



Jooints and bearings – European State of the Art of sustainable solutions

Dr. Christian Braun, Oliver Benicke

MAURER AG, Frankfurter Ring 193, 80807 Munich, Germany

Contact: benicke@maurer-soehne.de

Abstract

To guarantee the required working life for structural bearings and expansion joints, appropriate European regulations were developed. The European standard EN 1337 regulates the design of structural bearings with state-of-the-art materials. For Road Bridge Expansion Joints a European Assessment Document (EAD) has been established, based on the former European Guideline for Technical Approval ETAG 032. For new and high performance materials, a European Technical Assessment (ETA) becomes necessary.

For products according to EN 1337 and the EAD's for High Performance Structural Bearings as well as Expansion Joints distinction is made between different performance classes. In the sense of sustainable structures the level of performance is decisive.

The presentation will highlight the requests for sustainable solutions of bearings and expansion joints with low maintenance and long life expectance.

Keywords: structural bearings; expansion joints; working life; EN 1337; European Technical Assessment; European Technical Approval; ETAG; European Assessment Document

1 Introduction

The differential construction method is defined as an optimum usage of materials and structural members in dependence on their respective function. "Differential" can thus also be termed "functional" or "normal". In distinction to the "integral construction method" this definition is reduced to the permission of planned and constraint free motions in joints. Differential bridges are characterised by clearly defined interfaces to their environment and within the structure.

The total maintenance costs within the design life time of the structure take about as much as the construction works. Of this, 10% are attributed to

expansion joints and bearings, which take only 3% of the total procurement costs. Therefore special attention shall be paid on the different levels of performance and threshold values which influence the assumed working life of these products.

Structural Bearings and Road Bridge Expansion Joints have to be designed in accordance with European specifications based on the European Construction Product Regulation (CPR) [1]. General specifications of actions are given in the appropriate Eurocodes [2]. Thus a high level of reliability of the construction products placed on the market and transparency of the latter are given. This paper gives an overview of the state of the art and shows how to implement innovative solutions.