JPCI NEWSLETTER

No.10, September 2017

Japan Prestressed Concrete Institute

JPCI AWARD

Award for Outstanding Structures

● Shin-Meishin Mukogawa Bridge

Location	: Hyogo
Structural Type	: 5-span continuous extradosed PC bridge with butterfly webs
Bridge Length	: 442.2m
Span	: 71.8+3@100.0+67.8m
Width	: 10.75m×2 (effective width)
Design	: Sumitomo Mitsui Construction Co.,Ltd.
Construction	: Sumitomo Mitsui Construction Co.,Ltd.

● NICHIA SUWA TECHNOLOGY CENTER

Location	: Nagano
Structural Type	: PCaPC+PCaRC+RC+S
Number of Stories	: 2 stories+1 basement
Building use	: Resarch Center
Floor Space	: 2,625.44m^2
Total floor space	: 4,002.86m^2
Design	: Takenaka Corporation
Construction	: Takenaka Corporation

● Aichi High School of Technology and Engineering

Location	: Aichi
Structural Type	: RC+PCaRC+PCaPC+S
Number of Stories	: 5 stories
Building use	: High School
Floor Space	: 12,161.07m^2
Total floor space	: 30,692.99m^2
Design	: KUME SEKKEI Co.,Ltd
Construction	: JV of TODA CORPORATION and MEIKO CONSTRUCTION Co.,Ltd

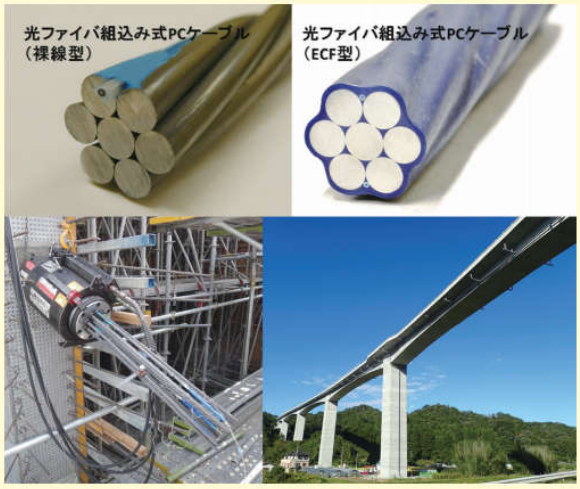
● Aichi Prefectural Police Headquarters
(Rebuild and refurbishment)

Location	: Aichi
Structural Type	: SRC+RC(Seismic Isolation)
Number of Stories	: B3/F9/P2
Building use	: Government Office
Floor Space	: 2,431.50 m^2
Total floor space	: 32,937.51m^2
Proprietor	: Aichi Prefectural Police Headquarters
Repair Design	: NIKKEN SEKKEI LTD
Construction	: KAJIMA・TOKURA Specified Construction JV

● The Metropolitan Expressway Route 1 (Haneda Line)
(Rebuild and refurbishment)

Location	: Tokyo
Structural Type	: Before: 3-span PC continuous box-girder with Gerber hinge After: 9-span PC continuous box girder
Bridge Length	: 476.5m
Span	: (32.1+24.0+23.0)+(25.0×2+32.0)+(23.0+25.0×2)+(20.7+25.0×2)+(23.0+25.0×2)+(23.0+40.0+20.7)m
Width	: 7.5m(effective width)
Design	: P.S.Mitsubishi Construction Co., Ltd ORIENTAL CONSULTANTS Co., Ltd
Construction	: P.S.Mitsubishi Construction Co., Ltd
Outline of construction	: Gerber hinge are made continuous and separated.

