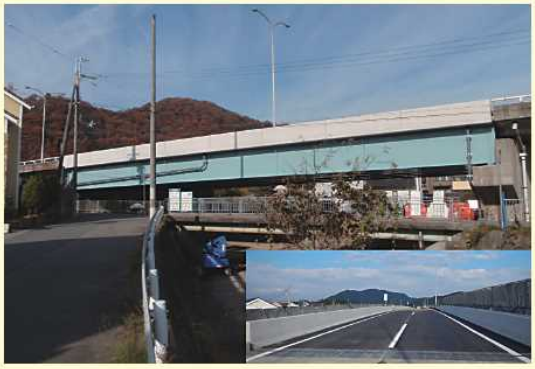


● Kakegawa tsunami escape facility(Kikuhama Area)

Location: Kakegawa, shizuoka
Structural: PCaPC
Number of Stories: 1stories
Building use: Tsunami escape facility
Institution height: Above ground 10.0m, Above sea level 15.0m
Refuge area: 200.0m^2
Design: V-iss Planning & Design
Construction: Ohamanakamuragumi Corporation
PC construction: P.S.Mitsubishi Corporation

● Ichikawa Ohashi Bridge on Bantan Renraku Road

Location: Hyogo
Structural Type: Simple steel composite girder bridge
Slab Type: High Strength Lightweight Precast PC Slab
Bridge Length: (Up line) 40.0m, (Down line) 40.0m
Span: 39.2m
Width: 8.75m (Effective width)
Design: KINDAI-SEKKEI CONSULTANT, INC.
Construction: IHI Construction Service Co., Ltd.



EVENTS

Annual Symposium
- Coming symposium -

23rd Symposium on Developments in Prestressed Concrete

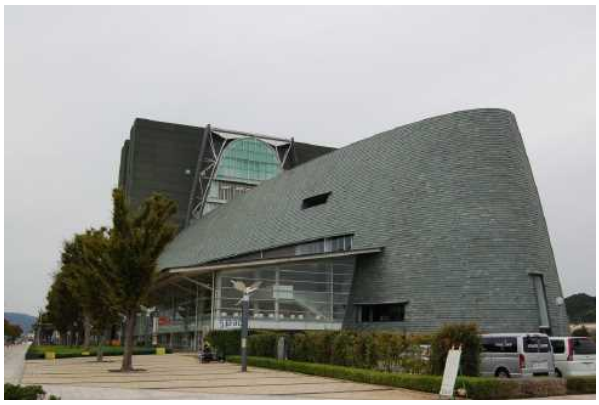
October 23rd – 24th, 2014

Morioka, Japan
http://www.jpci.or.jp/eng-index.htm

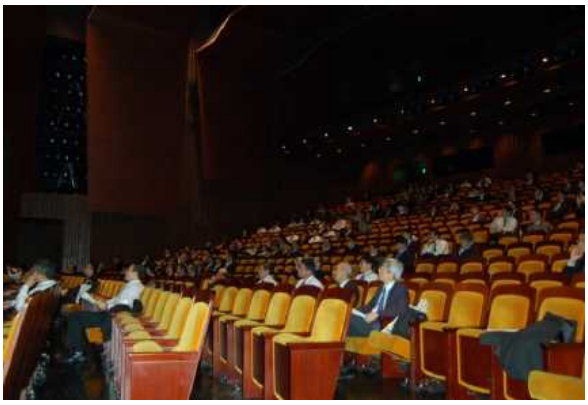
The topics of the next symposium are special lecture and technical tour. Just after the opening ceremony, Dr. Aurelio Muttoni, professor of the École Polytechnique Fédérale de Lausanne and Mr. Yasuyuki Kajiwara, chief of the Miyagi Development Bureau, Reconstruction Agency will give special lectures. Technical Tour will be held on the 22nd October 2013. The progress conditions in restoration and reconstruction after the Great East Japan Earthquake will can be seen.

