

JPCEA NEWSLETTER

No.3, November 2010



Japan Prestressed Concrete Engineering Association

JPCEA AWARD

Annual general meeting was held on 26 May 2010, and this year's JPCEA AWARDS were presented. Prize winners are as follows.



Saratagawa Bridge • Tomoegawa Bridge

Location: Shizuoka

Structural Type: PC continuous rigid frame composite truss bridge

Bridge Type: Highway Bridge

Bridge Length: Saratagawa (Eastbound line) 610m, (Westbound line) 625m
Tomoegawa (Eastbound line) 479m, (Westbound line) 479m

Span: Saratagawa (Eastbound line) 48.5m+2@90.0m+100.0m+2@110.0m+58.5m
(Westbound line) 63.5m+2@90.0m+100.0m+2@110.0m+58.5m
Tomoegawa (Eastbound line) 59.5m+3@119.0m+59.5m
(Westbound line) 57.0m+3@119.0m+62.0m

Width: 16.5m (Effective width)

Design: Central Nippon Expressway, Asia Air Survey, Shin Nippon Giken Engineering,
Obayashi - Showa Concrete Industry - Haltec JV, P.S.Mitsubishi - Abe Nikko
Kogyo JV

Construction: Obayashi - Showa Concrete - Haltec JV,
P.S.Mitsubishi Construction - Abe Nikko Kogyo JV



Calsonic Kansei Research and Development Center, and Headquarters

Location: Saitama

Structural Type: RC+S+PCaPC (Main Building), RC+S (East Building)

Number of Stories: Main Building 7 stories, East Building 3 stories

Building use: Research institute, Office

Floor Space: Main Building 6,266.88 m², East Building 3,761.39 m²

Total floor space: Main Building 37,930.17 m², East Building 9,540.70 m²

Design: Nikken Sekkei, Taisei (Structural Design)

Construction: Taisei



Onogawa Bridge

Location: Kumamoto

Structural Type: 4-span continuous PC extradosed bridge

Bridge Type: Railway Bridge

Bridge Length: 286.0m

Span: 30.0m+2@113.0m+30.0m

Width: 12.4m

Design: Yachiyo Engineering

Construction: Obayashi - Shiraishi - Mori JV



Palm Jumeirha Monorail Viaducts

Location: Dubai, U.A.E.

Structural Type: 5-span continuous PC Viaduct

Bridge Type: Railway Bridge (Monorail)

Bridge Length: Standard Type 145m (Total Route Length 5.4km)

Span: Standard Type 29m

Width: 800mm (Guideway Beam Width)

Design and Construction: Obayashi - Oriental Shiraishi JV



The prestressed concrete viaduct in the Nasu-dukuri Area on the Second Keihan Expressway

Location: Osaka

Structural Type: 20-spans continuous PC box girder bridge

Bridge Type: Highway Bridge

Bridge Length: 790 m

Span: 34.15m +40.50m+4@37.00m+6@42.00m +3@37.00m+4@40.75 m+39.65 m

Width: 29.640m

Design: Kindai Sekkei Consultant, Katahira & Engineers,
Sumitomo Mitsui Construction

Construction: Sumitomo Mitsui Construction



Haneda Airport D-runway, Steel pipe sheet-pile cellular seawall

Location: Tokyo

Structural Type: Circular Slit-Type Wave Absorbing Seawall with PCa PC Pile

Bridge Length: 428.7m

Width: 14.4m

Design and Construction: Kajima, Aomi Construction, Obayashi, Penta-Ocean Construction, Shimizu, Nippon Steel Engineering, JFE Engineering, Taisei, Toa, Toyo Construction, Nishimatsu Construction, Maeda, Mitsubishi Heavy Industry, Mirai Construction, Wakachiku JV



Sagimai Bridge

Location: Kanagawa

Structural Type: 2-span suspension bridge with PC girder

Bridge Type: Pedestrian Bridge

Bridge Length: 129.0 m

Span: 63.7m + 63.7m

Width: 5.450 m

Design: Pacific Consultants

Construction: Kawada Construction

R&D Award



Nakashinden Viaduct

Location: Kanagawa

Structural Type: 9-span continuous pretensioned precast web bridge
17-span continuous pretensioned precast web bridge

