

Cable-stayed Road Bridge over the Valencia By-pass road

The new link motorway between the southern Valencian distributor and the A-7 motorway which by-passes Valencia, shall need to cross the latter and its service roads set at a 45° skew and without need of supports on the central reservation of the A-7 so allowing for possible future widening of the aforementioned. The connection at the junction area shall have two carriageways, one 7.0m wide and the other 4.0m, two 2.5m hard shoulders and a 3.0m wide central reservation.

The proposed structure consists of three spans 34.5m + 57.0m + 34.5m, set on two 1.8m wide X 1.0m deep longitudinal steel box girders which are held together by two planes of cables; 3 front-stay cables and three back-stay cables which are set in anchor blocks.

The cables in the stay system have a diameter varying between 225mm and 245mm. They are composed of parallel cables and are of a pre-established length finishing in anchorages.

Transversally, the 23.0m wide deck is composed of a framework of bi-articulated, reinforced, 0.8m-deep

steel-beams upon which corrugated sheeting is placed followed by a 0.2m maximum depth concrete slab. At the extremes of the slab, due to the skew, a 2.05m deep closing beam is placed, which collects the transversal beams in the area close to the acute angle of the deck.

The 12.0m high composite pylons are hexagonal in shape, have an external 20mm thick sleeve which is filled with concrete and are embedded in the deck at the connection with the longitudinal girders with the transversal beams. Pot bearings have been placed below the deck at the connection area of the pylons which transfer the loads to the piers reinforced with steel cladding. These piers, which also have a hexagonal cross-section, are around 8.0m high and are founded on pile caps set on five 1.0m diameter piles.

At the abutments the deck rests, via pot-bearings, upon two reinforced concrete prism-shaped pilasters which are founded on two 1.0m diameter piles situated in front of the reinforced area of the abutments, hence making the main structure independent to deformation affects of the reinforced area around the abutments.



Spain /2005 Project data

Structural Type:
Composite Cable-stayed Bridge
Location:
Torrent (Valencia)
Proprietor:
Generalitat Valenciana
Scope of Works:
Construction Project and Technical
Assistance to the Constructor
Main Consultant:
INOCSA
Structural Consultant:
FHECOR Ingenieros Consultores
Report Date:
December 2003
Constructor:
UTE FCC-PAVASAL
Implementation Date:
June 2005