JPCI NEWSLETTER

No.17, February 2026

Japan Prestressed Concrete Institute

JPCI AWARD

Award for Outstanding Structures
- Civil Engineering Structures Category -

● **Okura-Yoza Bridge, Hokuriku Shinkansen**

(Journal of the 31st Symposium on Developments in Prestressed Concrete; Journal of Prestressed Concrete, Japan Vol.66 No.5)

Location : Tsuruga City, Fukui Prefecture

Outline of Structure :

The Okura-Yoza Bridge is a series of bridges located about 1km north of Tsuruga Station of the Hokuriku Shinkansen line between Kanazawa and Tsuruga which started operation in 2024. The defining feature of this bridge is the continuity of long-span prestressed concrete (PC) bridges. The main bridges consist of Okura-Yoza Land Bridge, consisting of two three-span continuous PC box girder bridge with span lengths of 215m and 206m, and Tsuruga Bypass Viaduct, a two-span PC box girder rigid-frame bridge with a span length of 172m.

Additionally, due to environmental considerations for the Nakaikemi Wetland located north of these bridges, the horizontal and vertical alignments were revised, resulting in a structure with a continuous sequence of piers over 20 m in height, which is rare among Shinkansen bridges.

Client : Japan Railway Construction, Transport and Technology Agency (JRTT), Hokuriku Shinkansen Construction Bureau
Design : Pacific Consultants Co., Ltd.
Construction : Joint Venture of Sumitomo Mitsui Construction Co., Ltd., Kyokuto Kowa Corporation and Michibatagumi Corporation

● **Futami Bridge, 2nd phase line**

(Bridges and Foundation Engineering, September 2024, December 2024)

Location : Iyo City, Ehime Prefecture

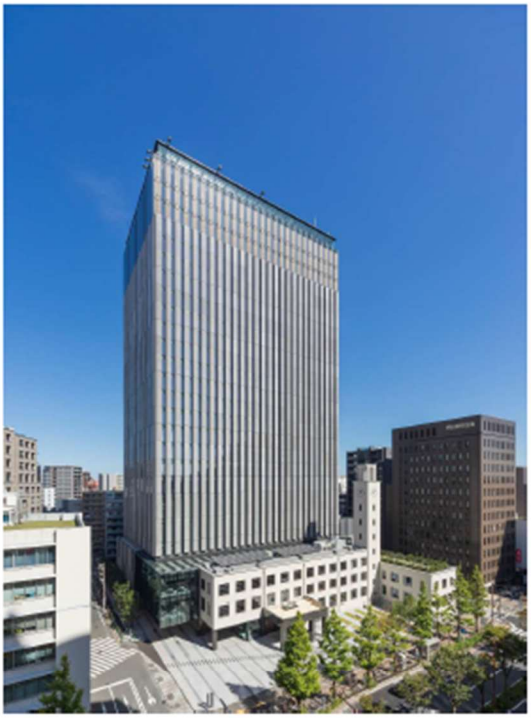
Outline of Structure :

This bridge is a 232.3m long PC 4-span continuous balanced arch bridge, built on the seaward side parallel to the arch bridge on the Phase I line as part of the four-lane Matsuyama Expressway project. Under the constraints of steep terrain and topographical conditions, the balanced arch structure was selected to minimize the impact on the Phase I line, considering not only structural and economic factors but also landscape and environmental concerns.

The superstructure was constructed using the truss overhang erection method, the first of such method in Japan and overseas, in which the stiffening girders are placed ahead of the arch ribs. The four-lane expansion project was completed on April 19, 2025, and is expected to alleviate traffic congestion, reduce the risk of accidents, and ensure traffic functions in the event of a disaster.

Client : West Nippon Expressway Co., Ltd. Shikoku Branch
Design : Eight-Japan Engineering Consultants Co., Ltd.
Construction : Joint Venture of Kajima Co., Ltd., Fuji P.S Co., Ltd.

