2010 Tanaka Award

Excellence in Bridge Design and Construction:
the award is made to recognize a constructed, or reconstructed bridge, or related structures which possess excellent quality in planning, design, construction, maintenance and management and exhibit technical and aesthetic excellence. The award is made not to individuals who were involved in construction of bridge, but rather to the work produced based on those individuals' superb collaboration and performance under the supervision and management of an organization, or organizations during the entire construction process.

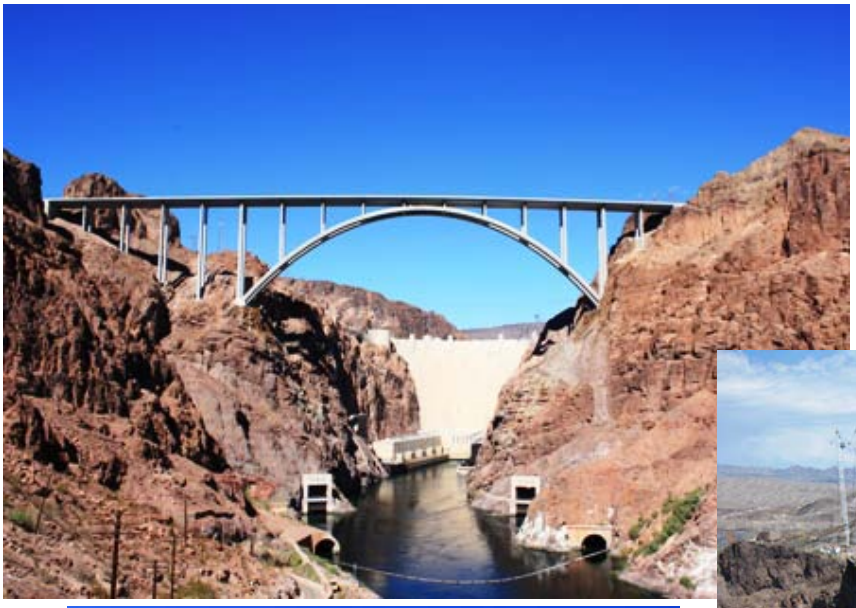
Colorado River Bridge

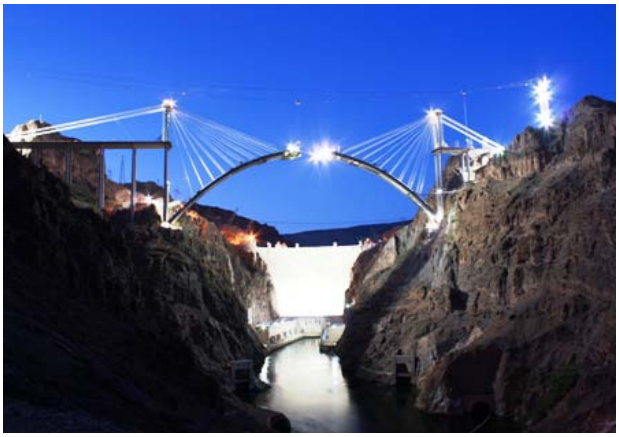
Federal Highway Administration/ T. Y. Lin International/ HDR Engineering/ Sverdrup Civil Incorporation Joint Venture of OBAYASHI Corp., PSM Construction USA

Summary

The Colorado River Bridge provides a crossing of the Colorado River downstream of the Hoover Dam. The 323 m arch is the longest concrete arch bridge in North America. The structural features of this arch are twin box hollow ribs and connections between twin arch ribs with steel struts.

The arch rib was constructed via cast-in-place concrete using temporary stays and pylons. A 3 dimensional analysis was utilized for the arch geometry control. The Arch concrete was placed at night with injection of Liquid Nitrogen to prevent the high-strength concrete from thermal cracks due to the high temperature environment.





