

## Newcastle Central Motorway – Concrete Repair



The motorway is both busy and complex



Chloride attack evident on link rebar



Edge cutting (L), hydrodemolition (R)



Sprayed concrete to soffit



Preparing a crack for resin injection



FRP column wrapping

Sprayed concrete, resin injection and FRP column wrapping are specialist features of inner city motorway repair and strengthening scheme.

Client	Newcastle City Council
Principal Contractor	Mowlem
Specialist Contractor	Balvac
Contract Value	£ 600,000
Programme	9 months
Completion	April 2003

Newcastle Central Motorway runs through the heart of the city. Significant lengths feature one carriageway running above the other on viaduct. The supporting columns, and some soffit areas near joints, had over time suffered significant chloride contamination from de-icing salts causing concrete to spall. Structural cracking was also found in some columns.

Mowlem's contract was to strengthen and repair the columns along 3 km of viaduct by casting an additional reinforced collar around the lower half of each column. Before carrying out this work, Balvac had to remove contaminated and damaged concrete, and repair those areas that fell outside the collar zones. Balvac's work was carried out on a variety of shift patterns that included 24/7 working in some phases. Up to 30 Balvac operatives worked on site during busy periods.

Spalled and chloride contaminated concrete was removed throughout using hydrodemolition. Large repair volumes led to the choice of dry batch spray concrete as the repair method. Weber SBD supplied the material used. The design life of the repairs was enhanced by installation of Fosroc Galvashield XP sacrificial anodes placed in all repair areas except under the RC collars. Over 4,000 XP units were used

Structural cracks found in columns were repaired by resin injection using SB Epoxy Plus, again supplied by Weber SBD.

In 12 locations there was insufficient clearance between columns and live traffic to accommodate a wider RC collar. These columns were both strengthened and protected by Fibre Reinforced Polymer (FRP) wrapping using and aramid fabric from the Weber SBD Enforce range.

## Balvac

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