Award for Outstanding Structures
- Buildings Category -



● Kawasaki City Hall

(Journal of Prestressed Concrete, Japan Vol.67 No.1, pp.53-60, 2025.1)

Location : Kawasaki City, Kanagawa Prefecture

Outline of Structure :

Kawasaki City Hall consists of a 25-story high-rise wing and a restored wing that preserves part of the former main office in its original form. This building is an urban high-rise disaster management facility, designed with comprehensive disaster countermeasures to ensure city hall functions can be maintained during any type of disaster. Based on past earthquake damage, a ceiling-less structural system was adopted to prevent ceilings and equipment from falling during seismic events. The ceiling-less structure on the typical floor is made up of steel beams covered with concrete and PCa slabs while the council floor is made up of T-shaped PCaPC slabs, and the lower floor is made up of inverted beam structures.

Client : Kawasaki City
Design : Kume Sekkei Co., Ltd.
Construction : TAISEI CORPORATION Yokohama Branch
Construction (PC) : PS Construction Co.,Ltd.

● NIKON Global Headquarters / Innovation Center

(Journal of Prestressed Concrete, Japan Vol.66 No.4)

Location : Shinagawa-ku, Tokyo

Outline of Structure :

This building uses PC slabs with ribs as a mechanism to diffuse the light from outside through the windows inside. To achieve a long span and curved ribs, a hybrid composite slab system made of PC and steel was developed. A void space is provided between the PC and the top concrete to reduce weight and ensure material strength, but it is also effectively used as an equipment ventilation and smoke exhaust path. Since there is no precedent for a composite slab made of PC and steel, the safety of the slab was confirmed through analytical verification considering fabrication and construction steps, as well as experimental verification by measuring the fabricated full-scale test specimen.

Client : NIKON CORPORATION
Design : Mitsubishi Jisho Design Inc.
Construction : HAZAMA ANDO CORPORATION (General construction)
KEN KEN Co., Ltd. (Prestressed concrete construction)

● Ibaraki City Culture and Child-rearing Support Complex ONIKURU

(Journal of Prestressed Concrete, Japan Vol.66 No.5; Concrete Journal Vol.62, No.8; Shinkenchiku July 2024; GAJAPAN No189; Nikkei Architecture July 25th 2024; Kindaikenchiku December 2024)

Location : Ibaraki City, Osaka

Outline of Structure :

The building was planned as a new public complex to revitalize Ibaraki City in northern Osaka Prefecture, integrating various facilities including a library and a hall. The facility, envisioned as a space where citizens can think, use, and help create, is not only a place for diverse civic activities but also serves as a headquarters for disaster response. The structure combines flat slabs supported by circular columns, prestressed concrete beams, reinforced concrete seismic walls for the theater, and a base-isolated system, achieving Category I seismic safety while creating a flexible public space adjacent to the lawn plaza.

Client : Ibaraki City
Design : Toyo Ito & Associates, Architects and Takenaka Corporation Joint Venture
Construction : Takenaka Corporation

● KASHIMA CIVIC CULTURE HALL SAKURAS

(Journal of Prestressed Concrete, Japan Vol.67 No.4 2025; The 52nd Prestressed Concrete Technology Seminar Text; Journal of Architecture and Building Selected Architectural Designs 2025; GA JAPAN 187; Collection of Architectural Sections and Detail Drawings)

Location : Kashima city, Saga Prefecture

Outline of Structure :

A new civic culture hall was constructed to integrate the functions of the former Civic Hall and Folklore Museum, serving as a cultural hub connected to surrounding facilities. The structural system utilizes ST composite floor slabs and prestressed concrete (PC) beams to efficiently support a long-span framework, resulting in a lightweight yet expansive interior. This approach also enabled the creation of a distinctive ceiling plane that defines the spatial character of the hall. The ring-shaped structural configuration facilitates the introduction of natural daylight into the hall's interior. The hall achieves high acoustic performance by the primary structural frame and is designed with a flexible spatial layout that integrates with shared circulation areas. Despite budgetary constraints, the project was conceived with a focus on the synthesis of architectural design and structural expression, aiming to establish an accessible and inclusive cultural landmark for the community.

