

Cable replacement of Fernando Reig Bridge in Alcoy, Alicante

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Abstract

This paper summarizes the cable replacement works carried out at this cable-stayed bridge constructed in the city of Alcoy (Spain) that was reopened to vehicular and pedestrian traffic in April 2018, 31 years after its inauguration. The sequence followed for the cable replacement and the lessons learned this procedure are explained at length. The authors believe that the transmission of this experience can help others to technically manage similar bridges not only in Spain but all over the world.

Keywords: cable injected with grout, cable break, autopsy, replacement.

1 History and description of the bridge

When it was inaugurated in 1987, the Fernando Reig Bridge was an innovation in bridge engineering in Spain and in the world. A cable-stayed bridge of a type that was very much in vogue at the time, this bridge introduced the novelty of industrialised prefabrication in the construction of long-span bridges, while at the same time taking care of the formal and plastic aspects that a city like Alcoy, which has an exceptional heritage in bridges of very different ages, materials, and structural types, deserved. Its peri-urban character has reconciled over the years the use of vehicles and pedestrians who, in addition to using it to cross from one side to the other, can enjoy its function as a privileged viewpoint over the Barxell river and its surroundings.

The genesis of the bridge and its construction process are very well described by the authors of the project in references [1], [2] and [3]. In the words transcribed below, the authors of the project make it clear that they wanted to provide Alcoy with a bridge worthy of what this "city of bridges" deserved:

"In our opinion, it made no sense today to act in any other way than our ancestors did, and that is why our intention was to design a bridge that would bear witness to our era as they did to theirs. A cable-stayed bridge with a long span, with a deck made entirely of prefabricated concrete, representative of the bridge construction techniques of the 1980s".

This declaration of principles, also splendidly set out in the project report, was substantiated in a structure that introduced industrialised prefabrication and the associated construction system, as well as in the attention to form, texture,