



Design and Construction of the Flyover in the Intermodal Ferry Terminal in Świnoujście

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Abstract

This paper presents various aspects of the design and construction of the flyover in the ferry terminal in Świnoujście, which has been recently developed to allow for the intermodal transport (by water, rail and road). The expansion of this terminal is the part of the wider transportation network development project aiming to improve connections between Scandinavia and Central and Southern Europe. In the first part of the paper detail description of the structure is made and the design process is briefly discussed. In the second part of the paper few interesting topics related to the construction are presented. Finally, topics related to the carbon footprint reduction on this project are discussed.

Keywords: Flyover, double composite, steel, concrete, curved girders.

1 Introduction

In the recent years, the “green” focus of Civil Engineering has shifted from the sustainability and life cycle cost optimization to the reduction of carbon footprint. This shift has been driven by rapidly progressing climate changes, being caused largely by the CO₂ emissions resulting from human activities. In the current climate situation, the main role of the Civil and Bridge Engineering industry is:

- to support changing transportation infrastructure such that the use of more environmentally friendly transport modes is possible and it is preferred by the users;
- to re-think the approach to building the infrastructure in the first place and, if deemed necessary, to refurbish the existing infrastructure or to design and built new one with the aim of reducing the associated carbon footprint to the absolute minimum.

Recently constructed flyover in the Ferry Terminal in Świnoujście (Poland) is a part of larger project, which main aim was to adapt infrastructure of the terminal for intermodal transport and promote more environmentally friendly rail transport.

2 Description of the structure

The flyover in the Intermodal Ferry Terminal in Świnoujście was designed as five span continuous structure with the total length of 194,10 m. The theoretical span lengths are as follows: 35,00 m + 50,10 m + 41,00 m + 40,00 m + 28,00 m (see Figure 1). The structure is curved in vertical and horizontal planes. In the longitudinal profile the structure is designed with vertical radius $R = 800,00$ m and straight sections at both ends with 9% slope. In plan the structure is designed with horizontal radius $R = 245,00$ m (see figure 2).

The bridge cross section consists of 7,20 m wide carriageway, two 0,50 m wide shoulders, one on each side of the carriageway, and safety barriers.