Bridge over the River Tajo. Guadalajara

The structure is composed of 14 spans measuring 40.0m + 3 x 70.0m + 150.0m + 5 x 250.0m + 150.0m + 2 x 70.0m + 40.0m, reaching a total length of 1980.0m. The bridge is 24.0m wide so allowing the occupation of a dual carriageway.

The structural type employed is a continuous hyperstatic post-stressed box girder constructed using the continuous cantilever method combined with MSS (movable scaffold system).This constituted a record in Spain for this construction method.

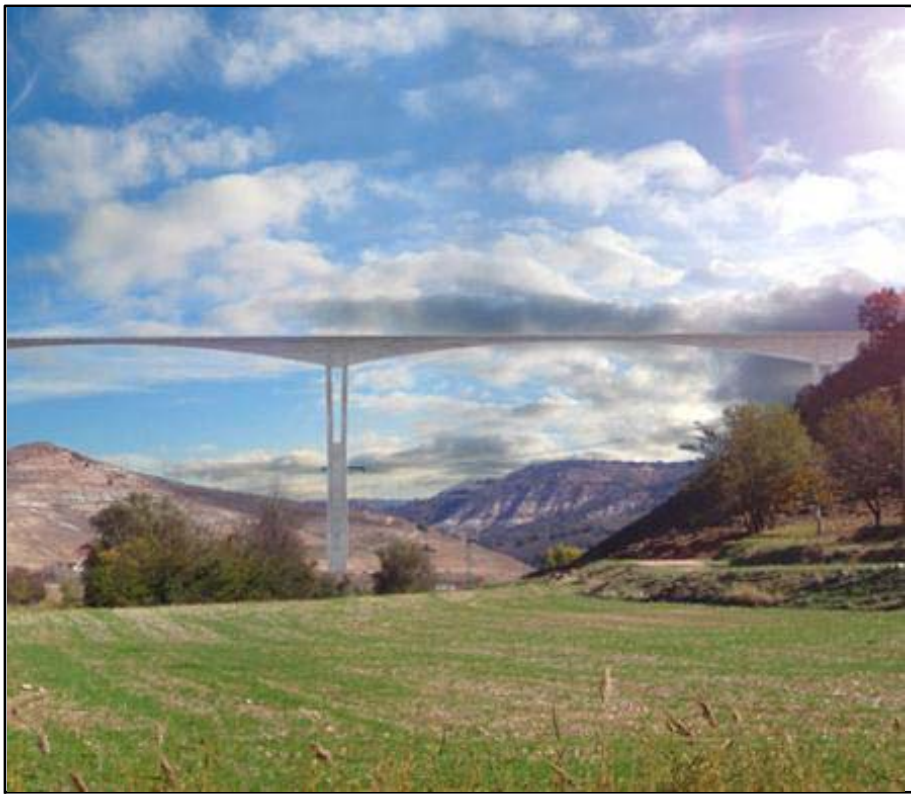
The depth of the deck is a constant 4.0m in the 40.0m and 70.0m spans and tapered in the 150.0m and 250.0m spans where it runs between 16.5m at the piers to 4.0m at the centre of the span length, thus offering a depth/span ratio of 1/15.2 and 1/62.5 respectively.

The width of the box girder is a constant 7.5m so giving cantilever lengths of 8.25m making it necessary to have transversal tapered concrete ribs placed every 5.0m. The concrete employed has been light or high-resistant depending on the different phases of the construction process.

The bridge crosses the valley over the River Tajuña at a height of 140.0m at its centre, so needing very tall slender piers.

The piers may be grouped in two basic types: the first corresponds to the spans constructed with MSS, which have a hollow rectangular 7.5 X 3.0m cross section reaching up to 46.0m in height, and the second group for the spans constructed using the cantilever method which are composed of two longitudinal hollow-sectioned shafts which from a height of 50.0m are connected by two transversal screens until embedding at foundation level, with heights, in cases, reaching up to 125.0m. The concrete employed in this case is high resistance.

The abutments which have been projected are closed and have been executed in such a way that their height does not exceed 10.0m. Shock absorbers have been housed in the abutments which allow longitudinal rheological and thermal displacement but block sudden overloads.



Spain /2009

Project data

Structural Type:
Box Girder Bridge constructed employing the cantilever method.
Location:
Alcarria Motorway. Guadalajara
Proprietor:
Junta de Comunidades de Castilla-La Mancha.
Scope of Works:
Construction Project.