

Widening of the Los Santos Bridge

The Los Santos Bridge is a five span structure located in the North of Spain on the border between the Autonomous Communities of Galicia and Asturias. The bridge was built employing cantilever construction at the beginning of the 1980's. It is currently the subject of a project intended to double its capacity.

When the doubling of the bridge was studied by FHECOR Consulting Engineers, the conclusion was reached that it was possible to use the current structure with local reinforcement of foundations and external prestressing as well as additional reinforcement of the deck using a superimposed steel structure. This solution was found to be 80% cheaper than previous proposals based on building an independent structure.

The widening of the bridge is achieved by building an extension of the upper slab supported by inclined struts which carry the additional load to the central box girder.

The study of the bearing capacity of the existing structure concluded that it was able to carry the present loads but that the bearing capacity was extremely strict with a very limited capacity for additional loads. For this

reason, the widening project proposed a strengthening of the structure by means of external prestressing, a longitudinal steel box connected to the existing structure and filled with self-compacting concrete and a third web located at the centre of the deck intended to take the additional hanging load coming from the inclined struts and transmit it to the reinforced structure.

The external prestressing is located within the box girder. It is formed by 8 tendons carrying 31 strands with a 16.00mm nominal diameter. The prestressing is anchored to the pier and abutment diaphragm walls. Its layout is polygonal and shaped by means of deviators located at span thirds.

The longitudinal steel box is located at the deck centre in contact with the bottom slab. Its width varies from 1.20m to 1.00m and its depth is 0.90m. The concrete filling of this steel box is needed in order to increase the compressive bearing capacity of the bottom chord in the area of the piers. At the centre spans the concrete also is needed as corrosion protection for the vertical anchor bars, connecting the steel box to the third web.



Spain /2008 Project data

Structural Type:
Prestressed concrete bridge built employing the cantilever method and widening by means of a steel structure and external prestressing

Location:
On the Ría del Eo between Galicia and Asturias (Northern Spain)

Proprietor:
Ministry of Public Works.

Construction Company:
DRAGADOS

Opening date:
October 2008

Scope of Works:
Preliminary studies, Construction Project and Technical Assistance