Bridge Type: Highway Bridge

Bridge Length: 958m (Up line), 991m (Down line)

Span: (Second Viaduct) 9@40m,
(Third Viaduct) 8@41m+2@32.5m+2@30.5m+43m+2@34m+2@33m

Width: 11.400m ~ 21.050m

Design: Central Nippon Expressway, Japan Bridge & Structure Institute,
Structure Engineering Center, Japan, Construction Project Consultants,
P.S.Mitsubishi Construction - Shimizu JV

Construction: P.S.Mitsubishi Construction - Shimizu JV

Construction Technology Awards



Daini Chikadou Viaduct

Location: Fukuoka

Structural Type: 31-span T-shaped girder bridge

Bridge Type: Railway Bridge

Bridge Length: 1,080m

Span: 17@34.0m+44.0m+24.0m+11@34.0m+29.0m

Width: 11.2-11.3m

Construction: Fuji p.s - Nippon P.S - Nippon High Strength Concrete JV



Nagaragawa Bridge (National Route 475 Tokai Ring Expressway)

Location: Gifu

Structural Type: 4-span continuous PC box girder bridge

Bridge Type: Highway Bridge

Bridge Length: 343m

Span: 59.5m+2@111.0m+59.5m

Width: 10.750m-24.832m

Design: Nippon Engineering Consultants

Construction: P.S.Mitsubishi Construction - Obayashi JV

WHAT'S NEW

2010 fib Awards for Outstanding Concrete Structures

The *fib* Awards for Outstanding Concrete Structures are attributed every four years at the *fib* Congress, with the goal of enhancing the international recognition of concrete structures that demonstrate the versatility of concrete as a structural medium. From Japan, the Island Tower Sky Club got a prize.



Owner: Shinei Jyutaku Corporation

Design Engineer: Joint venture of Takenaka Corp and Tsukasa Architect design Co.,Ltd

Contractor: Joint venture of Takenaka Corp and Matsumoto Gumi Corp.

Number of stories: 42 floors on the ground, one basement floor

Height: 145.3m

Total floor area: 60,831.26m²

Structural type: RC (partly SRC, S)

Structural system: Moment resisting frame with RC core wall

Foundation type: Steel tube in-situ driven concrete enlarged base piles

Construction Period: Jun.2006 - Aug.2008

Introduction

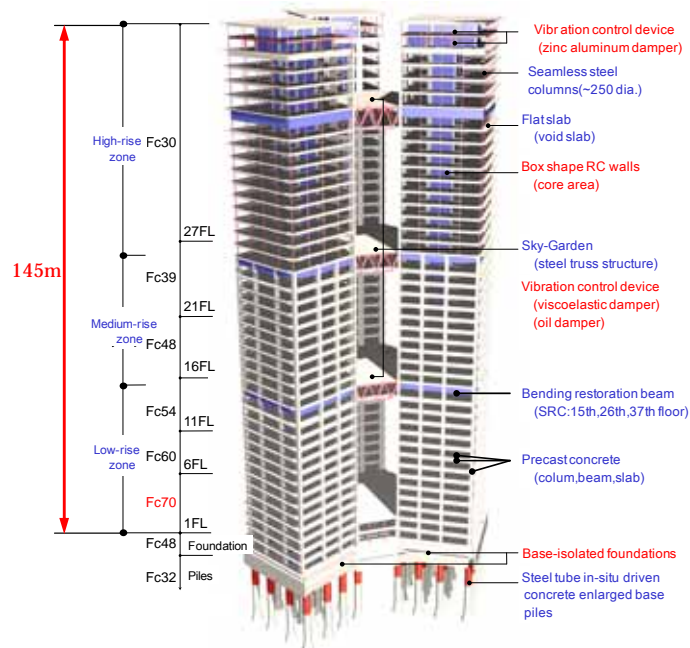
The Island Tower Sky Club is a super high-rise RC condominium constructed within safe, highly creative and advanced urban system in Fukuoka City, Kyushu, Japan (Photo 1&2&3).

