

## Expansion joint replacement using the *Mini-Fly-Over* system to minimise impacts on traffic

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### Abstract

The *Mini-Fly-Over* approach to expansion joint replacement in road bridges can help minimise the impact on traffic of such work. It involves the construction of a temporary sliding plate expansion joint across the expansion joint location, which enables traffic to cross the worksite when required due to high traffic volumes but allows demolition, reconstruction and installation work to proceed at other times – e.g. at night-time or weekends. The use of the approach in the replacement of various types of expansion joint is presented, demonstrating its versatility and usefulness as a highly effective method of traffic management.

**Keywords:** expansion joint; replacement; renewal; traffic disruption; traffic management.

### 1 Introduction

When a bridge's expansion joints require to be replaced at the end of their service life, the potential disruption to traffic during the work is enormous. Demolition, deck reconstruction, curing of concrete and joint installation can result in significant delays or diversions to thousands of bridge users, every hour that traffic on the bridge is impeded by the work. The costs associated with such delays and diversions can include not only great financial costs due to the loss of productivity of those affected and indirect consequences of that, but also significant environmental costs (wasted fuel, exhaust fumes, increased vehicle wear and tear, etc.) – not to mention the frustration suffered by bridge users and the resulting damage to the bridge owner's reputation. Indeed, the overall costs of expansion joint replacement works are typically many times

the original supply and installation costs [1]. Therefore, approaches to replacing expansion joints which minimise impacts on traffic must generally be worthy of serious consideration. One such approach, which has been tried and tested in replacing various types of expansion joint, utilises the *Mini-Fly-Over* system (Figure 1).



Figure 1. Placing of *Mini-Fly-Over* plates to allow traffic to cross an expansion joint replacement worksite during peak traffic periods