

DOI: 10.24904/footbridge2017.09830

NATURAL AND LANDSCAPE INSPIRATIONS IN DESIGNING OF MODERN FOOTBRIDGES

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Summary

The process of designing footbridges in Poland is undergoing a dynamic change. This is due to new social, economic and cultural circumstances as well as the continuous development of engineering experience. The large number of new investments and the increased participation of architects in the design process affect the architectural diversity of bridge structures designed so far in a universal and partly repetitive way.

Based on his design experience, the author presents in this paper the whole process of the aesthetic creation of objects and its influence on their final appearance. Here are discussed the challenges and elements defining the adopted solutions and the location-based influences, i.e. natural and landscape elements – also referring to symbolism. The article provides an insight into the context of the location in defining engineering solutions.

Keywords: footbridges; bridge structure architecture; creation process; Zakopianka; landscape inspirations; natural inspirations; modern forms; transmutation

1. Conceptual design process

1.1 Contract and conditions

The pretext for considerations regarding the architectural form of contemporary footbridges was a design contract received by the author of this article from the bridge construction office “MP MOSTY” in 2010. Its scope was the development of the concept of four footbridges across the DK-7 national road connecting Cracow with Lubien (eventually with Zakopane). This road, located in the mountain area, is the main communication artery in the southern section. It is planned to lead to the border with Slovakia and open a popular tourist connection between Poland and Slovakia, Hungary and the Balkan countries. Due to the formation of the terrain, the road offers a large number of turns, varied viewing posts and large differences in altitudes. It should be added that it is a busy, dangerous communication route, leading partly through built-up areas. The need for construction new pedestrian crossings was primarily due to security issues.

1.2 Idea

The ideological and design challenge that the author put before himself was the combination of four independent footbridges into a group having its own identity and collective symbolic features.

The localization coordinates were two main locations at the opposite ends of the road: Cracow—the capital city of Polish summer tourism and Zakopane—the capital city of winter tourism in Poland.

The picturesqueness of the route, where new objects were to be erected, encouraged the search for inspiration for their aesthetics in the themes of landscape and nature. The locations, from which future road users were to observe the new pedestrian passages, were heterogeneous in landscape, and a large number of viewing perspectives determined the variety of view shapes and possibilities of different interpretations of the future footbridges. Their final form should therefore dynamically reflect this variability. It should also allow for the aesthetic sensation of bridge objects not only as engineering formations but also as elements of landscape dominants.

The above assumption directed the creation process to the ideological tracks of combining variability, dynamism, picturesqueness, and diversity with the landscape and nature. To some extent, it has also become necessary to design a specific symbolic number of four objects. Such an inspiration was completed with the idea of designing four footbridges as an allegory of four seasons. Variability of seasons, their diversity in form and time, coincided with the expected assumptions. The challenge was the language of forms and materials in which the entire design task was to be embedded. Finally, it was necessary to take into account specific duality of the view of and from the object.

1.3 Language of forms and materials

According to the adopted concept, each footbridge was assigned to the season of the year. The form of a footbridge, its structural elements, and colour and material solutions were intended to reflect the original idea. The obvious requirement was to maintain the economic viability and accuracy of the adopted structural solution. Individual footbridges were designed based on the following symbolic assumptions:

The “Spring” footbridge is a structure with organic, perforated shape of pylons emerging from a glass lift shaft separated by muntins. The curved form of steel pylons and the cables attached to them are a metaphor for the roots with new shoots in spring. Perforation of supports also have a functional significance here. It makes the construction lighter and openwork. The combined symmetric cables provide the dynamism and create a sense of motion, development, and awakening to life. The red detail of eaves boards announces another season of the year.



Fig. 1. “Spring” footbridge, night view