



Design and Construction of Frank Gehry Bridge. First access to the new Island of Zorrotzaurre in Bilbao, Spain

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Abstract

Frank Gehry's Guggenheim Bilbao Museum made this Spanish Northern city worldwide known. Its opening induced an impressive urban regeneration during the last 20 years, turning its hard industrial image into an attractive place to live in and a tourist destination. This transformation continues nowadays and it is focused in the (artificial) peninsula of Zorrotzaurre, already being transformed into an island following the Master Plan commissioned to architect Dame Zaha Hadid.

Named after Frank Gehry as homage by Bilbao's City Council, the first bridge will materialize the connection of this island with the rest of the urban fabric. It will save the watercourse with a main span of 76,9 m and an average width of 28 m, using an innovative design concept which combines two structural schemes: an inverted Fink Truss and a three span variable height beam. It is a bridge of major interest due to the structural type used, without any precedent in a road bridge.

Keywords: urban bridge, inverted Fink truss, full locked cables, bridge monitoring.

1 Conception and design

1.1 Historical context and antecedents

Industry has always been the main economic engine of Bilbao. River Nervión, which divides the city into two halves, was traditionally used as an infrastructure, allowing the access of boats to the city centre.

The actions carried out during the last 20 years have deeply changed the city's appearance and recovering river and banks for the leisure of citizens. A hard industrial city has been turned into an attractive place to live in and a tourist destination, in a worldwide example of successful urban regeneration.

This transformation remains active, and it will be focused in the peninsula of Zorrotzaurre for the next two decades. Its characteristic shape is the result of an ambitious intervention undertaken by the end of the 1950s: the opening up of a canal to bypass a meander of the river and facilitate the navigation of heavier crafts. This development was never completely concluded, but was included in Bilbao's Urban Planning Document, approved in 1996, in order to improve flood protection of the city.

So, Zorrotzaurre will be transformed from a peninsula into an island. The land uses will also be modified from industrial to residential.