

Bridge over the Guadalfeo River in Granada

The new bridge over the River Guadalfeo belongs to the A-7 Mediterranean Motorway Project on the stretch between Nerja and Motril, instigated by the Ministry of Public Works. It is located in the area near to Lobres in Granada where the basic seismic acceleration equals 0.15g.

The structure is 280.0m in length, measured between abutment axes with four spans measuring 34 + 36 + 140 + 36 + 34m. The transversal cross-section is 25.0m wide. The deck is formed by a concrete box with vertical webs 10.0m in width and 2.50m deep and lateral cantilevers 7.50m long which were cast in a second phase upon receiving slabs which are supported on prefabricated ribs set at a 4.0m distance from one another.

The deck on the main span and the approach spans are only different in the number of webs in the central box; three in the case of the main span and two in the case of the approach spans.

The main span is formed by an arch with a lower deck which is 140.0m in length with the arch placed in the central reservation area. The hangers, which are composed of 300mm diameter steel tubes, are set every 8.0m and are tensioned from the lower anchorage

point which is located on the upper surface of the deck.

The arch is composite and has a rise of 21.50m in respect to the direction of the deck. It is rectangular in shape and is composed of an S-355 steel-plated sleeve which is filled with HAC-70 self-compacting concrete. With the aim to improve the behavior of the arch against the effects of warp or buckling, its width is variable, being 1.80m at the springs and 3.0m at the crown. The depth also varies, being 2.0m at the springs and 1.20m at the crown.

The deck is articulated in the connections between the main span and the approaches, maintaining the continuity against horizontal actions employing a dowel-joint of pre-tensed bars.

As well as the aspects relative to the 140.0m main span, the Project has also employed Lead Rubber Bearings (LRB's) both in the piers as well as the abutments with the aim to minimize the seismic forces the deck may transmit to the piers and hence to the foundations. LRB's apart from isolating the structure also allow the dissipation of energy during an earthquake. The supports designed, comply with the recentering requisites generally used for estimated movements in decks of 130mm.



Spain/2012 Project data

Structural Type:
Arch Bridge with lower deck
Location:
A-7 Motorway in Lobres, Granada
Opening Date:
Under Construction
Proprietor:
Ministry of Public Works
Construction:
FCC Construcción S.A.
Scope of Works:
Construction Project and
Technical Assistance