

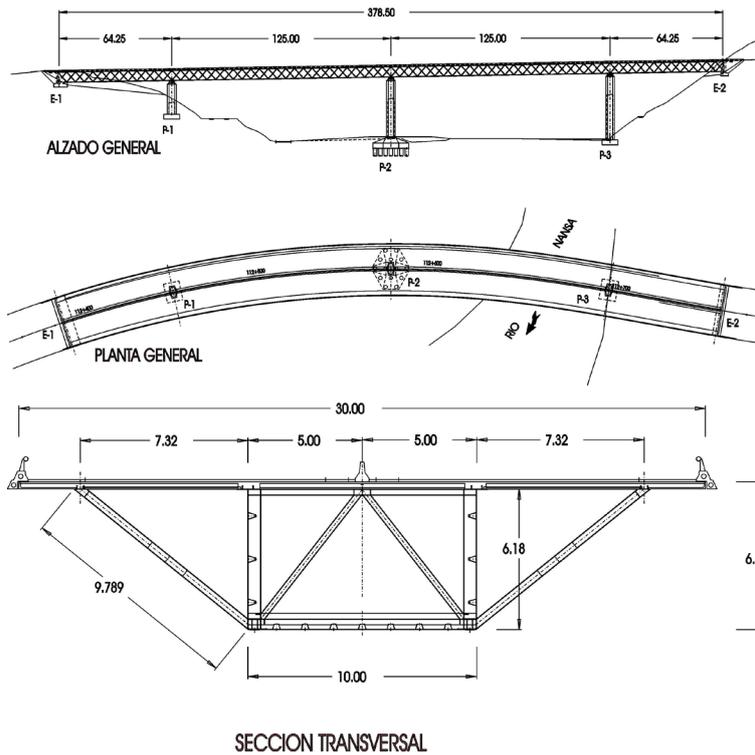
BRIDGE OVER THE TINA MENOR ESTUARY IN THE CANTÁBRICO HIGHWAY (SPAIN)

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The Bridge over the Tina Menor estuary in the Cantábrico highway has an overall length of 378.50 m and is formed by four spans of 64.25, 125, 125, 64.25 m. Concerning the plan alignment, the first two spans are in a circular alignment of 600 m. radius; the last two spans are in a transition curve with a change in the curvature sign.



The deck is continuous, formed by a composite box section of steel-concrete with a constant depth of 6.50 m. and a width of 30.00 m. The concrete slab has a total thickness of 0.32 m. and is formed by prefabricated ribbed slabs with a minimum thickness of 0.06 m. and a part that is cast-in-place 0.26 m. thick. The 30.00 m. wide

cross-section corresponding to the two roadways of the highway is completed by struts with profiles forming a cross bracing web. Thus, the bracing contributes significantly to

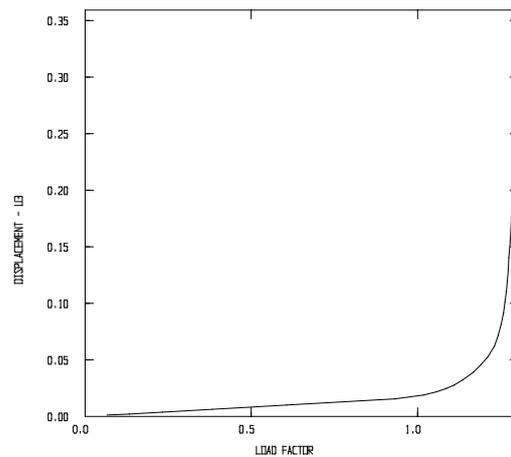
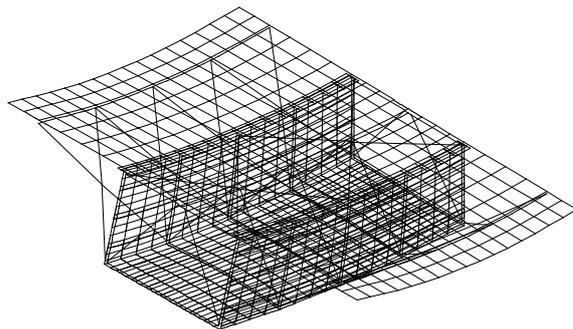


the torsional stiffness of the deck, that we calculated at around 25% with regard to that of the central box only.

The sections at supports are prestressed longitudinally, connecting the lower plate of the box to a concrete slab that varies from 0.20 m. to 0.70 m. thick.

The whole deck is prestressed transversally.

The construction is made with temporary supports, on the first two spans and half of the third, using the incremental launching method with a final rotation, for the rest, due to the difficulty for erection. The bridge was completed on October 2001





The article will show the main aspects in the bridge design in which general non linear methods of analysis were applied to the study of composite bridges, and the specific construction method used.