

## THE EFFECTS OF DEAD LOADS IN CANTILEVER CONCRETING BRIDGES

Czesław MACHELSKI\*

\*Prof.; Wrocław University of Science and Technology, Department of Bridges and Railways

E-mail address: [czeslaw.machelski@pwr.edu.pl](mailto:czeslaw.machelski@pwr.edu.pl)

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### Abstract

Cantilever concreting technology is one of the modern methods of constructing concrete long-span bridges. Characteristic feature of those bridges is the long-term span deflection resulting from the rheological processes in the concrete and in the pre-tensioning steel. It can also be caused by the material deterioration, e.g. concrete cracking, as well as the changes in the bridge structure, such as the support settlements. The aggregate result of bridge exploitation are the changes in its grade line, considered in this paper as the bridge span deflection line. The aim of the paper is the assessment of the internal forces on the basis of the bridge span deformation. Furthermore, an algorithm for the correction of the deflection function determined on the basis of surveying measurements (low precision measurements) is proposed. It is characterized by a significant improvement of the computational results, and it hardly “smoothens” the primary measurement results. The algorithm can be used to analyse the selected part of the bridge structure, e.g. the longest span. The paper proposes a universal coefficient of cantilever deflection, which is calculated on the basis of the cantilever joint moment when the final static scheme of the bridge is created. It can be used for the comparative analyses of various bridges. The value of the coefficient is dependent on the geometry of the cantilever box cross-section only.

Keywords: Cantilever bridge; Long-term deflection; Internal force.