



New access to Montoro. Bridge over the River Guadalquivir

Structural Type	Composite bridge with steel box and central steel arch over the river Guadalquivir.
Location	Montoro (Córdoba).
Opening Date	2007.
Property	Andalusian Management for Infrastructures Ltd. General Direction of Motorways. Public Administration for Public Works and Transport.
Construction	Under construction

The structural design of the project consists of a composite deck, a steel arch, nine galvanized steel cables and reinforced concrete abutments and includes a sequence of 5 spans of 20.00 + 27.00 + 40.00 + 60.00 + 33.50 + 19.50 m. The type section of the motorway is composed of two lanes of 3.50 m, two interior hard shoulders of 0.50 m, two exterior ones of 0.50 m and two exterior pavements of 3.00 m width (including the necessary space for the safety barrier which separates the pedestrian flow from road traffic). The remaining height, until the bridge maximum of 16.30 is reached, is completed with a concrete median of 1.30 m width.

The adopted transversal section is made up of an almost triangular box (minimum depth of 100 mm at extremes), divided into eight cells by vertical webs and completed with a concrete slab of 18 cm thickness. The characteristics of this slab are of special adequacy since deck load is minimized, in particular at the far end zones of the central supporting line (hanger plan) where their efficiency to resist axial, bending, shear and torsion combined forces is especially high.

Ribs or diaphragms of equal length as the total box width of 16.30 m have also been designed. The distance between these elements is variable, depending on which span they are placed.

The steel arch is of variable section. At the spring of the quadrilateral section its diagonals are of 672 x 2700 mm, while at crown, their value is 1600 x 650 mm. The dimensional variation of these diagonals is done in a circular way which maintains the total area of the section practically invariable. This geometry fulfills the necessary resistance requirements of the bridge. The designed values of steel thickness for this structural element are 40 mm at springs and 30 mm for the central section.