Increase of the working life of expansion joints thanks to the use of innovative solutions

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Abstract

A number of innovations have been developed in recent years in order to positively influence the durability and fatigue life of various components of expansion joints, no matter for which range of displacement.

It is a fact that the use of expansion joints of the single-seal or modular type crucially increases their working life while reducing their maintenance cost.

The main aim of these innovations is to increase the corrosion resistance and avoid wear or cracking of the single components over time.

The paper will describe the key features of modular expansion joints with regard to durability aspects.

Keywords: durability of expansion joints, corrosion resistance, hybrid joints, new generation sliding materials, vertical bends, micro-hammering.

1. Introduction

The material of the single components of an expansion joint affects the function and influences the life time of the product as much as the proper design.
The choice of suitable materials influences the maintenance costs during the life cycle of the products and the necessity of monitoring or even replacing the joints. The replacements are usually way more expensive than the product itself and unpleasant for the structure owners and the users of the structure due to use restrictions (e.g. traffic reduction). Considering elements that extend the durability from the beginning on is crucial, especially for large and heavy-loaded structures located in aggressive environments. This paper will address the enhanced durability of several expansion joint elements.

2. Key features for durability increase

2.1 Hybrid profiles

Searching the sources for the damage of expansion joints, it is evident that corrosion shares the largest portion comparing to other failures. Expansion joint profiles are usually made of structural steel so

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