KuBAaI - Bocholt (Germany) – Design of a GFRP footbridge as part of an urban development

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Abstract

This paper describes the structure of a weathering steel footbridge with a GFRP deck, as part of a larger redevelopment of a former industrial area in the City of Bocholt - KuBAaI.

In the recent past, the requirements on the design of footbridges regarding economic design in combination with architecture, especially in urban developments with limited budget of local authorities have increased. It is the challenge of the engineering process to explore fitting solutions to meet these requirements.

The footbridge in the KubAaI follows the chosen design concept of a low maintenance bridge by the use of appropriate materials, such as weathering steel for the main steel structure and GFRP elements for the bridge deck, and an aesthetically pleasing appearance. The structure will blend into the industrial surroundings and be much more than a mere connection, it is also a public space.

Keywords: Footbridge, steel structure, weathering steel, GFRP composite, vibrations, light structure, economic structures, sustainability

1 Introduction

The city of Bocholt has a former industrial area of 25 ha which will be restructured to an urban and cultural district for people to work, live, and explore. SeARCH architects in collaboration with landscape architects B+B were chosen to develop a concept for the renovation of the public space. As a result, four footbridges are planed not only to connect the two parts of the area which are separated by the river Aa, but also to be part of the new urban development.

In the centre of the former industrial area the river Aa is part of the re-cultivation. Hence, the connecting bridges are not only an architectural statement, but also show the transition from the former industrial origin to the new cultural urban district. The design of the bridges is chosen to meet the idea of the old and the new. Three of the four bridges will be newly designed whereas one former railroad bridge will be refurbished for the use as a pedestrian bridge.

The following figures show an overview of the area with the planned bridges.

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