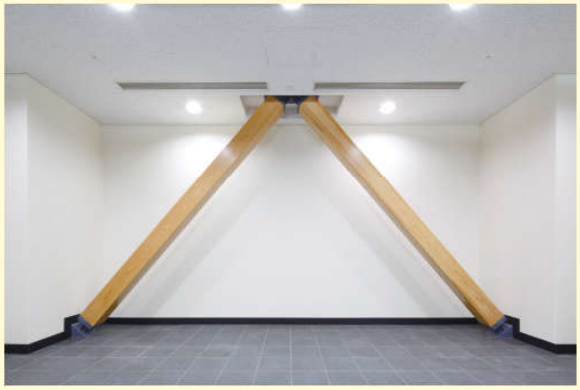
Award for Outstanding Engineering Innovations



● Method of Measuring Tendon Force Using Optical Fiber Sensor

Summary : Measurement method which can monitor tensioning force at any certain section along whole length of tendon by embedding permanently optical fiber strain sensor in prestressing steel strand has been developed. The method has been applied to internal tendon using bare strands and external tendon using epoxy coated and filled strands in a prestressed concrete viaduct. It is confirmed that this method is capable of measuring tensioning force at any certain section along whole length of tendon during tensioning and after a bridge is constructed.

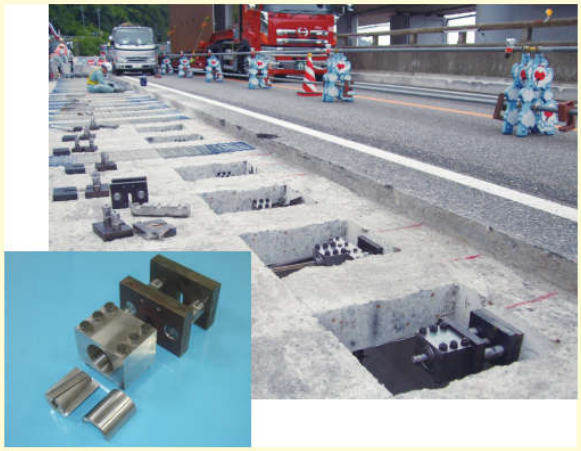
Location : Fukushima
Structural Type : 6-span continuous rigid frame girder bridge
Bridge Length : 462.0m
Span : 44.5m+4@91.0m+51.5m
Effective Width : 12.0m and 14.5m (emergency parking zone)
Design : Sogo Engineering Inc.
Construction : Kajima Corporation



● Development of the Seismic Retrofit by Pre-compressed Wooden Brace System with prestressing

Summary : In this construction method, the compression brace is used to fix the timber in the RC or SRC framework under prestress by the coil spring.
Installation to an existing framework is simple because of prestress, and we can do it easily by hand because we use light-weight timber.

Development : Takenaka Corporation



● PC Internal Fixing Method “i-Fix”

Introduction : The method “i-Fix” exhibits its power for internal fixation of transversal prestressing wires on PC T-girder or I-girder bridge rebuilding works, especially in case of securing traffic spaces on a part of the bridge. This method was applied to the internal fixation on the bridge rebuilding work of Uta Viaduct.

Development : Kawada Construction Co., Ltd.
Nippon Steel & Sumikin SG Wire Co., Ltd.

Award for Outstanding Accomplishments of Constructions

● Asakegawa Bridge

Location : Mie
Structural Type : 3-span steel-PC composite continuous box girder bridge stiffened with arch ribs
Bridge Length : 325.0m
Span : 58.8+225.0+38.6m
Width : 23.25m(effective width)
Design : IHI Infrastructure Systems Co.,Ltd. Kawada Industries, Inc. Kawada Construction Co.,Ltd. JV
Construction : IHI Infrastructure Systems Co.,Ltd. Kawada Industries, Inc. Kawada Construction Co.,Ltd. JV

EVENTS

Annual Symposium
- The coming symposium -

The 26th Symposium on Developments in Prestressed Concrete

26th - 27th October 2017

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

Topic of the next symposium is special lectures. After the opening ceremony, Prof. Hugo Corres Peiretti, President of *fib* and Mr. Kiyoshi Morita, Councilor of the Port of Kobe Japan, will give special lectures. Technical Tour will be held on 25th October 2017. Tour attendants are going to visit the Kobe Earthquake Materials Storage of the Hanshin Expressway Co., Ltd. and the Kiku-Masamune Sake Brewing Co.,Ltd in Kobe.

- The last symposium -

The last symposium, "The 25th Symposium on Developments in Prestressed Concrete", was held on 22nd and 23rd October 2016 at the Kitakyushu International Conference Center & Asia Pacific Import Mart Medium Exhibition Hall in Kokura. The purpose of the symposium is to attain further development of prestressed concrete technology by sharing valuable information among researchers.

