The Evolving Metropolis
2019 IABSE Congress
New York City

IABSE 90 YEARS

Construction methods for building the Hisingen Bridge

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1 Abstract

Gothenburg's main connection across the river Göta älv needs to be secured for the future. The existing bascule bridge will be replaced by a new vertical lift bridge as of 2021. This river crossing is the only connection across the river for the entire tram network in Gothenburg. It is also a very important connection for busses, pedestrians, bicycles and cars. The location of the new bridge, close to the existing bridge in the central part of Gothenburg, generates several challenges that requires special attention such as: logistics, construction planning and minimal impact on the existing city during construction.

The new bridge is constructed as two separate bridges. One larger bridge that carries all means of transportation with a vertical lift span over the fairway and one bridge exclusively for public transport. There are several very difficult technical challenges within this project. One key challenge has been finding a balance between on-site construction and off-site prefabrication due to lack of space and tight deadlines. None of the construction are not allowed to have any negative impact on the traffic nor surrounding structures, which has shown to be difficult during foundation works.

Keywords: Lift bridge, steel-concrete composite bridge, urban development, Hisingen Bridge, Hisingsbron

2 Introduction

The existing bridge *Götaälvbron*, is one of Gothenburg's main connections across the Göta älv river, has been in service since 1939 and needs to be replaced by 2021. Some 125,000 people cross the bridge by foot, bicycle, car, bus or tram on a daily basis.

In 2013 the City of Gothenburg Urban Transport Administration (Trafikkontoret) launched an international design competition for a new bridge across the Göta älv river. The winning alternative was an entry namned *Arpeggio*, a vertical lift bridge with four steel pylons. The winning entry also had an elaborate lighting design which gives the viewer an interesting experience during night time. More background on the paper about the project can be found in [1] and the project website [2].

3 The Hisingen Bridge project

The new bridge is constructed as two separate bridges and can be divided into a few major parts, cf. Figure 1. Both bridges are designed as steel-concrete composite bridges with steel box girders with a concrete deck on top.

https://doi.org/10.2749/newyork.2019.0144
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