

Ikinabashi Bridge



Outline

Ikinabashi Bridge is a 3-span continuous steel-concrete composite cable-stayed bridge with a total length of 515m and a central span of 315m. This is the third longest span bridge in Japan. It was constructed to support the creation of a new town, Kamijima in Ehime Prefecture, resulting from merging separate islands, which is rare in Japan. The bridge is part of the "Kamijima Connecting Bridge Project" which connects Iwagi Island, Ikina Island, Sashima Island, and Yuge Island within the town.

Ikinabashi Bridge is a connecting bridge over a sea area where the tidal currents are rapid and the water depth and bearing ground conditions change suddenly. Therefore for economic and constructability considerations the bridge piers were installed at shallow water depths to allow construction from the land, and an unbalanced span ratio (central span:side span = 3:1) was adopted. A steel beam was adopted for the central 149m of the center span, and in the other sections concrete beams were adopted. As a result of this mixed beam structure with balanced mass on both sides of the main towers, it was possible to achieve a bridge shape without providing intermediate piers in the side spans. This was the first time that a structure in which the inclined members were anchored to the steel beam as well as the concrete beam in the central span was attempted in Japan.

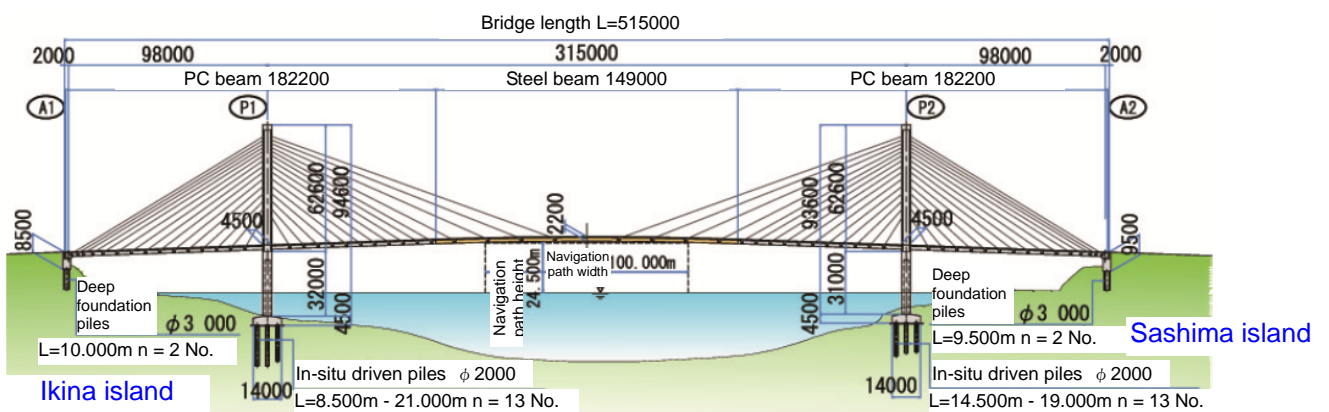
Also, the LCC was reduced by various measures such as thermal spraying an aluminum-magnesium alloy on the steel beams and bolts as well as using a high strength fluorine paint specification, reducing the mass while maintaining the stiffness with a hollow

cross-section for the main tower reinforced concrete structures, and using a detached anchorage system for anchoring the inclined members.

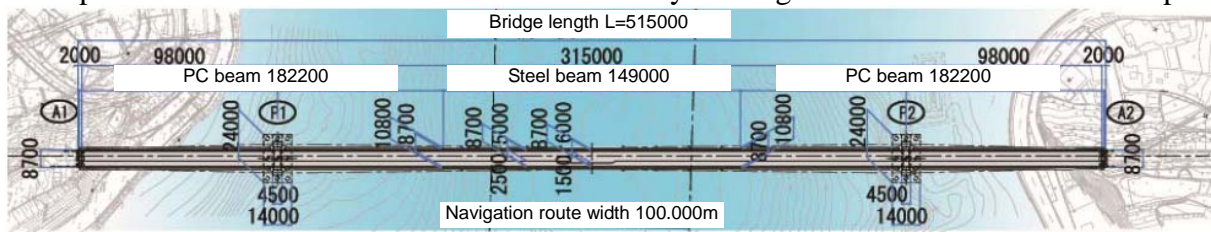
During construction, the joint beam was suspended and installed using the world's first traveling work vehicle. In addition the steel beam was lifted as a large block using a floating crane barge to shorten the construction time and minimize the effect on the shipping route.

The bridge commenced service on 6th February 2011, and it plays a major role in the vitality of the town.

■ General overall view



- 3 span continuous mixed steel-concrete cable-stayed bridge with steel beam in central span



- 1.5 lane arrangement: 1 vehicle lane 5.0m + sidewalk 2.5m