Previous to the symposium, the Workshop was held. Activities of committees of the JPCI were reported. Dr. Larbi Sennour, President-CEO of the Consulting Engineers Group, Inc., the Past Chairman of PCI Technical Council presented "Topics in Precast/Prestressed Systems in US High Seismic Regions". Mr. Hiroshi Imanaga, the Deputy Mayor, City of Kitakyushu presented "Progress of City of Kitakyushu as a City with Advanced Environmental Policies

Venue, Kitakyushu International Conference Center

Opening ceremony

Dr. Mohsen Shahawy

Prof. Toyoaki Miyagawa

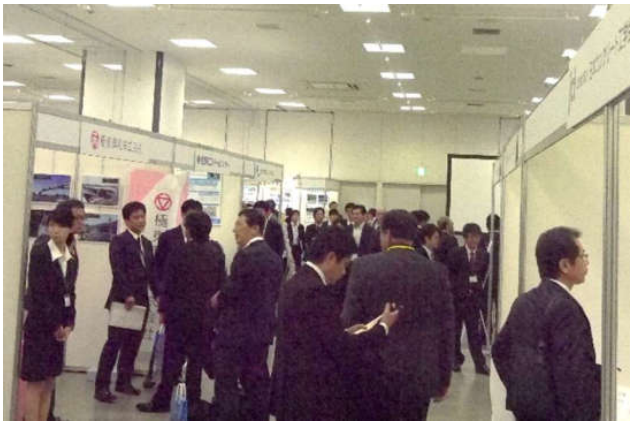
and Efforts for Regional Revitalization ".

In the Opening Ceremony Dr. Susumu Inoue, professor of the Osaka Institute of Technology, the chairman of the Executive Committee of the symposium, gave an opening address. History and outline of the symposium were introduced, and Dr. Minehiro Nishiyama, professor of the Kyoto University, the president of the JPCI gave an opening speech. Then, Mr. Hirotsugu Doi, Director of the Road Department of Kyushyu Regional Bureau, Ministry of Land, Infrastructure, Transport and Tourism and Mr. Hiroshi Imanaga, Deputy Mayor of City of Kitakyushyu gave speeches of greeting.

Dr. Mohsen Shahawy, President of SDR Engineering Consultants Inc., USA and Dr. Toyoaki Miyagawa, professor of the Kyoto University were invited and gave special lectures.

Dr. Mohsen Shahawy presented “Condition Assessment and Durability of Post-Tensioned Bridges”. In 1999 Florida Department of Transportation (FDOT) had several tendon failures due to improper grouting and prestressing steel corrosion in post-tensioned structures especially in segmental box girder bridges. Then the Federal Highway Administration (FHWA), as a result of these findings in Florida and other states, is requiring a complete and in-depth inspection and evaluation of all post-tensioned structures in the United States. From inspections, it was found that corrosion caused by grout voids, bleed, and/or honeycombed. Grout with these conditions allows access of water, oxygen, chlorides. Single-end grouting from the high point most likely entrapped air and subsequently the grout subsided from the anchorages. Grouting rates may have been too high resulting in segregation of grout mix and excessive water. Possible measures to consider are development of more inspectable and/or replaceable tendons, improved design details and specifications, the use of greased un-grouted tendons for easy replacement, electrically isolated tendons to monitor for corrosion, use of cathodic protection for tendons and use wax as grouting materials. United States has same problems as in Japan.

Dr. Toyoaki Miyagawa presented “Service Life Extension of Prestressed Concrete Structures”. Service life of Concrete structures have to last long as citizens use them, and engineers have to go out with that period. Concrete structures have to be provided toughness, beauty and durability. Measurement and confirmation are very important for both constructions and maintenance concrete structures. In order to perform optimum maintenance on deteriorated concrete structures, appropriate inspections, examinations and



Technical exhibition

Parallel session

countermeasures are needed. Design of strategic maintenance scenario has to be established.

