



The design challenges of the new movable bascule bridge 'Parallelstructuur A12 Gouda'

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Abstract

The Parallel Structure (or 'parallelstructuur' in Dutch) for the A12 motorway near Gouda in the Netherlands is designed to relieve the weaving traffic on the A12/A20 interchange by creating a direct connection to bypass the interchange. The project consists of two components. The first component is the Extra Gouwe Crossing parallel to the A12 between the Gouda and Gouda-West off-ramps. The other component is the Moordrechtboog which will connect the A12 and A20 motorways. In the Extra Gouwe Crossing there will be a movable bridge to cross the river Gouwe. The bridge will be a balanced bascule bridge, with a total weight of 900 metric tons. The total length is 41 m and the width is 23,5 m. The span between main center of rotation and it's front supports is 30 m. This paper is about the design challenges of this movable bridge.

Keywords: Movable bridge, steel orthotropic deck, electro mechanical operating mechanism, panama wheel, fatigue life, stability.

1 Introduction

Contractor Heijmans is expanding the road network around the Dutch city of Gouda, in a project commissioned by the province South Holland. Engineering firm Movares provided the necessary designing and engineering of the bridge. The two new roads will relieve the A12 motorway and give more capacity on this route. The big movable bridge is located at the crossing of the Gouwe, see Figure 1.

Building the bridge on this location is a complex puzzle, with a lot of effort during the design process. The bridge is built directly next to the Gouwe-aqueduct, which is built in 1981. Damage to the existing aqueduct is the risk with the

biggest impact in the project, which could compromise traffic flow and safety on the A12 motorway. This should be avoided at all cost. Under the bridge there is an existing space which houses the traffic management systems of the A12 from The Hague till Utrecht. Failure of this system may result in a traffic hazard or non-availability of the A12. Directly next to the bridge there is a production facility which uses very sensitive equipment, which cannot be disturbed. This meant building the entire foundation in a two week cleaning break in the production facility. In short, a large amount of interfaces in a complex environment with many stakeholders and requirements.