The project is intended as a pioneering venture and a leading urban model (safe and comfortable) by adopting inventively the most advanced building technology to create an incomparable building form (slender symbol tower) and an unsurpassed residential space (excellent lightning and gorgeous view) in an incomparable and sustainable “base-isolated 3-tower connected structure”.

Outline of the structure

The 70N/mm² high-strength reinforced concrete building is 145.3-meter tall with 42 stories above the ground. The building is conceived with three similar slender (1:7) towers, instead of one wide tower, to provide the apartments with excellent day lightning. Each tower has 20 x 20 m square floor plan and total floor area is 61296 m². Therefore, to lessen seismic load effect, high performance isolated structure is adopted. Furthermore, selecting the particular feature of three-fold rotational symmetry connected towers improved the lateral and torsional stiffness of the building and assured a high level of safety. Because of the long natural period of the building the control of vibrations is cautiously planned to assure a high habitability level using the most advanced building technology.

The sustainable building has a featured aerial garden (Sky Gardens). The building skeleton-infill method is adopted aiming a long-life span and high-value for the building and city assets. Elevators and entrances are of universal design, sprinklers are installed in all apartments and a couple of evacuation routes are secured through the Sky-Gardens.



EVENTS

Annual Symposium - this year's symposium -

19th Symposium on Developments in Prestressed Concrete

October 21th – 22th, 2010

Kagoshima, Japan
<http://www.jpcea.or.jp/>

- the last year's symposium -

The last year's symposium, "18th Symposium on Developments in Prestressed Concrete", was held on 29-30, October, 2009 at Yonago Convention Center (BIG SHIP) and Yonago-shi Bunka Hall in Tottori prefecture.

Previous to the symposium, the Workshop was held. Activities of the JPCEA committees, report by the inspectors group of fib symposium in London, and researches in universities and colleges in the Chugoku region were presented.

In the Opening Ceremony of the symposium, Dr. Taketo Uomoto, professor of the Shibaura Institute of Technology, the chair of the Executive Committee, and Dr. Yoshiteru Ono, professor emeritus of the Osaka University, president of the JPCEA gave a speech, and the outline and aims of the symposium was introduced. Then, Mr. Yoshinobu Kanayama of Chugoku Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism gave a speech of greeting. He expects the progress of prestressed concrete technologies which contribute to construction of infrastructures.

Dr. Takao Inoue, the dean of the Faculty of Medicine, Tottori University, and Dr. Keiko Kurita, dean of the Division of Global Social Science, Tokyo Woman's Christian University, were invited and gave special lectures. Dr. Takao Inoue presented "Things what bones and



Venue, Yonago Convention Center



Opening ceremony



Special lecture, Dr. Takao Inoue



Special lecture

brains of Yayoi People discovered in Aoya Kamijichi Site in Tottori tell us”. Aoya Kamijichi Site is ruins which prospered from the second century B.C. to the second century A.D. A great number of relics were excavated from the ruin. The Site is called as “a Museum of Yayoi period” because of high quality of its relics. They tell us the states of the Yayoi period. A part of cultures in the Yayoi period can be presumed from wooden furniture. Scars on human bones are evidences of battles. Also, characteristics of body shape and the average life span of people in the Yayoi period can be presumed from human bones. Most of animal bones excavated from the ruin were mammals which can be seen in Tottori at the present time. They were sources of animal proteins.

Dr. Keiko Kurita presented “Public works and economics, -Civil engineers and cost and benefit in France in nineteenth century”. Rational valuation basis is demanded to verify necessities and clearness of public works. In France, in the middle of the nineteenth century, transportation investments already used to be considered economical evaluations. A party of civil engineers as it were “Engineer Economist” existed at that time. In the 1820s, open competition had become popular, and efficiency of private companies had begun to emphasize on. Then government engineers had to argue against private engineers on the same economics stage to protect own jobs, and cost-benefit analysis had become essential for them. In order to justify a planed project, and to expropriate lands from people, public usefulness has to be verified. Things we can be learned from them are, firstly choose factors should be investigated properly, and secondly make decision to making process clear.

