The Vidourle Viaduct

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Abstract

The Vidourle Viaduct is an iconic structure on the Nîmes-Montpellier Bypass (Contournement Nîmes-Montpellier or CNM in French), the first dual track, mixed traffic high speed railway line (HSL) in France. The viaduct is 159 metres long and 14.1 metres wide, and consists of one Warren main bridge and two half-through access bridges. The aesthetic features of the viaduct were designed by Alain Spielmann' architectural office. This paper describes its structural design, structural analyses and construction methods.

Keywords: Mixed traffic; high-speed passenger and freight railway line; Warren bridge; half-through bridge; structural design; structural analyses; construction methods.

1 Introduction

With a total length of 80km, the newly built CNM HSL is the first mixed high-speed passenger and freight rail corridor in France, on which both high-speed passenger and freight trains run. Besides France, mixed traffic HSL already exist in several countries such as HS1 in the UK, the Köln–Frankfurt HSL in Germany and the Xiamen-Shenzhen HSL in China, but the freight traffic is scarce and their design speeds are lower.

The CNM belongs to north/south European freight corridor that links Northern (Baltic countries) to Southern countries (Spain). It improves the overall capacity between Nîmes and Montpellier, two important cities in Southern France. This HSL intersects the "Vidourle" coastal river by means of the Vidourle Viaduct: a three span, 159m long and 14.1m wide bridge, which consists of one 90m long Warren main bridge and two 31.5m long half-through access bridges (see Figure 1).

https://doi.org/10.2749/nantes.2018.s20-11
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