Client : Kashima City
Design : NASCA
OAK plus
Construction : Joint Venture among Matsuo, Nakashima and Takagi Construction
PS Construction Co., Ltd. (PC Construction)

● Azabudai Hills Garden Plaza C

(Shinkenchiku September 2024)

Location : Minato City, Tokyo Prefecture

Outline of Structure :

Most of the building is underground with the first floor featuring a greenery-filled plaza and a cluster of shops, the first basement level housing a market, and the second and third basement levels having an art museum. The art museum has two large double-height spaces (with spans of 27 meters and 22.5 meters). The long-span beams on the first basement level above these large spaces not only support their own weight but also the loads of up to two floors above, transferred through columns. Several measures were taken to reduce the load on the beams, including lightweighting of the landscaping on the first floor and increasing the number of supporting frames.

The large-section prestressed concrete beams, unprecedented in architecture (with beam depths of 3.2 meters and 2.7 meters, with a depth-to-span ratio of approximately 1/8.4), made it possible to achieve the client's requirements for "high structural safety, greenery above ground, and cultural facilities (with large spaces) under the ground."

Client : Mori Building Co., Ltd. [Specific Builder]
Design : Mori Building Co., Ltd. First-Class Registered Architect Office
NIHON SEKKEI, INC.
SHIMIZU CORPORATION [Underground Structure; Joint Designs]
Construction : SHIMIZU CORPORATION
Construction (PC) : KEN KEN Co.,Ltd.

Award for Outstanding Accomplishments of Constructions

● Rapid Construction Method of Pier Head

(Bridge and Foundation Engineering, July 2021;
Journal of Prestressed Concrete, Vol.66, No.3)

Location : Ashigarakami District, Knagawa Prefecture

Outline of Structure :

Shin-Takizawagawa Bridge is a continuous prestressed concrete (PRC) rigid-frame box girder bridge, comprising of four spans on the inbound line and six spans on the outbound line, located between the Shin-Hadano and Shin-Gotemba Interchanges on the Shin-Tomei Expressway. To improve construction efficiency, the "Rapid Construction Method of Pier Head" was developed and applied for the first time in this project. This construction method utilizes precast members for the pier head, eliminating the need for large-scale temporary support structure and reducing the amount of on-site rebar and formwork labor. Additionally, a compact girder-type mobile work vehicle, capable of assembly in narrow spaces, was used for cantilever construction further enhancing on-site productivity.

Client : Central Nippon Expressway Co., Ltd
Design : Sumitomo Mitsui Construction Co., Ltd. – Kyokuto Kowa Co., Ltd. - DPS Bridge Works Co., Ltd. (Joint Venture)
Construction : Sumitomo Mitsui Construction Co., Ltd. – Kyokuto Kowa Co., Ltd. - DPS Bridge Works Co., Ltd. (Joint Venture)

● EAST-WEST ECONOMIC CORRIDOR IMPROVEMENT PROJECT Package-1 Construction of Gyaing Kawkareik Bridge

(Bridge and Foundation Engineering, December 2024)

Location : Kawkareik Township, Kawkareik District, Karen State, The Republic of the Union of Myanmar,

Outline of Structure :

The Gyaing Kawkareik Bridge is a 7-span bridge with a length of 580m, consisting of an extradosed bridge section (ED bridge) on the main span and a steel plate girder bridge section with minimal main girders on the approach span. The construction of this bridge incorporated Japanese bridge technology. The ED bridge section has a center span of 180.0m with single plane stay cables in parallel arrangement to account for the wide cross-section of over 20 m. Furthermore, 37S15.7 with triple corrosion-resistant specification was used for the stay cables.

