

M42, J2 to J4 – Vacuum Void Grouting of Failed Carriageway Joints



New inlaid blacktop and old concrete slab



Each joint position was FWD tested



Drilling and sealant operations



Preparing the treatment area



Applying the vacuum



Mixing and introducing polyester resin

Balvac's vacuum process chosen in preference to crack and seat technique in rehabilitation of 10 Km of 3-lane concrete motorway carriageway.

Client	Highways Agency
Designer	Amey Mouchel - Area 9
Principal Contractor	Tarmac
Specialist Contractor	Balvac
Programme	10 phases over 20 weeks
Completion	July 2003

The vacuum void grouting process provides an efficient and cost effective method of stabilising voided or rocking slabs - thus extending their useful working life. The process works by controlled introduction of resin grout to fill the small voids typically found beneath the joints of rigid pavements.

Sub-standard joints requiring treatment were identified in advance by surveying every joint using a Falling Weight Deflectometer (FWD) test. Treated joints were tested a second time to confirm the process had been successful. In all 14,400 joints were tested, with approx 6% found to require treatment.

Initially a grid of holes was drilled either side of a failed joint. Vacuum ducts were then placed parallel to the joint. A polythene shroud was placed over the whole area, and a vacuum pump applied. Weber SBD Certite polyester resin was poured into each hole between the ducts until refusal.

Typically a 4 person team treated 15 joints per shift, with the number of teams and shift patterns varied to keep ahead of surfacing operations. Rapid curing of the polyester enabled the slab to be opened to construction traffic within an hour.

This contract was notable for the introduction into the UK of rig mounted, mechanically fed rock drills to remove drilling operatives from the risk of Hand Arm Vibration.

Vacuum void grouting is a Highways Agency approved technique, with work carried out to meet the requirements of HD 32/94. The designers chose slab stabilisation in preference to crack and seat following a "Value for Money Assessment".

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