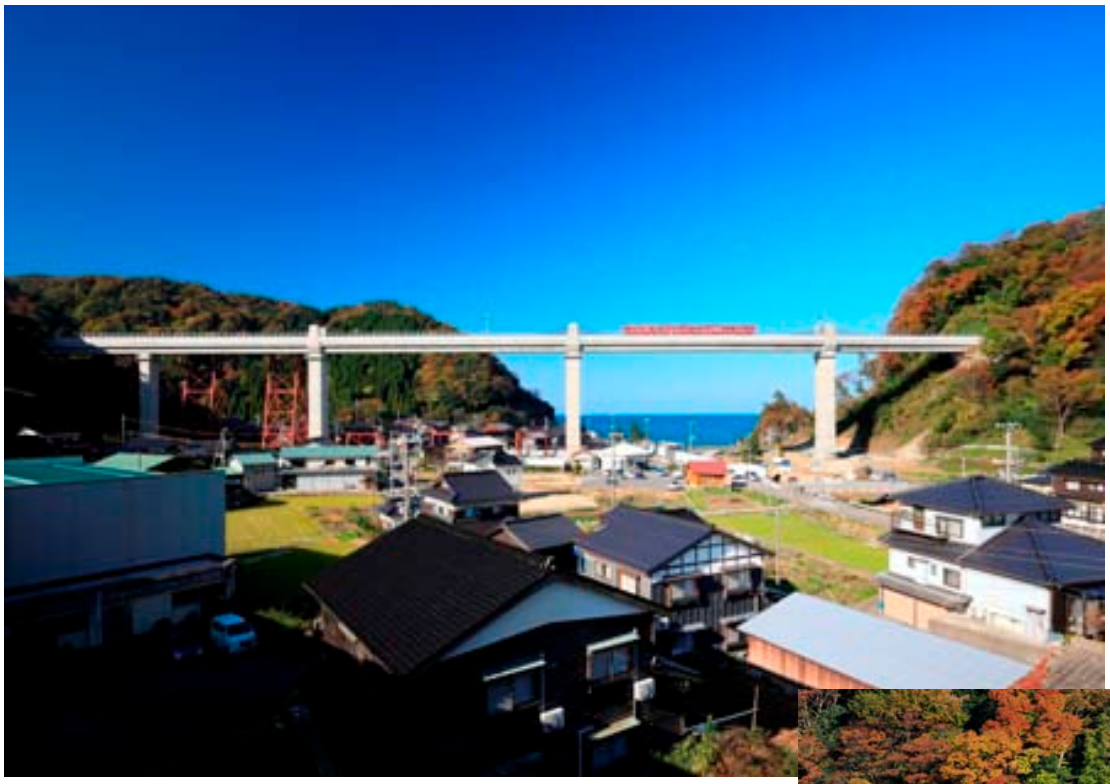
Amarube Bridge

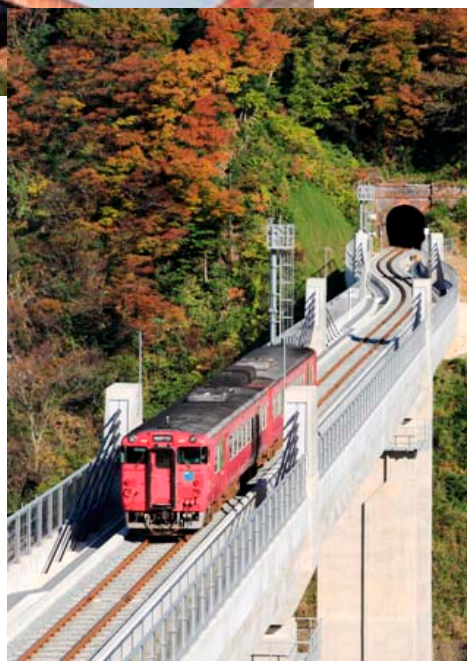
West Japan Railway Company/ JR West Japan Consultants Company/
Joint Venture of Shimizu Corp. and The Zenitaka Corp.

Summary

The Amarube Bridge, which replaced the former Amarube Bridge, is five-span continuous PC box girder extradosed bridge. The total length of the bridge is about 310m. In the design of this bridge, the design life of 100 years is secured by verification of durability for salt damage. Moreover, a delay or suspension of train service due to strong winds was improved by wind guard walls.

In connecting work between existing line and new line, the period of suspension of train service was shortened by parallel transfer and rotation work of the bridge girder weighting approximately 38,200kN.



