

Bridge bearing solutions that facilitate quick and efficient bearing installation and bridge construction

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1 Abstract

A bridge's bearings, arguably its most critical components, perform a vital function throughout the bridge's service life, but the bearings used can also have a significant impact on the bridge construction process. Suitably designed adjustable bearings are an integral part of the incremental launch method of bridge construction, for instance, which can be a very efficient construction method. Adjustable bearings may also support other bridge construction methods, such as segmental bridge construction, where fixities/freedoms that applied during the construction phase require to be changed before the bridge enters service. Lifting bearings, the height of which can be increased, may enable a lack of precision in the structure to be tolerated, and measuring bearings may enable load distribution during bridge construction to be verified, where this is required by the construction method. Design features of otherwise standard bearings that support quick and high-quality installation can also contribute towards the efficiency of the overall bridge construction process, as can the use of bearing designs which minimize bearing size. Bearing solutions and features that facilitate bearing installation and bridge construction in ways such as these are described.

Keywords: Bridge; construction; ILM; segmental; bearing; installation; design.

2 Introduction

Since constructability is such an important factor in maximizing efficiency and minimizing costs in the bridge construction industry, ease of installation of a bridge's bearings – perhaps its most critical components, which typically require to be replaced during the bridge's service life, perhaps several times – is a factor which should be considered carefully in selecting and designing bearings for use. A number of bearing types and features which improve bridge constructability, e.g. by supporting particular bridge construction methods or by virtue of their own easy installation, are described below.

Installation of bearings in existing structures, to replace bearings that have reached the end of their service life, is not specifically covered.

3 Supporting the overall bridge construction process

Ways in which suitably selected and designed bearing solutions can support the bridge construction process as whole – as opposed to facilitating easy installation of the bearings themselves, which shall be discussed later – are discussed below.