Repair of an Orthotropic Slab with UHPFRC Slab: Bridge at Illzach in France, Return from Experience after 5 years

Grégory Généreux
Cerema, Sourdun, France

Damien Champenoy
Cerema, Metz, France

Thibaut Perrin
Cerema, Strasbourg, France

Sébastien Fyon
Département du Haut-Rhin, Colmar, France

Alain Simon
Eiffage, Vélizy-Villacoublay, France

Simon Pouget
Eiffage, Corbas, France

Contact: gregory.genereux@cerema.fr

Abstract

Built in 1970, the Illzach Bridge located near Mulhouse in the East of France is a single 106 m span carrying a two traffic lanes with two lateral steel trusses and an orthotropic slab with transverse cross beams. After the detection in 2009 of numerous cracks in the deck welds, a repair solution, based on the replacement of the asphalt layer by a UHPFRC (Ultra High Performances Fibre reinforced Concrete) slab, with local connection to the orthotropic slab, was adopted. The reparation process called Orthodalle® was designed thanks to results of a research national project of 4 years called Orthoplus (2007-2011) and the works took place during summer 2011.

After introducing the bridge and its disorders, this paper presents the design and the works of this innovative repair solution. In the following parts, the paper describes the numerous monitoring and testing operations during the 5 years after the repair, calculations made for the bridge and gives the conclusions of this project.

Keywords: UHPFRC, repairing, steel orthotropic deck, monitoring.

1 Illzach Bridge and its disorders

The Illzach Bridge, built in 1970, has a single isostatic span consisting of 106-m-long Warren girders supporting an orthotropic steel deck (Figure 1). Its overall width is 12.60 m and its effective deck width is 11.00 metres. The deck carries two traffic lanes. The orthotropic deck

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