

## M54 & M42 SLAB STABILISATION

### Background

Uretek is regularly contracted by stakeholders concerned with the maintenance of the UK's strategic routes to perform slab stabilisation works.

Recent projects include stabilisation to significant sections of the M54 and M42.

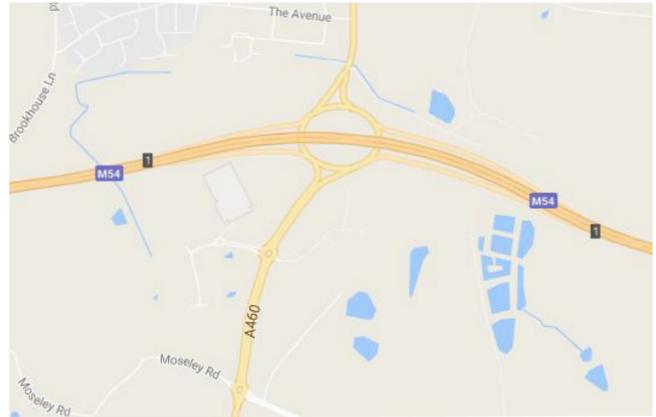
One of the common causes for slab failure is due to water ingress through the joints between the slabs. Overtime the water displaces the fill beneath the slab causing significant voiding; it is this voiding that enables the slab to move.

### Solution

On the M54 a visual inspection by the client and subsequent inspection by Uretek indicated a clear pumping of the slabs at a section near junction 4 as vehicles passed over them. As the frequency and weight of vehicles increases the washout of fill becomes more prevalent and results in complete slab instability.

The section of the M54 had 10 pumping slabs that ran side by side westbound. To fully stabilise the slabs the options for the client were to dig out and replace or stabilise through geo-polymer injection. To dig-out and replace a slab would be a very time consuming exercise taking approximately one night per slab. The Uretek injection method meant the slabs could be stabilised quickly with multiple slabs stabilised each night.

On the M42, the problems mirrored that of the M54, water ingress was causing pumping across 100 slabs and degradation around the joints. Uretek was required to stabilise the affected slabs through geo-polymer injection processes, whilst other contractors followed behind latticing the joints and installing a new surface.



The program of work for both projects involved injecting Uretek's geo-polymer below the slabs, the geo-polymer is pumped in as a liquid and polymerises under the slab filling voids. The expansive force pushes out any water and compacts the existing fill ensuring a permanent stable base for the slab.

Our process sees 16mm holes drilled to a 350mm depth across the slab at 1.5m centres, an injection tube is placed through the hole and a Uretek technician injects the material. As material is injected, the slab is monitored using lasers - as soon as any movement of the slab is indicated the area is stabilised.

Uretek can perform this stabilisation process on slabs across all motorways, the key benefit being the speed in which we can stabilise slabs. Where required we can mobilise additional teams on projects to achieve programmes of work in quicker timescales - especially critical when the work is part of a wider scheme.

Our injection processes are a long term solution which stabilises both slabs and flexible roads; it ensures any resurfacing is installed for the long term and assets are maintained beyond original life.

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