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FOOTBRIDGE FLUGFELD BÖBLINGEN SINDELFINGEN CLIENT AND DESIGNER IN COOPERATION

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1. Introduction

Footbridges are often built in complex environments. Finding the optimum solution thus requires intensive study of the given site conditions and design parameters. Design competitions are often employed to get a wide range of designers seeking and suggesting diverse solutions. However, cost considerations, time constraints, and scarce resources can make competitions prohibitive. This paper describes how to succeed in developing diverse solutions in cooperation with all parties involved, and on how to identify the ideal solution in a joint decision making process.



Fig. 1 (left) Bridge at Flugfeld Böblingen/ Sindelfingen; Photo by Ingolf Pompe

Fig. 2 (right) Pylon head, Photo by Andreas Schnubel

2. Brief and framework conditions

Flugfeld Böblingen is a joint development project between the cities of Böblingen and Sindelfingen. At the heart of this new urban district is the “Langer See” (long lake). The north bank features a promenade while the south bank is characterized by a marsh connecting to the nature park “Grüne Mitte”. At the centre of the lake, a pedestrian and cycle bridge was required (Fig. 1). Besides the need for effective circulation, the client expressed a desire for a bridge design with a high recognition value, since the bridge was to be the new landmark of the district. Moreover, the superstructure’s design was to be as transparent as possible in order not to obstruct the visual connections along the lake (Fig. 4). From a technical point of view, the lack of space for foundations at the north bank had to be considered, resulting from a cofferdam structure and the

promenade running directly along the lake. It was not possible to place any pillars into the lake, because of the possibility of damage to the bed of the man-made lake.

3. Design and construction

During the first design phase various solutions were developed (Fig. 3). This portfolio included a number of very different types of structures, which mapped out the benefits and downsides of each approach.

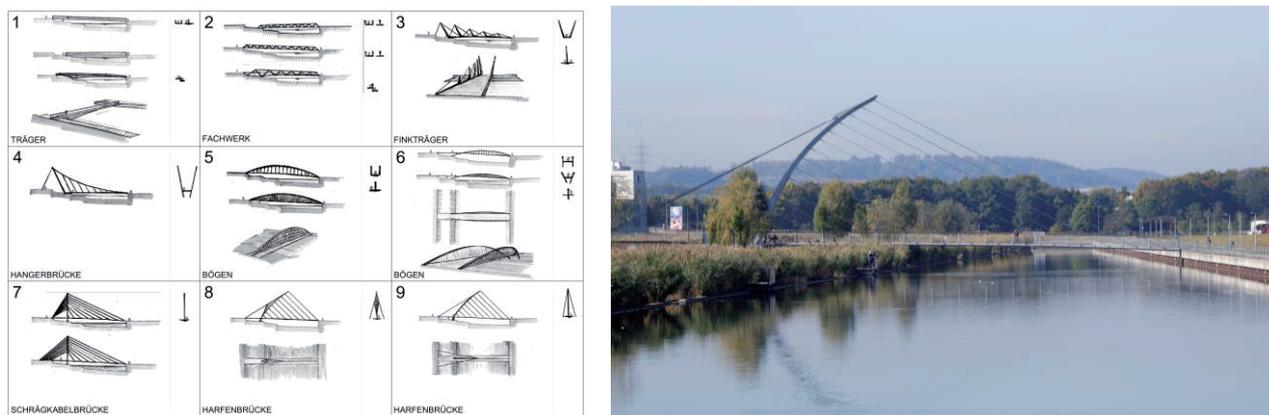


Fig. 3 (left) Options analysed in first design phase, Sketches by schlaich bergemann partner
Fig. 4 (right) Bridge across the “Langen See” – side view, Photo by I. Pompe

A detailed evaluation matrix was drawn up in order to compare the different schemes. In an intensive review process these were then discussed with the client’s representatives with the aim of selecting three design options for detailed analyses in a second design phase (Fig. 5). In addition to design aspects, these analyses addressed costs and construction concepts. To be able to assess their spatial effect and their integration into the urban setting, all designs were visualised and presented. Following a second intensive decision process a body of specialists selected the scheme for implementation - a harp-design bridge.



Fig. 5. Three options of second design phase, visualizations by schlaich bergemann partner

The curved pylon (height: 16m) is the most striking characteristic of the bridge across the lake (Fig. 2). On the one hand, this feature meets the explicit request to be eye-catching and thus makes the bridge unique. But the curved pylon geometry also has the structural benefit of reducing bending stress in the pylon legs.

The superstructure is comprised of a composite construction (span: 46m), consisting of a base plate with hollow-section edge beams in the longitudinal direction, with concrete infill between. The base plate essentially serves as formwork, and upon curing of the top concrete layer it serves as its lower reinforcement layers.

4. Closing remarks

The bridge across the Langer See at Flugfeld Böblingen Sindelfingen represents the creation of an appealing, technologically advanced work of engineering with high recognition value. It not only provides a functional transportation connection, but it also fulfils the desire for a new landmark for the district. This bridge is an exemplary demonstration of a successful project delivered without the need for a design competition. This can work well, if an attentive and knowledgeable client collaborates with a committed designer to seek the best solution from a wide variety of options. The selected design has been well received, and has grown to become a distinct structure for the people, the place, and the development of the city of Böblingen.