The Evolving Metropolis
2019 IABSE Congress
New York City

IABSE 90 YEARS

Design of a temporary and transportable drawbridge

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1 Abstract

During replacement of the existing bascule bridges in the N244 and N246, the Province of North Holland requested temporary movable bridges during the construction phase. The temporary bridge had to be worked out in a very short time from sketch design to completion. The contractor who won this assignment has asked Movares to support them in this enormous task. The preconditions of the temporary bridge design were already fixed, the bridge had to become a drawbridge without counter weight, be transportable, variable in length for two span lengths, expandable with bicycle path on the consoles on both sides and delivered at the end of August (six months later).

This is the first ever temporary and transportable drawbridge built in the Netherlands. The technical challenges we encountered during the design were, among other things, the large loads from the movement mechanics and correspondingly large pivot points and connections; uniformly making connections for various configurations and making the drawbridge easy to dismount and transport.

Keywords: Drawbridge; temporary structure; modular; easy dismountable and transportable.

2 Introduction

The former Beatrixbrug near Westknollendam crossing the tapsloot (a river branch of the Zaan) wil be replaced by the new Princes Amalia bridge. In the meantime the building activities on the final Amalia bridge may not create an obstacle for the roadtraffic nor the shipping. Both the N246 and the Zaan are important, frequent used infrastructure, see Figure 1. Closing one of the traffic flows would create big detours. Therefore the commissioning Province of North Holland requested in their demand specification: "the national roadstructure N244a and N246 must provide temporary bridges during the realization of the work for the crossing of road traffic with the Tapsloot and the Noordhollandsch Kanaal, as well as the waterway traffic on those waterways."

2.1 Winning Contractors

By winning the assignment the contractor Janson Bridging together with Dura Vermeer and SPIE committed itself to construct and deliver a temporary drawbridge before the start of the new Amalia bridge. Such a bridge has not yet been shown and is a complete novel in the Netherlands, certainly not within this short period of time.

Janson Bridging approached, amongst others, specialist from the Engineering firm Movares for their specific knowledge on drawbridges. Movares took part in the design team and provided the necessary designing and engineering of the temporary bridge.

https://doi.org/10.2749/newyork.2019.0526
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