



## Expansion joint renewal with “zero” traffic disruption? A solution using modern sliding finger joints

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## Summary

In order to minimise traffic disruption during expansion joint replacement works, it is beneficial to recognise at the time of initial joint selection and installation that the joint will almost certainly require to be replaced several times during the lifetime of the main structure. An expansion joint design which has resulted from this recognition is presented. The main parts of this joint, a sliding finger joint, can be easily replaced in a single night shift.

Even where the original expansion joint is of a different type, a solution which enables replacement of the old joint with a new sliding finger joint, with minimal disruption to traffic, is presented.

**Keywords:** Expansion joint, replacement, renewal, traffic management, low noise

## 1. Introduction

### 1.1 Functions of bridge expansion joints

One of the most critical components of a bridge is the expansion joint, which must allow traffic to cross the bridge structure while still permitting movement of the bridge deck due to thermal effects, wind, traffic loading, seismic effects and so on. A bridge's expansion joints are relatively delicate structural components compared to the overall bridge. Furthermore, they are among the most highly stressed components of the bridge as they are particularly susceptible to the impact of traffic and the effects of bridge movements. The joints also have to provide a watertight connection throughout the lifetime of the bridge, since, should the joint lose its watertightness, the structure beneath will become contaminated with corrosive agents such as de-icing salts. As a consequence of such a lack of watertightness, the durability of the main bridge structure could be at risk and major remedial works could then become necessary.

