



## Expansion joints with low noise emission – will recent developments become widespread across Europe?

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## Summary

The paper gives a brief introduction to the various available systems which are aimed at reducing noise at expansion joints in road bridges. A short description of each type of joint is presented, with consideration also of further factors such as cost, kinematical behaviour, over-rolling comfort, safety and drainage. In addition, supplementary or alternative possibilities of noise reduction, which are independent of the expansion joint itself, are discussed.

**Keywords:** expansion joint, noise reduction, modular expansion joint, cantilever finger joint, sliding finger joint, kinematical behaviour, durability, movement, driver comfort

## 1. Introduction

Noise generated by traffic is becoming an increasingly important consideration in the planning and construction of transportation routes, as populations and cities grow, with more transportation routes required and more housing constructed close to these routes. At the same time, urban populations exhibit ever-decreasing tolerance for noise from these transportation routes. Expansion joints can be a significant source of noise, if not carefully selected and correctly installed. New technologies to address this issue are therefore likely to increase in demand. This paper explores the different types of “quiet” expansion joints available, and new technologies which can transform an otherwise “noisy” expansion joint into a much quieter one.

## 2. Overview of quiet expansion joint types

The following types of expansion joint satisfy current requirements relating to durability and noise, with consideration of the relevant German and Austrian national standards, and current efforts to develop European Technical Approval Guidelines (ETAG) for bridge expansion joints.

1. Cantilever finger joints
2. Sliding finger joints
3. Modular expansion joints with noise reducing plates
4. Single gap expansion joints with noise reducing plates

These are discussed in sections 2.1 to 2.4 below.