



Juan José Arenas: a Philosophy of Bridge Design

Guillermo Capellán, Miguel Sacristán, Santiago Guerra, Emilio Merino, Javier Martínez

Arenas & Asociados, Santander, Spain

Contact: gcapellan@arenasing.com

Abstract

Juan José Arenas, IABSE's 2017 International Award of Merit in Structural Engineering, was a really prolific engineer in the design and construction of bridges and signature structures.

This article briefly synthesizes the main projects of Juan José Arenas since he founded Arenas & Asociados. This phase runs from 1999 to his decease in November 2017. The last years of his professional career, but also those of more experience and knowledge. This period leaves a laudable legacy, with worldwide recognized structures as the Third Millennium Bridge in Zaragoza or the Viaduct over River Almonte (HSR Madrid-Extremadura). But, in addition, many other examples that, due to their uniqueness, suitability, soundness or details, deserve their mention and remembrance.

Keywords: Juan José Arenas, bridge, viaduct, design, construction, detail.

1 A new professional challenge

These last years heading Arenas & Asociados since he founded the company in 1999 were really prolific for Professor Juan José Arenas. At this time, he wanted to concentrate just in the design of bridges and signature structures, and thus, he took the decision of leaving aside a powerful general consulting firm as it was APIA XXI (also founded by him), to set out a new adventure.

It was the time of his maturity as a structural engineer, with an enormous experience and recognized projects accumulated over the years. On the other hand, the passage of time and the gradual deterioration due to health concerns, made him loose gradually physical strength. But this did not affect his determination, perseverance and lucidity to face new projects, always supported by a team that grew around him. This new journey started in 1999 with the construction of some emblematic bridges Juan José had designed in previous years, as described in a recent article in ROP magazine[1]. Hispanoamérica Bridge in

Valladolid had just been built, and the Bridge over River Tormes in Salamanca was being built consecutively. Barcelona's Harbor Movable Bridge was also under construction. And in very short time, the construction supervision of the New Fish Market in Santander was carried out.

The first two structures are two very different bridges that include Juan José's own project innovations. For example, Hispanoamérica cable stayed Bridge (*Fig.1 left*) introduces prestressed concrete rigid-tie retaining elements, that together with the compression pylon form a large "sail" on a monumental scale. This solution responds to the double search for a better structural behavior of this asymmetrical cable-stayed bridge with reduced compensation span, and for the right scale and monumentality, suitable for a site with large avenues in the urban environs of Valladolid.

Felipe VI Bridge in Salamanca (*Fig.1 right*), is very different as seeks to get integrated into a World Heritage Site, trying to produce the least impact on the view of the historic center and the Cathedral of Salamanca. It is, therefore, a bridge without