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5. Kosan Bridge, Ube City, Yamaguchi Pref. (Japan)

Owner: *Ube Industries, Ltd.*

Engineer and contractor:

Substructure: *Taisei Corporation*

Superstructure: *Ube Industries, Ltd. and Fuji Sharyo, Ltd.*

Dimensions:

Substructure: *5 Piers (In the sea)*
6 Piers and 2 Abutments (On Land)

Superstructure:

Total length: *1,020 m*

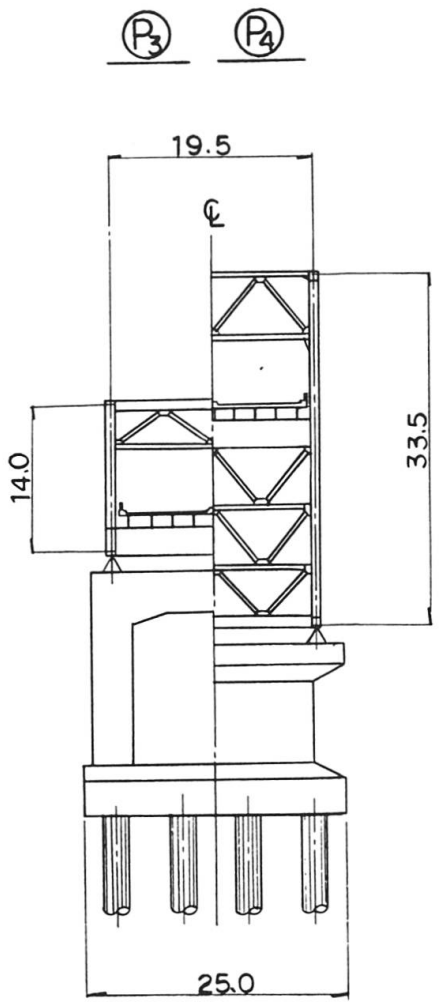
Main spans: *from 88.4 to 200.0 m*

Bridge width: *18.0 m*

Total weight: *10,400 t*

Work's duration: *21 months*

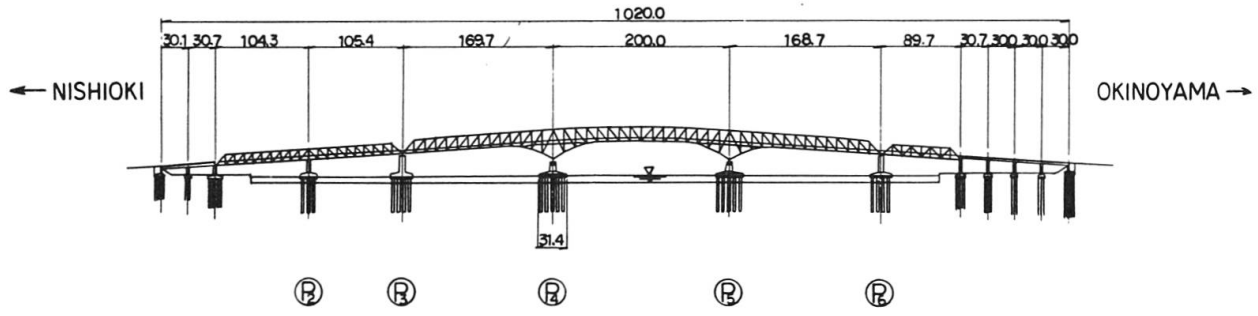
Service date: *1982*



Cross sections

Introduction

Kosan Bridge was planned to serve as the road between two reclamation areas, Nishioki and Okinoyama, across the sea. This road is the highway for the transport of materials and products of Ube Industries, Ltd. Coal, limestone and clinker will be transported by trailer which total weight is 100 t. As they have been transported by average trailers on common road up to the present, the common road has been always crowded and the volume of transportation has been small. After the construction of this bridge, we can expect increase of the capacity of transportation and reduction of transport cost by use of big trailers.

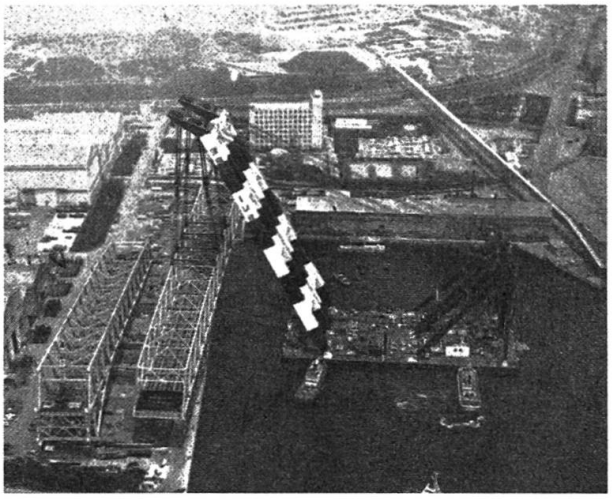


Elevation

Substructure

Concrete footing and pier in the sea has pile foundation of 12 to 20 steel piles which diameter is 2.5 m. The length of the piles are 41.0 to 47.0 m. At the same time of piling, the lower part of the footing were casted at the precast yard near the site. This precast plate was transported and set on the piles by a 3,000 t crane boat. The precast plate is 50 cm thick and most of the reinforcement of the footing is installed in it. The precast plate was utilized for casting concrete of upper part of footing as framework, support and scaffolding, and also we could work on it without effect of the tide.

