

JPCI Award 2024

【JPCI Award for Outstanding Paper】

● Exterior and Interior Damage Investigation of PC Bridge Girders and Experiments on Natural Environmental Action

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The 33rd Symposium on Developments in Prestressed Concrete

【JPCI 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 (JRJT), 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.

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【JPCI 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 :

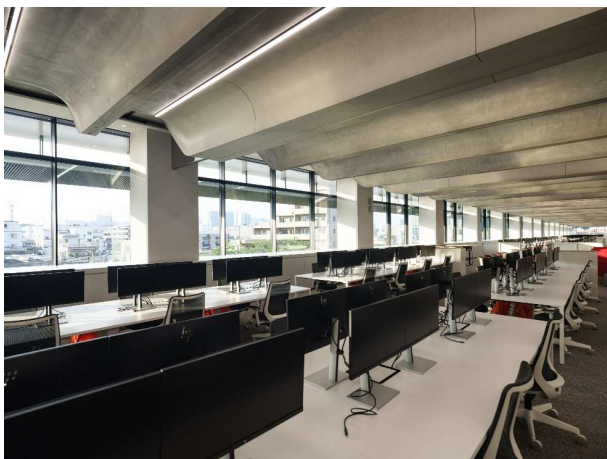
Kawasaki City Hall consists of a 25-story high-rise wing and a restored wing that preserves part of the former main office in its original form. This building is an urban high-rise disaster management facility, designed with comprehensive disaster countermeasures to ensure city hall functions can be 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)

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【JPCI Award for Outstanding Structures】

—Buildings Category—



● 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)

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—Buildings Category—



● 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.

【JPCI Award for Outstanding Accomplishment 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, Nagawa 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)

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【JPCI Award for Outstanding Accomplishment of Constructions】



● 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 Struttet 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