



Talavera Cable-Stayed Bridge

Ramón SANCHEZ DE LEON

Civil Engineer
Estudio AIA
Toledo, Spain

rsanchezdeleon@estudioaia.com



Ramón Sánchez de León, born 1965, received his civil engineering degree from the University of Madrid, Spain. Since 1989, he has been employed by Estudio AIA. He was in charge of the design of the Talavera cable-stayed bridge. Professor University of Castilla-La Mancha.

Summary

The layout of the new south by-pass at Talavera de la Reina, a town in the Spanish province of Toledo, required a bridge over the River Tagus wide enough to handle dual carriageway traffic. In addition to that requirement, design was conditioned by environmental legislation that banned intermediate piers in the main course of the river.

The regional roads division of Castilla-La Mancha government wanted to create a bridge would become a landmark structure for the city and the region; as a result a new cable-stayed bridge was designed, with a single span and an inclined towers, and which is claimed to hold several records.

Keywords: pylon; steel-box; high strength concrete; back-span stays.

1. Introduction

These demands were met by the 318-m, cable-stayed bridge that crosses the river with a single-span, high-strength concrete deck 36,00 m wide and 2,75 m deep with two planes of supporting cables that converge on a single pylon.

The pylon itself is a high-strength concrete mast slanted at a 22° angle that towers 192 m over the bridge foundations. It is braced by two planes of backstays anchored in underground reinforced concrete counterweights. In sum, the bridge has 152 cables forming four planes with 38 stays each.

The cable-stayed part of the bridge is supplemented with a curved, post-stressed concrete double box girder viaduct with seven 48,00 m centre spans and two 36,00 m end spans, whose 408 m total length bridges the entire floodway. Altogether, the structure is 726 m long.



More than an element contributing to the continuity of a key thoroughfare for urban development, the bridge, with its slender elegance and monumentality perfectly mainstreamed into the cityscape, is fast becoming a town icon.

The Talavera de la Reina Bridge (Fig. 1) besides of a single-span cable-stayed section 318 m long has a 408 m approach viaduct. The present communication focuses on the cable-stayed bridge and its structural complexities. For readier comprehension, the various members comprising the stayed bridge are described separately.

Fig. 1: Elevation view of Talavera Bridge

The bridge was entirely designed and engineered by ESTUDIO AIA, ARQUITECTOS E INGENIEROS ASOCIADOS SA, this company also subsequently commissioned to monitor and control bridge construction and stressing as well as to provide technical support for the site