JPCEA NEWSLETTER

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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.

Sarutagawa Bridge • Tomoegawa Bridge

Location: Shizuoka
Structural Type: PC continuous rigid frame composite truss bridge
Bridge Type: Highway Bridge
Bridge Length: Sarutagawa (Eastbound line) 610m, (Westbound line) 625m
    Tomoegawa (Eastbound line) 479m, (Westbound line) 479m
Span: Sarutagawa (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 ㎡, East Building 3,761.39 ㎡  
Total floor space: Main Building 37,930.17 ㎡, East Building 9,540.70 ㎡  
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:** 29.640 m
**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

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
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

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”.

WHAT’S NEW
**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.
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
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
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 contains 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

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