

## A1(M) River Don Viaduct – Uplift Bearing Replacement



Heavy bearing installation at height and adjacent a river were some of the challenges facing the contract team

Complex bearing replacement contract undertaken as part of the Highways Agency Area 16 Highways and Structures Framework.

Client	Highways Agency
Principal Contractor	Balvac
Value	£700,000
Programme	8 Weeks
Completed	Summer 2002

The A1(M) River Don Viaduct consists of two separate bridges carrying the north and southbound carriageways of the A1(M) over the River Don. The centre span consists of a cantilever with a drop in span over the river. The contract required the replacement of 16 uplift restraint bearings on piers 2 and 5. Each bearing was to be capable of taking an uplift load of 50 tonnes.

Hydro-demolition was used to break out pockets in the deck beams and the top of each pier. Additional reinforcement was placed in these newly formed pockets along with the holding down bolts for the new bearings. The main design objective was to provide a substantial anchorage to withstand the uplift forces generated by the bearings within the constraints of the existing beams and piers that were already very heavily congested with reinforcement. This was achieved by a combination of adding anchors and tying into the existing reinforcement. Plates were cast into the structure and the bearings placed and grouted into place.

Notable problems that were overcome by the contract team included:

- Completing hydro-demolition works over a river, protecting the watercourse from pollution
- Limiting the full closure of a carriageway to two occasions only, the periods when the bearings were grouted in place.
- Very accurate and detailed hydro-demolition works in a confined space ensuring the structural stability of the structure was not impaired.
- The physical size of the bearing was governed by the construction techniques, which in turn were derived from the necessity to gain the largest tolerances for placing the additional reinforcement.
- The challenge of placing heavy bearings.

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