In order to exchange information concerning activities, researches and original technologies of organizations, companies and universities in the Kyushyu region were displayed at the Technical Exhibition. 40 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, 146 contributed papers and reports were presented in 16 sessions, and the participants were 627. From each session, the most excellent presenters were chosen and were given “Award of Excellent Presentation”. Prize winners are as follows.

Session 1: *Kazunori Emi*, Kyokuto Kowa Corporation
Session 2: *Hisafumi Takeuchi*, Ken Ken Co,.Ltd.
Session 3: *Hiromitsu Oyama*, BASF Japan Ltd.
Session 4: *Syu*, Kobayashi, IHI Construction Service Co., Ltd.
Session 5: *Yasushi Kunitomi*, Japan Prestressed Concrete Contractors Association
Jyunpei Saito, Nihon University
Session 6: *Tsutomu Takaoka*, Kawada Construction Co., Ltd.
Satoshi Suzuki, Kawada Construction Co., Ltd., Abe Nikko Kogyo Co., Ltd. and Fuji P.S Corporation JV

Workshop

Award of excellent presentation

Session 7: *Atsushi Kikuchi*, FKK
Session 8: *Takeru Kitamura*, Taisei Corporation
Session 9: *Hiroaki Tsuruta*, Kansai University
Session 10: *Yuki Kurihara*, Public Works Research Institute
Session 11: *Yoshinori Shindo*, Japan Railway Construction, Transport and Technology Agency
Session 12: *Hidekazu Takashima*, P.S. Mitsubishi Construction Co., Ltd.
Session 13: *Masahiko Yamada*, Fuji P.S Corporation
Session 14: *Yosuke Azuma*, Taiheiyo Cement Corporation
Session 15: *Toshihiro Iwai*, P.S. Mitsubishi Construction Co., Ltd.
Session 16: *Chigusa Hagio*, Fuji P.S Corporation

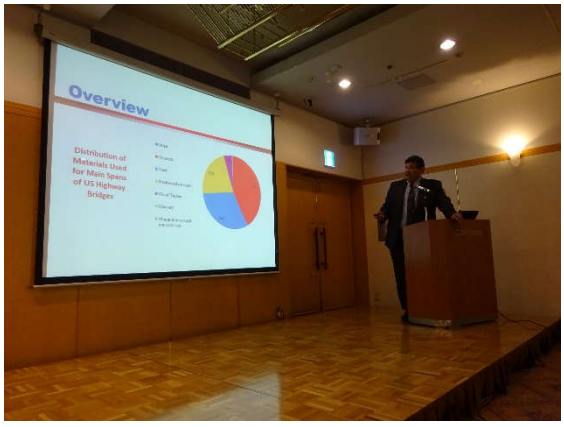
Seminar on Maintenance of Prestressed Concrete Bridges in USA and Japan

18th October 2016
Tokyo, Japan

"The Seminar on Maintenance of Prestressed Concrete Bridges in USA and Japan" was held on 18th October 2016 at Arcadia Ichigaya in Tokyo organized by Japan Prestressed Concrete Institute and sponsored by Japan Prestressed Concrete Contractors Association. The purpose of the seminar is to exchange information concerning inspection, diagnosis, repair and strengthening techniques to maintain prestressed concrete bridges.

In the seminar three keynote speakers presented special lectures. Dr. Mohsen Shahawy , president of SDR Engineering Consultants, Inc. presented "Condition Assessment and Durability of Post-Tensioned Bridges", Mr. Yoshitomi Kimura, director of Road Structure Department, National Institute for Land and Infrastructure Management presented "Current Situation of Prestressed Concrete Maintenance in Japan", and Mr. Takeshi Hirose, Chief of Bridge Division, Road Research Department, Nippon Expressway Research Institute Co., Ltd. presented "Maintenance of Prestressed Concrete Expressway Bridges".

Opening address



Keynote lectures

After the keynote lectures, the panel discussion was held. Panelists were three keynote speakers and Professor Hiroshi Mutsuyoshi, and before the discussion Professor Wael Zatar introduced standards and guidelines of PTI, ASBI, FHWA and FDOT. Enthusiastic discussions and exchange of views were performed. It was a very meaningful and fruitful seminar.

Panel discussion

■ 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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