



Deba bridge rehabilitation

Deba, Spain / 2019

Owner
Client
Scope

Diputación Foral de Gipuzkoa
Diputación Foral de Gipuzkoa
Emergency monitoring, rehabilitation project and monitoring



Courtesy of Freyssinet S.A.U.

The Deba bridge was inaugurated in 1866 as a bridge with three masonry vaults and a metallic movable span, replaced in 1950 by a concrete vault clad in limestone. The three masonry stone piers are located in the River. Their original foundations were typical for this kind of bridges, made out of wooden piles. The Deba side abutment has a similar foundation, while the Mutriku side abutment rests on rock. The bridge has experienced several interventions throughout its life.

In the early hours of July 5th, 2018, the central pier partially collapsed, dragging the adjacent vaults with it and leaving the bridge in a precarious state near destruction. The reason was the loss of capacity of the existing foundation due to the xylophagous attack, the *Teredo navalis* mollusk among them.

The first phase (emergency phase) of the intervention consisted of reinforcing piers 1 and 3 using micropiles to place a movable scaffolding system (MSS) launched from the Deba side on top of them. After that, the central vaults were supported on wooden panels hanging from the MSS. The central pier could be partially unloaded with this system, and the bridge was safe from total collapse. In addition, to allow pedestrian access compatible with the works, a provisional walkway was installed inside the MSS.

In the second phase of the intervention, the complete rehabilitation of the bridge has been carried out. According to the project, the bridge was restored to its configuration before the failure of the central pier foundation. The actions included the underpinning of the central pier, the complete dismantling of the central vaults, the restitution of the upper geometry of the pier, and finally, the reconstruction of the vaults using mass concrete as filler. Most of the existing stones have been repaired and reused, while a similar limestone has been used for the new pieces. Finally, the foundation of abutment 1 has also been reinforced and pier 3 foundation undermining finished.

FHECOR and INJELAN were engaged by the Diputación Foral de Gipuzkoa to assist during all these works. Freyssinet España S.A.U. has been the main contractor in Stage I, with cooperation from Geotunnel, Ulma and Atesvi. Moyua-HARRI joint venture has been the main contractor in Stage II, with cooperation from Geotunnel and Ulma. FHECOR and INJELAN have also developed the Rehabilitation Project of the bridge.



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