

Stay Cable Replacement and Preservation of the Pertuiset Bridge for Strengthening

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Abstract

Pertuiset Bridge, built in the 80's over the Loire River in Unieux (France), is one span stay cable of 132 meters in length composed of one reverse Y shape pylon. Two layers of 13 stay cables supports the main span, and backstay cables are composed of 2 layers of 10 cables anchored in a counterweight. The deck is composed of two lateral prestressed beams and prestressed cross beams spaced at each 4m, and was built by cantilever erection method. In this project, Freyssinet has proposed a complete portfolio of strengthening technologies such as additional external PT, new micropiles, replacement of stay cables, shotcrete and CFRP. This strengthening allowed to reduce excessive tensile stresses in the deck and therefore allowed the stay cables replacement as well as the removal of traffic limitation of 3,5 tons (30 tons now).

Keywords: strengthening, stay cable replacement, post-tensioning, micropiles

1 Introduction

Pertuiset Bridge over the Loire River in Unieux (France) is a 132-meter-long bridge built in 1988 (Fig. 1).

It is a stay cable bridge composed of one span. The bridge has only one pylon in reverse Y shape on superficial foundations and the main span is supported by 2 layers of 13 stay cables whereas 2 layers of 10 stay cables are directly anchored in a counterweight (Fig. 2). The deck is straight and composed of 32 segments built by successive cantilever erection method.



Figure 1. General view of Pertuiset Bridge