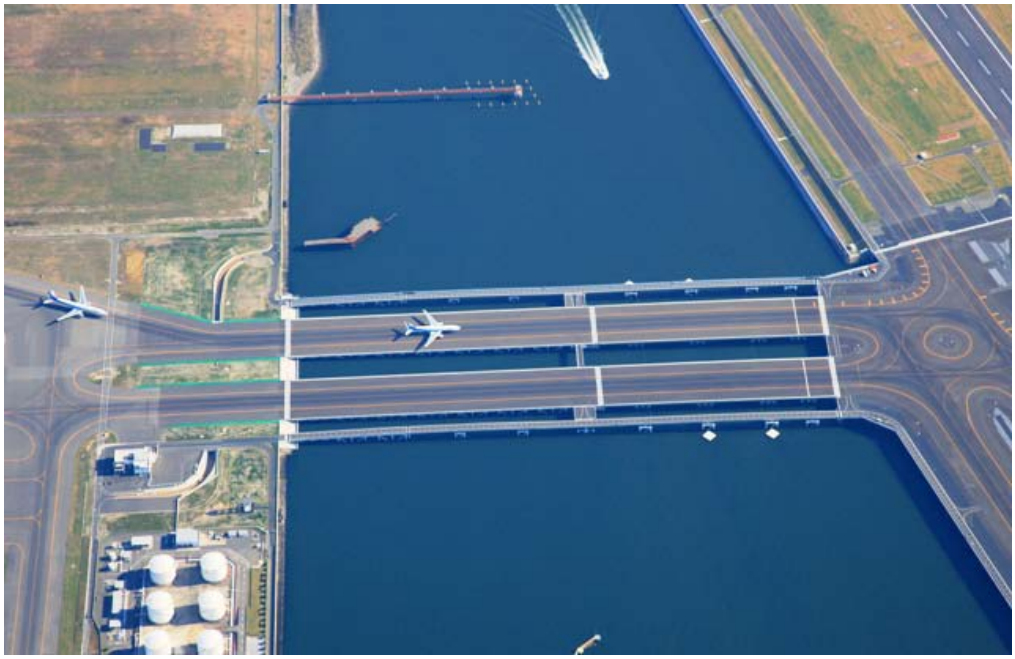


Connection Taxiway Bridge in Tokyo International Airport D-Runway

Kanto Regional Development Bureau, Kajima Corp., Aomi Construction Co., Ltd., Obayashi Corp., Penta-Ocean Construction Co., Ltd., Shimizu Corp., Nippon Steel Engineering Co., Ltd., JFE Engineering Corp., Taisei Corp., Toa Corp., Toyo Construction Co., Ltd., Nishimatsu Construction Co., Ltd., Maeda Corp., Mitsubishi Heavy Industries, Ltd., Mirai Construction Co., Ltd., and Wakachiku Construction Co., Ltd.

Summary

Connection Taxiway Bridge in Tokyo International Airport D-Runway is four parallel bridge of the world first where the large airplane can pass mutual in the large-scale sea bridge of extend about 620m. It is composed of the piled elevated platform part and of the bridge part. The piled elevated platform part is a compound jacket structure to combine the steel-made jacket with the PC beam slab. The bridge part is continuous composite girder with the maximum span 70m. The term of works is shortened by making to pre-cast and the large block construction of the material, and the quality has been improved. Connection Taxiway Bridge achieved a new composite structure where it was located in the offshore environment and durability had been secured for 100 years.



Fudo Ohashi Bridge

Ministry of Land, Infrastructure, Transport and Tourism, Kanto Regional Development Bureau.;
CTI Engineering Co., Ltd.; KAWADA Construction Co., Ltd.; Construction Joint Venture of GST.; KOYAMA KENSETSU KOGYO Co., Ltd.; NISSAN RINKAI Construction Co., Ltd.;
NITTOC Co., Ltd.

Summary

The Fudo Ohashi Bridge is under construction for the substitute road to span across the future lake as part of the Yamba Dam Project planned for implementation midpoint along the Agatsuma River. This 590m-long five-span continuous rigid-frame bridge is world's first PC compound truss extradosed bridge that integrates the structural technology of PC compound truss bridges and extradosed bridges. The panel points where the deck and truss members cross, had to possess a load-bearing capacity higher than conventional requirements. This bridge a new panel point structure is adopted, its safety has been verified by FEM analysis and a variety of loading experiments. The Fudo Ohashi Bridge, composite structures for the realization of a new bridge, and those working on issues to be resolved, has contributed greatly to the development of bridge technology.