Company’s activities and university’s and college’s researches in the Chugoku region were displayed at the Technical Exhibition Hall. 24 groups participated in the exhibition. Booths were arranged for the exhibition, and presentations and discussions for each exhibition were made in the presentation room provided in the hall.

In the last symposium, 86 contributed papers were presented in 12 sessions, and the participants were 403. From each session, the most excellent presenters were chosen and were given an “Award of Excellent Presentation”. Prize winners are as follows.

Session 1: *Shinichi Yamanobe*, Kajima Corporation

Session 2: *Tomonori Tanaka*, Fuji p.s Corporation

Session 3: *Tetsuo Hashino*, P.S. Mitsubishi Construction Co., Ltd.

Session 4: *Masaya Tomita*, Sumitomo Mitsui Construction Co., Ltd.

Hiroshi Akiyama, Zenitaka Corporation

Session 6: *Hiroshi Inagaki*, Kyusyu Institute of Technology

Session 7: *Kazuhiro Utsugi*, Kajima Corporation

Session 8: *Jaeman Lee*, Kyoto University

Session 9: *Masahiro Suzuki*, P.S. Mitsubishi Construction Co., Ltd.

Doyeon Kwak, Taiheiyo Cement Corporation

Session 10: *Toshihiro Yokota*, Yachiyo Engineering Co., Ltd.

Session 11: *Hiroshi Sakata*, KEN KEN Co.,Ltd.

Session 12: *Takehiro Kamamoto*, Nippon Expressway Research Institute Co., Ltd.



Parallel session, International conference hall



Parallel session, Conference room



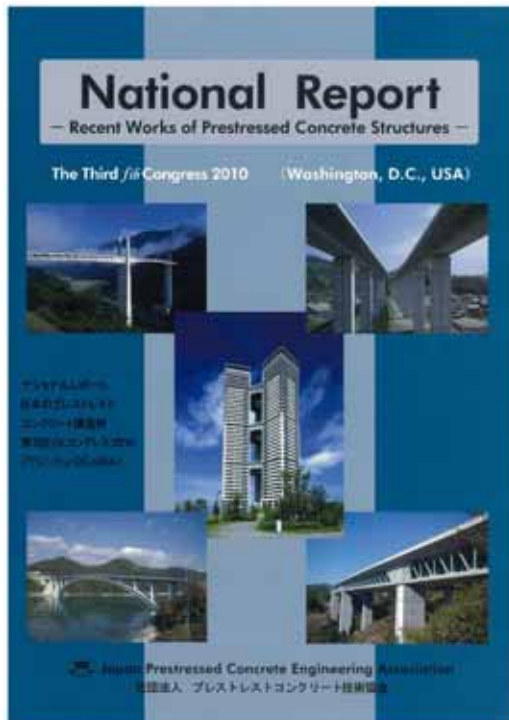
Technical exhibition



Award of excellent presentation

PUBLICATIONS

National Report ***- Recent Works of Prestressed Concrete Structures -***



JPCEA organized editorial committee on the English edition for the Third International *fib* Washington, D.C. Congress 2010. The committee decided to prepare the edition to be useful for both the documentation of the national report of Japan and the introduction of major Japanese prestressed concrete construction in the latest four years.

The edition was also arranged so as to be useful for Japanese engineers by adding comments in Japanese. JPCEA will continue to publish a similar edition in every four years in the future International *fib* Congress.

Contents of the report

PREFACE

ARCHITECTURE: 11 reports

BRIDGE: 35 reports

TANK & PC TOWER: 3 reports

RENEWAL: 2 reports

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

If you have any comments and suggestions, please contact us by sending e-mail to: kaiinka19@jpcea.or.jp

Internationalization Subcommittee

International Committee

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