- The last symposium -

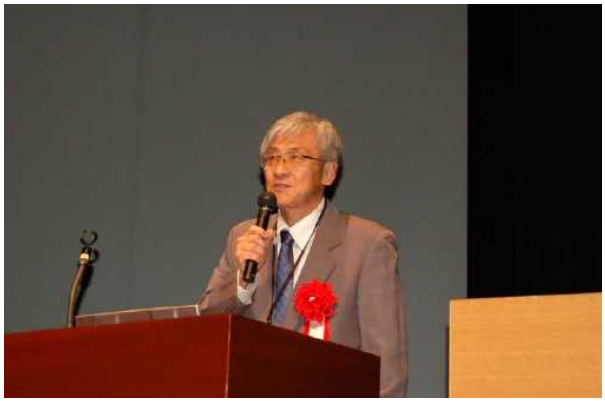
The last symposium, “22nd Symposium on Developments in Prestressed Concrete”, was held on 24 and 25, October, 2013 at the Shizuoka Convention & Arts Center, “Granship”, in Shizuoka prefecture. Beautiful and spectacular Mt. Fuji, one of a World Heritage and the highest mountain in Japan, can be seen from Shizuoka-city. The purpose of the symposium is to attain further development of prestressed concrete technology by sharing valuable information among researchers and practitioners.



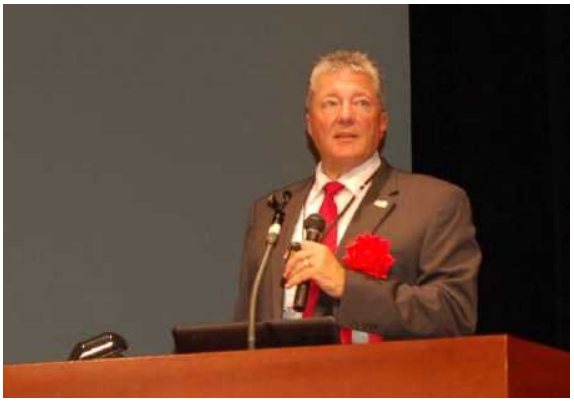
Venue, Shizuoka Convention & Arts Center



Opening ceremony



Dr. Koich Maekawa



Mr. James G.Toscas

Previous to the symposium, the Workshop was held. Activities of the JPCI committees were reported.

In the Opening Ceremony Dr. Hiroshi Mutsuyoshi, professor of the Saitam University, the chairman of the Executive Committee of the symposium, gave opening address. History and outline of the symposium were introduced, and Dr. Jyunichiro Niwa, professor of the Tokyo Institute of Technology, the president of the JPCI gave an opening speech. Then, Mr. Katsumi Uesaka, Director of Road Department of Chyubu Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism gave a speech of greeting.

Dr. Koich Maekawa, professor of the University of Tokyo, was invited and gave a special lecture. Dr. Maekwa presented “Integrated Knowledge of Concrete and Application to Bridge Engineering”. He discussed behavior of concrete structures from point of view of multi-scale. Using multi-scale platform is one of the solutions to be structured huge number of knowridges.

International session was held for the first time in the symposium history, in which outstanding researchers and practitioners invited from overseas give an address on state-of-the-art technology in the field of their specialties. Mr. James G. Toscas, President of the Precast/Prestressed Concrete Institute (PCI), U.S.A., Associate Professor Nguyen Xuan Khang, Dr. Eng., Director General, Institute of Transport Science and Technology (ITST), Ministry of Transport, Vietnam and Professor Jiri Strasky, Technical Director of Strasky, Husty and Partners, Brno University of Technology, Czech Republic were gave special lectures.