Client : Department of Bridge, Ministry of Construction
Design : Central Consultant Inc.
Eight-Japan Engineering Consultants Inc.,
Japan Bridge & Structure Institute, Inc.,
Katahira & Engineers International,
Dia Nippon Engineering Consultants Co., Ltd.
T.O.P Engineering Consultants International Company Limited
Construction : Joint Venture of Hazama Ando Corporation, PS Construction Co., Ltd

● Construction of the Ōmika-nishi Overbridge on Shin-Tomei Expressway

(Journal of Prestressed Concrete, Japan Vol.66 No.5)

Location : Oyama Town, Suntou District, Shizuoka Prefecture

Outline of Structure :

Ōmika-nishi Overbridge is a Strutted Rigid-Frame PRC Box Girder Bridge with a total length of 116.1 meters. It is a large-scale bridge close to the upper limit of the applicable standard span length (55 meters). The structure features steep gradients, with a maximum longitudinal slope of 10.0% on the upper deck slab and 14.5% on the lower deck slab. Additionally, challenges arose from changes in the design conditions of the superstructure. To prevent quality defects and delays in the construction schedule, it was necessary to consider measures for steep gradient concrete during pouring and changes in the construction methods of the superstructure.

Client : Central Nippon Expressway Company Limited, Tokyo Branch
Design : FUKKEN CO., LTD., Obayashi Corporation
Construction : Obayashi Corporation

EVENTS

Annual Symposium
- The coming symposium -

The 35th Symposium on Developments in Prestressed Concrete

22nd - 23rd October 2026

https://jpci.or.jp/en/events/sympo/35pc-sympo/

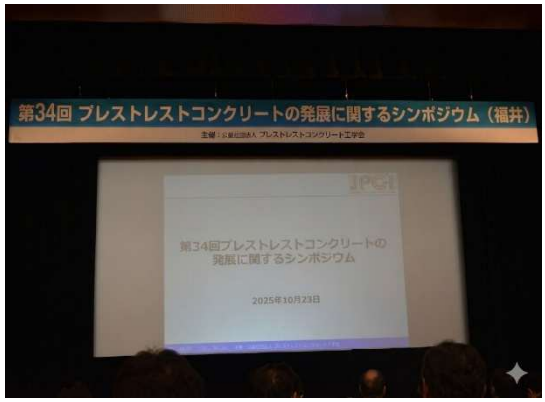
The 35th Symposium on Developments in Prestressed Concrete will take place on October 22 and 23, 2026 in Beppu, Oita. The venue is B-Con Plaza. The objective of the symposium is to further develop prestressed concrete technology by sharing valuable knowledge obtained from research and practices. In the symposium, special lectures will be presented by two speakers, one from Japan and the other from overseas. We look forward to meeting you in the next symposium.

- The last symposium -

The 34th Symposium on Developments in Prestressed Concrete was held on October 23rd and 24th, 2025, at Phoenix Plaza (Fukui Civic Welfare Hall) in Fukui. The primary objective of this symposium is to advance prestressed concrete technology by facilitating the exchange of valuable information among engineers, researchers, and academics.

The symposium commenced with opening remarks from Professor Hidenori Hamada (Kyushu University), Chairperson of the Executive Committee. He provided an overview of the event, highlighting the special lectures, workshops, and a technical exhibition that accompanied a record number of general presentations. Notably, he mentioned that this was the first time the symposium was hosted in Fukui and encouraged active participation as a vital opportunity for professional networking.

Venue, Fukui Civic Welfare Hall



Opening ceremony

Prof. Hidenori Hamada

Mr. Yoshihiro Aratani

Professor Hikaru Nakamura (Nagoya University), President of the JPCI, followed with an introduction to the society's history and activities. He noted that the extension of the Hokuriku Shinkansen served as the catalyst for selecting Fukui as the venue. Emphasizing the philosophy that "Technology is created, nurtured, and protected by people," he underscored how personal exchange at such symposiums leads to the creation of superior structures.

Guest greetings were also delivered by Mr. Yoshihiro Aratani (Kinki Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism) and Mr. Tadaaki Iwao (Road Department of Fukui Prefecture).

