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Schlosssteg 2.0

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Summary

This paper tells the story about the reconstruction of the so called *"Schlosssteg",* a footbridge with 60 m span, located in Waidhofen an der Ybbs, Austria. The main topic deals with the personal relation to the site and the design approach, including the special construction sequence, the so called "noninvasive construction method". After a short historical and technical overview the architectural approach to the design task will be disscused. It will be shown that the arcitectural approach is inseperable linked to the engineering task. Especialy the used construction method brought major influences to the final design of the structure. By using the old, allready damaged, footbridge for installing the new one, the old bridge had to fulfill a final loadtest, which not only stressed the structure, but also the engineers nerves. The hollistic design strategy led to a design which harmoniosusly blends with its enviroment an therefore became awarded with the *"European Steel Bridge Award 2016".*

Keywords: reconstruction, weathering steel, heritage surroundings, holistic design strategy, noninvasive construction method

1. Introduction

Waidhofen an der Ybbs is a medieval city embedded in the beautiful landscape of the foothills of the alps. In the year 2000 a new footbridge over the Ybbs River was inaugurated. Due to unfavorable circumstances this first *"Schlosssteg"* only became about 15 years old. In 2014 the local council decided to replace the existing steel structure by a new one. The winner of the negotiated procedure was the so called *"Schlosssteg 2.0",* presented by the bidding consortium *GLS Bau und Montage GmbH, tragwerkstatt Ziviltechniker gmbh* and *AXIS Ingenieurleistungen.* In December 2014 the bidding consortium was commissioned with the design, dislocation of the existing bridge and the construction of the new footbridge. The inauguration of the new footbridge took place after only 10 month in October 2015.

For the entire project a budget of only € 750.000 (incl. VAT) was available. Due to this low budget, especially the dislocation and the construction sequence of the new bridge had to planed carefully. The use of heavy mobile cranes were difficult because of the neighboring heritage buildings and a lot of protected trees next to the site. Furthermore the existing southern abutment was placed over a natural cavern, which made the placement of mobile cranes in this area impossible. The best crane placement would have been directly under the bridge, down at the river bed. To erect a crane placement at the river bed a temporary access road would have been necessary. This would have been a huge impact to the natural protected river zone, which absolutely had to be avoided. Due to this circumstances we had to think about alternative ways of how to build this bridge.

2. Conclusion

By consistently applying a holistic design strategy a steel bridge could be created that harmoniously blends with its environment, was put into practice within short time and without any accidents. The design was honored with the *"European Steel Bridge Award 2016*" in the category "Pedestrian and Cyclist Bridges" and a "*best practice award*", awarded by the federal state government of Lower Austria. Building this bridge - with this special construction method – at the place where my career as an engineer began is a unique personal milestone. The European Steel Bridge Award for this project is a massive additional motivation for me to go ahead in designing footbridges!

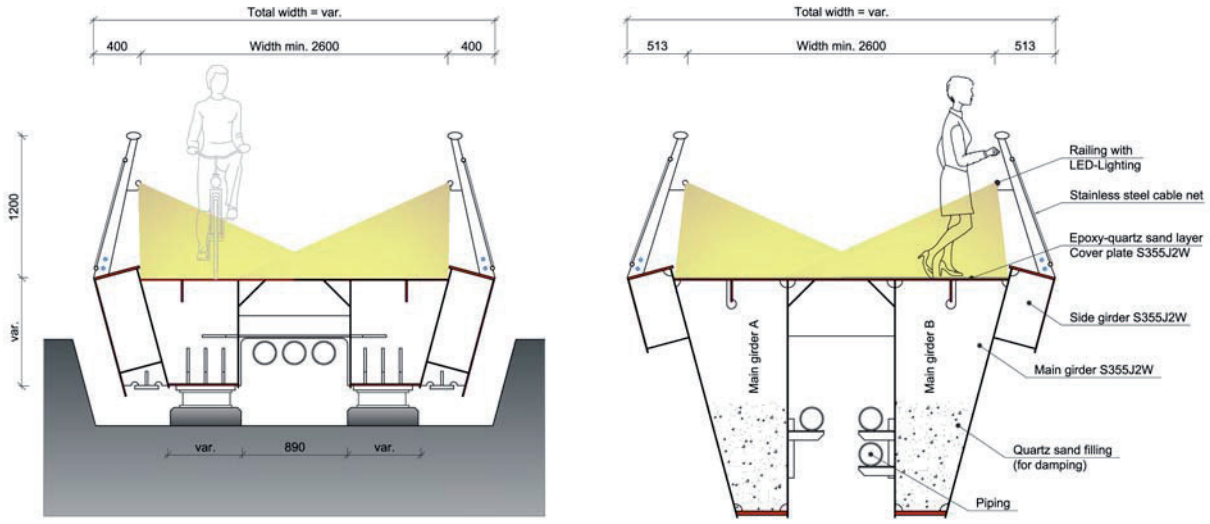

Figure 1: Cross section at the abutment and at the span center

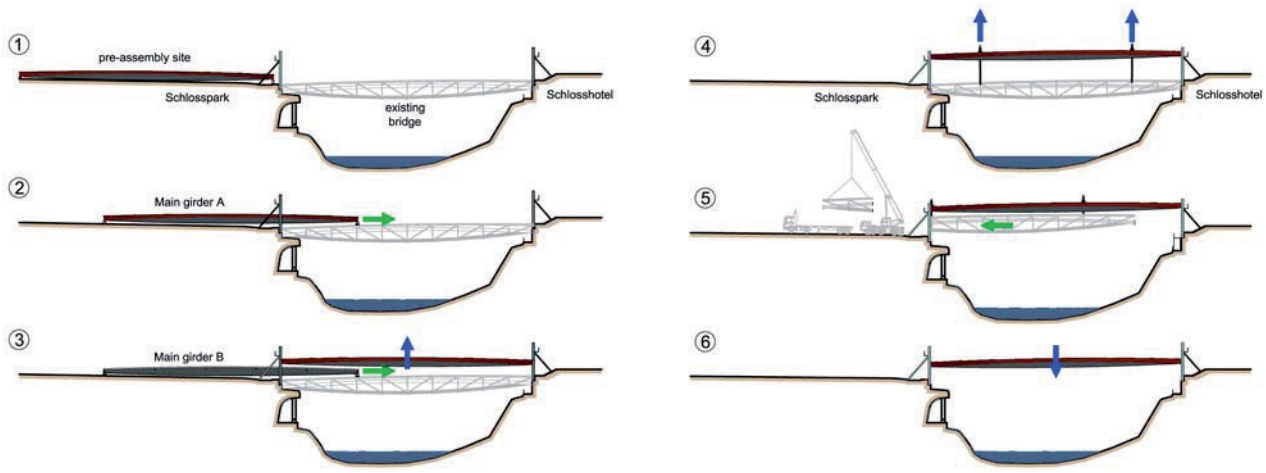

Figure 2: Noninvasive construction method