Mr. James G. Toscas presented “PCI and the US Precast Concrete Structures Industry”. The first technical committee on prestressed concrete was organized in 1944 as a joint committee of the American Concrete Institute (ACI) and the American Society of Civil Engineers (ASCE). Precast concrete structures, although historically recent, have developed into a high-performance option for virtually every market segment. Trends in the design of structures, including a growing preference for sustainable construction, favor further development and increased utilization of precast concrete construction systems. As an engineering-intensive building system, precast concrete structures have benefitted from, and indeed been significantly advanced by, the existence of a technical institute such as PCI. The heart of any technical institute is its body of technical knowledge, and many technical associations worldwide have independently evolved their individual bodies of knowledge. PCI

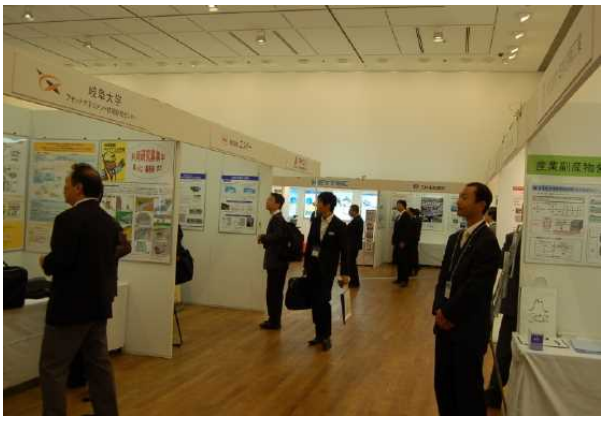
believes that there is great potential benefit in connecting compatible bodies of knowledge among the world's technical associations. Such connections, which have proven highly valuable among US organizations, can yield even greater benefits at the international level. PCI's new international strategy is intended to improve on existing friendly relationships and forge such connections.

Dr. Nguyen Xuan Khang, of ITST presented “Recent Development of Prestressed Concrete Bridges in Vietnam”. The prestressed concrete structure has been successfully applied in Vietnam more than 40 years. The prestressed concrete bridges were built in various periods with different design standards. In Vietnam, a number of innovative technologies have been applied not only in construction the new bridges but also in repairing and upgrading the old prestressed concrete bridges. These include the development of novel structural systems (external prestressing, extradosed prestressing, cable-stayed bridge) and the new technologies in repair, strengthening old bridges (shotcrete technology, FRP material, external prestressing tendons). Overview of such achievements as well as some problems in the development and application of modern technologies in the construction and repair bridges in Vietnam were presented.

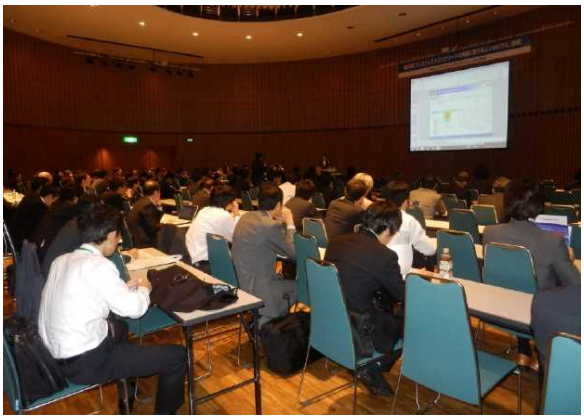
Dr. Jiri Strasky presented “Search for the True Structural Solution”. He is convinced that the true architectural solution of bridges is given by their true structural solution. The best structural solution should be some particular form inherent in the constraints of the site itself which best accomplish the function of bridging the site. The task of the structural designer is to discover and realize that form in a way that is economical and efficient. This structural form is appropriate only when the design uses the inherent structural and material characteristics of the form to advantage. Of course, a bridge structure must be safe, should invite to use, be comfortable for the user, and should be designed and constructed to human scale. Each conceptual design should advance or enhance our understanding of the arts and sciences of engineering. Structural solutions should in some way lead to the development of new details, new processes of construction, or new applications of engineering technology. The above design philosophy will illustrated on the following structures built in Europe and in the USA which conceptual design was developed by himself. Shell Wildlife Overpasses, Urban Bridge across the River Morava in a city of Olomouc, Urban Junctions in Cities of Ostrava and Banka

