



Adapting a prestressed concrete bridge for cyclists and to provide nesting sites for house martins

Janusz HOŁOWATY
Assistant Professor
West Pomeranian University
of Technology Szczecin,
Poland
jah@wp.pl



Janusz Hołowaty, graduated in civil engineering from the Technical University of Szczecin, Poland (now WPUT). PhD from Wrocław University of Technology, Poland in 1995. His main area of research is the testing of materials and bridges. He works also in consulting.

Summary

Adjusting a bridge for cycling facilities required an extension of the sidewalk cantilevers. The parapet beams of spans and abutments were remodelled to achieve increased width for shared use by pedestrians and cyclists. New monolithic bridge span parapet beams made it possible to partially equalise deformation in the edge sections of the deck which had appeared as a result of inaccuracies in construction and time-dependent effects. The abutment parapet beams were replaced by monolithic reinforced concrete slabs with cantilevers. New balustrades were assembled, a new smooth sidewalk pavement was made, and hand-rails were assembled on the bridge barriers. All the equipment elements were adjusted to the requirements of cycle traffic. There is a house martin nesting site on the bridge deck and the birds return yearly in summer to breed. As the house martin population visiting the bridge has increased in recent years and the birds are a protected species, small timber elements were assembled on sidewalk cantilever soffits to encourage and assist the house martin colony. The paper presents the paramount issues of encouraging cycling as well as preserving the house martin colony on the bridge.

Keywords: concrete bridge, footway widening, cycle track, nature conservation, wildlife.

1. Introduction

The scope of requirements for road bridges in Poland has changed profoundly with the rapid growth in vehicular traffic over the last two decades. Most of the existing bridges have been equipped with safety barriers, generally to the detriment of footway widths. The increase in the number of motor vehicles has resulted in cyclists preferring to use footways rather than the congested and dangerous carriageways. On the other hand, the development of cycle traffic has resulted in many new cycle route projects. The location of cycle lanes parallel to the existing carriageways requires, in areas of obstacles, the construction of new bridges or the adjustment of existing bridges to provide path continuity. Where it is possible to modify an existing bridge structure, the option of widening the facility is generally selected, since it is much more economical than the construction of a new bridge.

The paper presents the modernisation of the sidewalk sections of the Customs Bridge in Szczecin. The sidewalk widths on the bridge had been narrowed by the fitting of bridge barriers. The purpose of modernisation was to construct a cycle lane along the bridge, part of a project for developing a cycle route between the old town and Szczecin Landscape Park, which is to the south of the city. Following reconstruction, the bridge sidewalks were wider and had the required widths for shared pedestrian and cyclist traffic. The edge sections of the sidewalk cantilevers were replaced by new wider slabs and new parapet beams [1]. The newly constructed side sections of the bridge were readjusted to their new vertical alignment in order to remove excessive deformations due to inaccuracies in construction and time-dependent effects.

The bridge is located in a special bird conservation area in the river estuary, which is home to a range of protected birds including white-tailed eagles. The bridge itself houses a house martin breeding colony in summer. The population of the colony increased significantly when the house martins used parts of the timber formwork for their nests at the end of the bridge modernisation.