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HISTORY OF THE RECONSTRUCTION AND MODERNIZATION OF THE BOLKO ISLAND PEDESTRIAN BRIDGE IN OPOLE

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Summary

This paper puts forward the history of the Bolko island footbridge. In the first part a historic overview of the structure is put forward, showing the various stages the structure went through. In the second part a description of the modern day planned works are described. The most significant change will be the construction of additional walkways on the outsides of the spans. These will be covered in a composite GRP deck and a clear polycarbonate balustrade to both decrease the weight of the additions and not obscure the view of the existing structure.

Keywords: historical; GRP; parabolic truss; concrete deck; steel truss; Opole

1. Introduction

At the beginning of the 20th century the city of Opole was developing very dynamically. Cement plants were constructed on the outskirts of the city and the population grew significantly. Car traffic and housing construction increased significantly, mainly in the eastern part of the city. In order to keep up with the rapid urban development of Opole, it was necessary to build a pedestrian route to the park area on Bolko Island, located in the southern part of the city.

Up until this time access to Bolko island took place by ferry. This was unreliable and had a small capacity. To alleviate this a very nice suspension bridge, made entirely of steel and rivets, was ordered by the city of Opole and created by the State Inspectorate of Construction (Stadtbaurat) and Günther Trauer from Wrocław.

2. Construction of the first footbridge

At the fork of the mainstream of the Odra River, between the Flood Canal and the Winski Canal in Opole, there is an island named as "Kampe" (Kępa) since 1213, and since 1912 Bolkoinsel (Bolko Island).

Up to the end of the 19th century there was arable land and a thick forest on the island, and the area was swampy and used as a flood plain. In the years 1911-1913 the swamp was drained and the water system was regulated. Around 1930, in the northeastern part of the island, a private mini zoo was built, which was bought by the city authorities in 1937. A large part of the island was allocated to sports and recreation areas, and during the interwar period there were many festivities, concerts and dance parties. Up until the outbreak of World War II there was a permanent ferry crossing the Odra. In 1930 a suspension footbridge was built connecting Bolko Island with Pasięka Island on the right bank of the Oder River. Above the flood plains was a continuous double-span metal girder and over the river a double-span suspension structure. See fig 1a.

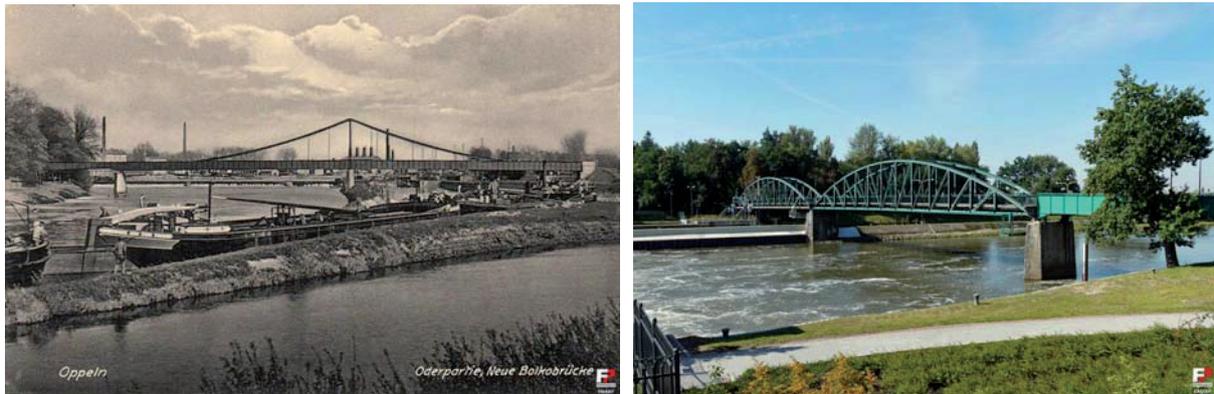


Fig. 1. a) General view of the suspended span prior to 1945. [1], b) Current view of the structure [1]

3. Reconstruction of the footbridge after the war

In the spring of 1945, the suspended part of the Bolko Bridge was set up with explosives and destroyed like many other bridges at the end of the Second World War. Only the girder beams survived the war. After the war, in the 1950s, Bolko Park and ZOO were rebuilt on the island of Opole despite the bridge not yet been rebuilt. Bolko Island had to be visited by boats and ferries. The bridge was rebuilt in 1957 and opened in 1963. In place of the suspended spans, two truss spans from Nowy Sacz were adapted to the pier layout.

After the bridge reconstruction was finished in 1963, the structure was classified as a road footbridge, i.e., in addition to the pedestrians, a single vehicle of up to 5 tones (50kN) was permitted on the deck. During the cataclysmic flood of 1997 the footbridge itself suffered little but the Bolko Island Zoo was severely damaged. In 1995, from the bottom of the truss spans, inspection trolleys with a load capacity of 10 kN each were hung. In 1999, in the second girder span, the reinforced concrete prefabricated slabs were replaced with a monolithic 16 cm thick slab. In 2002, on both ends of the pedestrian walkways, two steps were built to prevent road traffic from entering onto the bridge. Furthermore, a bicycle path was set out on the deck, and road signs were added at each end informing about the lack of traffic on the bridge. Currently the amount of pedestrian and bicycle traffic is significant enough to warrant a reconstruction of the bridge allowing for their separation.

4. Scope of reconstruction works

In 2016 the upgrade the footbridge was designed, which consists in of: The erection of additional pedestrian walkways on both sides of the structures to separate pedestrian traffic (on new cantilevers) and bicycle traffic (on center of the footbridge); Renewal of the steel elements of all four spans of the footbridge, Reconstruction of bridge deck elements for monolithic reinforced concrete slabs on the bridge, epoxy-polyurethane surface on the cantilevers and many other minor elements.

5. Summary

The goal of the reconstruction works was to change the usage parameters of the bridge without changing the overall character and feeling of the bridge. This is achieved by adding external walkways set on sides of the bridge, fitted with a thin polymer slab and see-through polycarbonate side plates. In this way, the goal of separation of the pedestrian and bicycle traffic is achieved, increasing the safety of all users of the structure.

6. References

[1] <http://opolskie.fotopolska.eu>