Dr. Nguyen Xuan Khang

Dr. Jiri Strasky



Technical exhibition



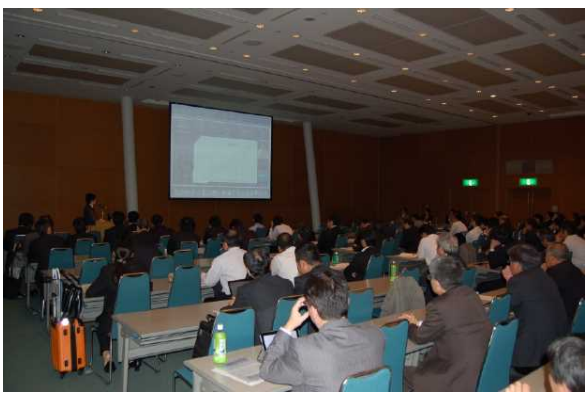
Parallel session

Bystrica, Long Motorway Viaducts, Cable-Stayed Bridge across the River Odra, Multi-span Extradosed Viaduct built in Povazska Bystrica, Self Anchored Suspension Bridge built across the River Ebro, Multi-span Arch Bridges built in Redmond and Eugene, Oregon, Stress Ribbon and Self-anchored Suspension Pedestrian Bridges built in San Diego, Self-Anchored Stress Ribbon & Arch Pedestrian Bridges built in cities of Olomouc and Brno, Cable-Stayed Pedestrian Bridges built in Eugene, Oregon, Self-Anchored Arch Pedestrian Bridges built in cities of Casky Tesin and Ceske Budejovice. New studies of arch and cable supported structures performed at the Brno University of Technology were be also presented.

In order to exchange information concerning activities, researches and original technologies of organizations, companies and universities in the Shizuoka region were displayed at the Technical Exhibition. 32 groups participated in the exhibition. Booths were arranged for the exhibition, and presentations and discussions for each exhibition were made in the presentation space provided in the exhibition hall.

In the last symposium, 114 contributed papers were presented in 16 sessions, and the participants were 513. From each session, the most excellent presenters were chosen and were given “Award of Excellent Presentation”. Prize winners are as follows.

Session 1: *Tomohir Shibuya*, Yachiyo Engineering Co., Ltd
Session 2: *nobody*



Parallel session

Award of excellent presentation

Session 3: *Satoru Sugimura*, Sumitomo Mitsui Construction Co., Ltd
Session 4: *Tsuyoshi Fukui*, P.S. Mitsubishi Construction Co., Ltd
Session 5: *Atsushi Fujioka*, P.S. Mitsubishi Construction Co., Ltd
Session 6: *Yukio Hiroi*, IHI Construction Service Co., Ltd
Session 7: *Osamu Sanada*, Saitama University
Session 8: *Yosuke Azuma*, Oriental Shiraishi Corp.
Session 9: *Kazuya Saito*, P.S. Mitsubishi Construction Co., Ltd
Session 10: *Tomohiro Miki*, Kobe University
Session 11: *Kiyoshi Aoyagi*, Public Works Research Institute
Session 12: *Toshimichi Ichimiya*, Kajima Corp.
Session 13: *YasuhiroHamamoto*, Sumitomo Mitsui Construction Co., Ltd
Session 14: *Naotaka Arikawa*, Sumitomo Mitsui Construction Co., Ltd
Session 15: *Shinichi Mihara*, Fuji P.S Corp.
Session 16: *Hidesuke Hakamura*, Public Works Research Institute

■ This newsletter contents current information on the activities and topics of JPCI.

■ If you have any comments and suggestions, please contact us by sending e-mail to: *kaiinka24@jpci.or.jp*

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