For the special lectures, Dr. Sho Takano, Associate Professor at the Research Institute for Regional Economics, Fukui Prefectural University, gave a presentation titled "Urban Development with Well-being as a Value Axis: Creating a Sense of Belonging and a Stage in the City". Also, Dr. Steffen Marx from Technische Universität Dresden, Germany, gave a special lecture titled "The Collapse of Carola Bridge — Forensic Engineering and Palliative Monitoring." A summary of these special lectures is provided below.

Dr. Sho Takano delivered a lecture regarding well-being. The lecture discusses the importance of urban development centered on well-being—a state of physical, mental, and social wellness. As loneliness and social isolation become serious issues, there is a global shift toward valuing mental, cultural, and environmental happiness over mere material wealth. This is evidenced by Bhutan's Gross National Happiness (GNH) and the integration of well-being into the SDGs. While some Japanese regions rank high in objective happiness statistics, there remains a "paradox of happiness" where residents do not subjectively feel happy. The key to regional well-being lies in two types of spaces: a "place to belong" (where one feels safe) and a "stage" (where one can express their potential). Having both increases self-esteem and the desire to remain in the community. Practical examples include "Fukumichi," which repurposes road spaces for social interaction; "Fukumachi University," where any citizen can be a teacher; and "PLAYCE," a hub that serves as a coworking space by day and a cultural stage by night. The lecture concluded that for a sustainable and happy society, it is essential for local communities to provide residents with both a sense of belonging and opportunities to take on new challenges.

Dr. Steffen Marx delivered a lecture regarding the collapse of Carola Bridge. The original bridge, built in 1895, was destroyed during WWII and reconstructed in 1971 as a three-parallel-girder structure using slender concrete box sections with a 120 meter main span. The design

Dr. Sho Takano

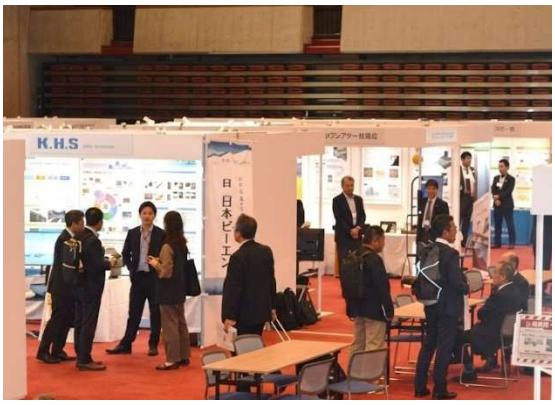
Dr. Steffen Marx

utilized the German "Gerber-hinge" (Saufhaus-Gerber) method with multiple hinges to equalize deflection caused by shrinkage, creep, and temperature changes across the superstructure. During the 1971 construction, prestressing cables were left un-tensioned and un-grouted for several months, exposing them to the elements. The steel used was later found to be highly susceptible to stress corrosion cracking and increased brittleness due to a specific oil treatment used at the time. While no external load was present at the time of collapse, low overnight temperatures cooled the thin deck slab, creating intense tensile stress. This added load to the already failing prestressing cables, triggering a shear failure at the pier. Data from the bridge's monitoring system confirmed that hinges had begun opening upward prior to the collapse. Acoustic emission sensors detected strong signals corresponding to the snapping of steel wires, indicating that stress corrosion was actively progressing in adjacent spans as well. Post-collapse inspections showed rebar pulled clean out of the concrete, proving that the prestressing cables had been bearing nearly the entire structural load. Germany has over 1,000 bridges with similar designs and over 100,000 bridges total; addressing all of them is estimated to take decades. Since immediate demolition of all at-risk bridges is unrealistic, the lecture proposes a risk-based prioritization strategy. The reliability of infrastructure is directly linked to social well-being (Well-being), emphasizing the need for forensic engineering to prevent future disasters.

