

Bridge over the Rialbo River. Campo, Huesca

The Ministry of Public Works Office decided to widen the existing bridge, choosing a solution that combined functional requirements, economical constraints, and respect towards a remarkable masonry structure.

The existing bridge dates from the second half of the XIXth Century. The bridge is straight, with an overall length of 92.0m, distributed in a two accompanying 30.0m wing walls and two limestone masonry semi-circular vaults spanning 16.00m. The road elevation above the river bed is roughly 14.00m. The vaults are 6.00m wide.

Functional shortcomings

These are mainly associated with the restrictive 6.00m road width, the inefficiency of the vehicle retention system and the inefficient surface drainage system.

The Project consists of two interventions which are differentiated by their nature, location and effect on the traffic: Widening of the deck and repairs on the masonry bridge.

This 11.00m wide new cross-section is divided into two 3.50m wide lanes, plus two 1.50m 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. Albeit the new slabs, the bridge still works as a masonry arch bridge, with masonry piers and shallow foundations.

The main repair works are to be carried out on the vaults, and on the upstream side of the Campo bank abutment. On one hand, vaults show a certain amount, roughly ten, of damaged ashlar stones, especially on the Foradada del Toscar bank vault. These damaged ashlar stones have lost a significant percentage of their cross section. On the other hand, some ashlar stones are missing in the abutment, where a small well has appeared and may progress further in the nearby future, but as yet has affected the foundation unit. Replacement of masonry stonework and specific protection of these elements has been projected, as well as other specific actions such as; cleaning, removal of vegetation, consolidation, re-pointing and application of water-repellent products to the masonry work.



Spain / no date
Project data

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