

Concrete bridges that were awarded the Japan Society of Civil Engineers Tanaka Prize 2007, Division of Outstanding Bridge Design and Construction*

Bai Chay Bridge, in Cua Luc Strait in the Ha Long Bay, Vietnam

Bai Chay Bridge constructed in Vietnam is a cable-stayed bridge with a 6-span continuous prestressed concrete deck of 903m. The 435m main span of the bridge is supported by a single plain cable system and single column towers. For that reason, Dead load was reduced by a mono-cell



cross-section deck reinforced by steel column braces. A prestressed concrete structure was also adopted at the lower part of the towers so as to increase the resiliency. The bridge reveals the advanced bridge engineering technology of Japan and the Japanese latest technology was transferred to the Vietnamese engineers.

New Meishin Expressway Ohmi-Ohdori Bridge, in Shiga Pref., Japan

New Meishin Expressway - Ohmi-Ohdori Bridge is an extradosed prestressed concrete bridge with steel corrugated webs constructed in a mountainous area near the Biwako lake. A multi-cell cross section for the wide bridge deck and a steel diaphragm structure for a stay-cable



anchor reduced the self weight of the bridge. The bridge piers made of self-compacting concrete of 50N/mm^2 compressive strength and high strength reinforcing bars retain high durability and seismic performance. The bridge located in a prefectural natural park was also designed aesthetically to harmonize with the surrounding environment.

* Texts and photos are from a pamphlet "JSCE Awards: Awardees and Their Outstanding Achievements" JSCE, 2007.

Tenmagawa Bridge, in Aomori Pref., Japan

Tenmagawa Bridge is a 180.4m long concrete arch bridge on the JR Tohoku Line. The bridge is supported by one spread foundation and three pile foundations due to geographical condition. For that reason, the arch ribs are fixed at the A2 abutment of a spread foundation so that



seismic lateral reaction force of the bridge deck suspended from the arch ribs can be resisted at the abutment. In order to realize this structure, new devices were developed such as large capacity reinforced concrete stoppers and suspenders absorbing deck shrinkage due to creep and drying shrinkage of concrete.

Seishun Bridge, in Gunma Pref., Japan

Seishun Bridge in Tsumagoi village, Gunma prefecture is a 60.1m long pedestrian bridge. The bridge crosses a steep V-shaped valley so that a new prestressed concrete double suspension structure of which concrete slab deck prestressed by two types of cables was



adopted. The primary and secondary cables were also used at the erection stage to support the deck self weight and adjust the deck sag, respectively. A solid handrail takes into account the structural system, and the U-shaped deck heightens the bending stiffness and reduces pedestrian vibration.

Uchimaki Viaduct, in Shizuoka Pref., Japan

Uchimaki Viaduct on the New Tomei Expressway in Shizuoka City is a 21-span continuous prestressed concrete box deck bridge. The wide bridge deck consists of a prestressed concrete box deck with wing slabs supported by inclined struts at both edges so that reduction of dead load of the



deck and a light view of the 1km long viaduct could be realized. The construction work also adopted various new methods and developed new technologies.