On the morning of October 24, the second day of the symposium, two concurrent workshops were held. One was a committee report titled "History of Prestressed Concrete Architecture and Technology — On the Sequel". Sequel Editorial Committee (Akira Morita, Masayasu Imamura,

Workshop I

Workshop II



Technical exhibition

Parallel session

Toshiaki Someya, Masahiro Nakamura). The other was a panel discussion, titled "Current Status of Prestressing Steel in Our Country". The moderator was Dr. Tomohiro Miki, professor of the Kobe University. And panelists were Dr. Yasushi Tanaka, professor of the Kanazawa Institute of Technology, Dr. Koji Osada, Central Nippon Expressway Co., Ltd., Mr. Kiyotaka Hosoi, Shinko Wire Co., Ltd. and Mr. Koichi Katsuda, Sumitomo Electric Industries, Ltd.

In the workshop, first, the Sequel Editorial Committee of this institute introduced the sequel to "History of Prestressed Concrete Architecture and Technology" published in 2002. This publication systematically organizes prestressed concrete architectural technologies and cases from the year 2000 onwards, and a presentation of works and technical explanations were conducted with the aim of contributing to future technological development.

Next, under the title "Current Status of Prestressing Steel in Our Country," Professor Yasushi Tanaka reported on maintenance cases of the Myoko Ohashi Bridge. Dr. Koji Osada reported on cases of prestressing steel breakage in expressway bridges and hydrogen embrittlement. Mr. Kiyotaka Hosoi and Mr. Koichi Katsuda each reported on corrosion-resistant steel technologies and overseas trends. Under the moderation of Professor Tomohiro Miki, a lively exchange of opinions took place, and a shared understanding was established.

In order to exchange information concerning activities, researches and original technologies 42 groups participated in the technical exhibition. Firms and organizations displayed their current information in the booths provided for the Technical Exhibition. Presentations were made by exhibitors and active discussions for each presentation were made in the exhibition hall.

In the last symposium, the total participants were 865. In the parallel sessions, 62 contributed papers and 132 reports were presented in 20 sessions. From each session, the most excellent presenters were chosen and were given “Award of Excellent Presentation”. Prize winners are as follows.

Session 1: *Mayo Fujimoto*, Abe Nikko Kogyo Co., Ltd.
Session 2: *Moe Teshima*, Kyokuto Kowa Corp.
Session 3: *Sho Inoue*, Japan Railway Construction, Transport and Technology Agency
Session 4: *Keiichi Goto*, Railway Technical Research Institute
Session 5: *Tomoya Muromayama*, Kanazawa Institute of Technology
Session 6: *Yujiro Nogishi*, Kawada Construction Co., Ltd.

Award of excellent presentation

Session 7: *Toshitaka Okuda*, Nippon P.S Co., Ltd.
Session 8: *Riku Tanabe*, P.S. Mitsubishi Construction Co., Ltd.
Session 9: *Kyutoku Kude*, P.S. Mitsubishi Construction Co., Ltd.
Session 10: *Takaya Tsunoda*, Nippon P.S Co., Ltd.
Session 11: *Takashi Minamoto*, Obayashi Corporation
Session 12: *Masahiro Abe*, Kajima Corporation
Session 13: *Mitsuaki Noguchi*, S. Mitsubishi Construction Co., Ltd.
Session 14: *Satomi Hosoki*, Kawada Construction Co., Ltd.
Session 15: *Yuki Kurihara*, Nippon P.S Co., Ltd.
Session 16: *Yuuka Hashimoto*, Obayashi Corporation
Session 17: *Ryo Maeda*, IHI Infrastructure Systems Co., Ltd.
Session 18: *Yuta Nagayoshi*, Oriental Shiraishi / IHI Infrastructure Construction JV
Session 19: *Chenwei Hou*, Obayashi Corporation
Session 20: *Chiharu Kubota*, Nihon University Graduate School

Closing Ceremony, Executive Committee Members

■ 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: kaiinka-r5@jpci.or.jp

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