

## Cable-stayed bridge over the River Fuengirola. Fuengirola (Málaga)

To give continuity to the promenade in the town of Fuengirola in Malaga, the General Coast Management of the Ministry of Environment planned a pedestrian footbridge at the mouth of the River Fuengirola, whose placement of supports should not interfere with the hydraulic drain-system of the river into the Mediterranean Sea.

In order to span an almost 90.0m wide riverbed, a cable-stayed reinforced concrete structure with a deck of two spans measuring 14.80m and 68.20m with a single pylon placed on the right riverbank was designed and built.

Due to the lack of span compensation of the deck, with a close to 0.20 relation, the balance of the vertical loads from the main cable-stayed span is obtained by means of a counterweight which guarantees stability against the vertical pull from the retaining cables. This counterweight is connected to the compensation span in such a way that horizontal loads transmitted by the

retaining cables are counteracted by the compression transmitted by the deck.

The cable-stayed system consists of closed cables of two diameter types of 40mm and 55mm that offer the structure a graceful appearance, which would not have been possible if the solution of parallel strands had been chosen. These closed cables are composed of spiral-rolled steel wires whose last three layers are z-shaped in order to induce their closing when tensioned. For reasons of durability, all interior wires are galvanized with zinc and the z-shaped wires with a special alloy of aluminum and zinc.

The reinforced 0.60m thick concrete deck is anchored in the counterweight and supported by the pylon and the abutment where the expansion joint is located. Its compensation span, which contributes to the loading weight action of the counterweight, has a tapered concrete section which is variable in width, running from 11.50m to 5.10m.



### Spain /2006 Project data

Structural Type:  
Arch bridge 45.35m in span with  
composite deck and steel arch  
Location:  
Over the Fuengirola River in  
Fuengirola (Málaga)  
Opening Date:  
February, 2006  
Proprietor:  
General Coast Management  
Steel Structure:  
ASCAMON  
Construction:  
DRAGADOS S.A.  
Scope of Works:  
Construction Project and  
Technical Assistance