

Bridge over the Veral River. Huesca

The Veral Bridge on the N-240 road crosses the Veral River and is situated close to the limits of the provinces of Huesca and Zaragoza. The bridge is included in the Ministry of Works General Bridge Inventory, labeled with the numerical code N-240060.

The bridge is composed of five circular, finely cut limestone ashlar masonry vaults which maintain a constant depth on the whole run of the arch. The bridge was designed by Gaztelu who at that time was Professor of Masonry Arch Bridges at the Special School of Civil Engineering in Madrid. Both design and construction took place in the second half of the XIXth Century. The bridge's total length is 80.40m, vaults are 6.00m wide, and vault spans are 15.00m. Pier heights are approximately 4.25m, whilst the width of the battered pier walls varies, at a ratio of around 1/10. The piers are crowned by conical masonry caps. The road elevation above the river bed is roughly 8.00 m.

Functional shortcomings

These refer overall to the narrowness of the carriageway, which is only 6.0m, the inefficient traffic retention system and the inefficient surface drainage systems.

Shortcomings regarding durability

Bridge inspections showed that pier integrity could be threatened due to the existence of significant

honeycombing and leachate fills. The dissolution of surface fill-material salts provoked by deficient drainage and waterproofing conditions, has resulted in the appearance of efflorescence in the barrels of the arches.

This 10.00m wide new cross-section is divided into two 3.50m wide lanes, plus two 1.00m wide verges and two 0.50m wide barriers. The drainage conditions are guaranteed by an effective camber in the pavement and new lateral drain installations.

The widened deck consists of a series of reinforced concrete slabs that rest on the back of the vaults with cantilever widths of 2.5m. As traffic flow could not be interrupted throughout the construction process it was fulfilled in the following way: The slabs were cast in successive semi-sections, which were freestanding throughout all the stages, thus respecting the areas to be concreted and the usage restrictions recorded on plan.

The repair works fulfilled, tend to assure a future useful-life for the masonry bridge as long as that estimated for the new structural elements that form the bridge widening.

Plinth protection has been placed around each foundation element, as well as other specific treatments such as; cleaning, removal of vegetation, consolidation, application of water repellent products and re-pointing of masonry-work.



Spain / no date

Project data

Structural type:
Limestone masonry arch bridge
Location:
Huesca
Proprietor:
Ministry of Public Works
Scope of Works:
Strengthening, widening, and
repair project