The introduction of this precast plate method shortens the duration of the construction of these piers.



Big erection cranes

Superstructure

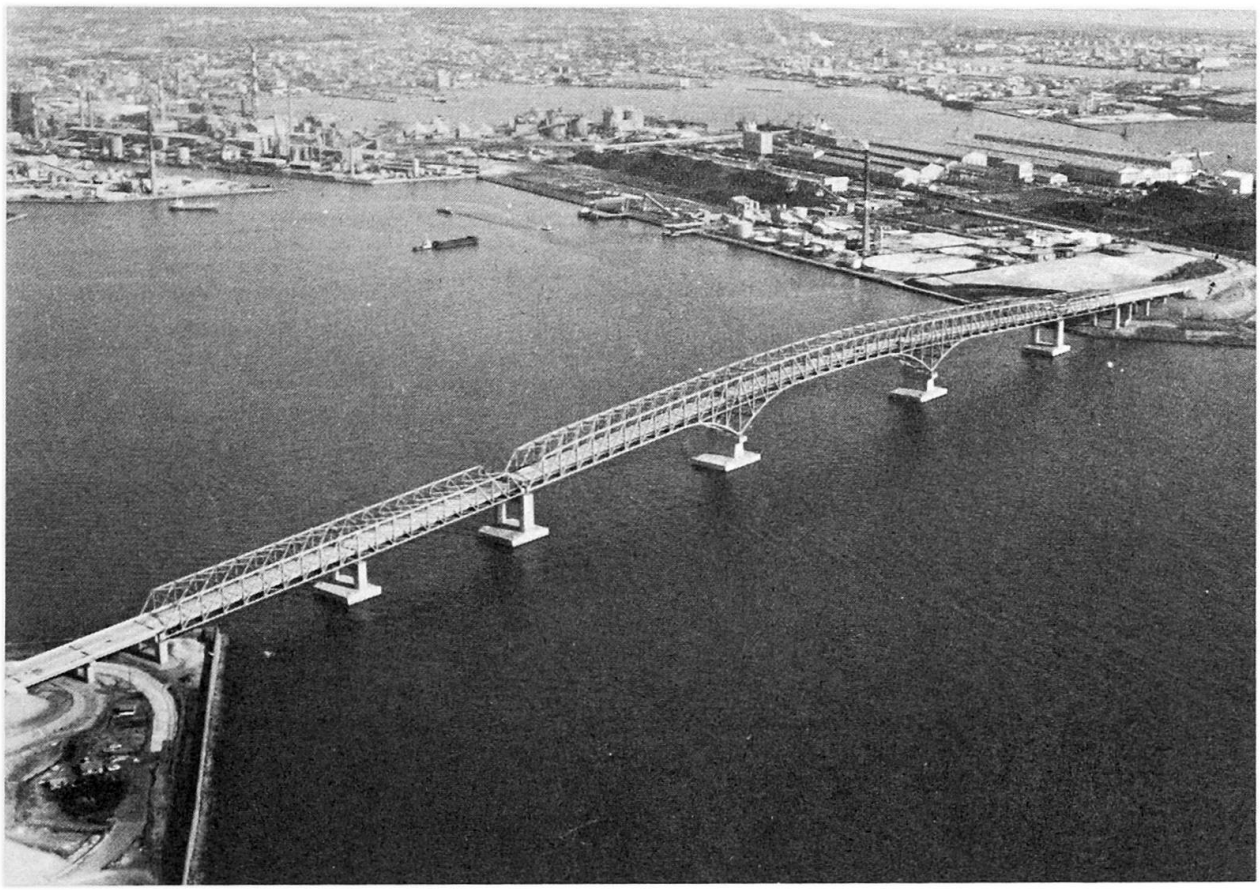
There are three steel truss bridges on the sea:

two span continuous truss (105 + 105 m)
three span continuous truss (170 + 200 + 170 m)
Simple truss (90 m)

The bridges were designed taking 100 t trailer into account as live load. So the member size of this bridge is larger than usual. The two span continuous truss, simple truss and the side spans of the three span continuous truss were constructed on the place about 3 km away from the site. They were transported on the sea and erected on the piers by a 3,000 t crane boat. Main span of the three span continuous truss bridge which is about 200 m long was erected at the site using two truck crane from both sides by cantilever method.

Painting work had already been completed before erection. Through the adoption of these erection method, the works' duration was reduced.

(H. Matsuda)



General view