



## M1 River Trent Viaduct

Following 12 months of Early Contractor Involvement (ECI) as part of the Area 7 framework for National Highways, VolkerLaser was awarded vital column strengthening works to the River Trent Viaduct on the M1.

The M1, Britain's first full length motorway, opened in 1959, allowing drivers to travel from London to Leeds. Midway along its 193 mile trajectory, the M1 is carried over the River Trent floodplain by a concrete viaduct.



Built in 1964, the viaduct required structural strengthening after decades of use. Works began with extensive earthworks and watercourse diversions to enable safe access to columns and foundations, supported by temporary works designs and ground-water control.

We prepared 136 exposed concrete surfaces, using high-pressure water jets for hydrodemolition of delaminated areas. New starter bars were resin-fixed into existing bases to reinforce the foundations, followed by in-situ dry-sprayed concrete to enlarge and strengthen them.

Shear reinforcement bars were installed into the columns, which were then re-profiled using custom modular steel shutters ahead of further in-situ concrete casting.

Manufactured by Form-Fab Ltd, the innovative concept was devised by our expert team. The modular system allowed the shutters to be fixed together in varying combinations to cover the vast range of column lengths required. This eliminated the expense in manufacturing tailored shutters for each individual column, providing the client with a value engineered solution, bringing the project well within budget.

With the work area prone to serious flooding of up to two metres in depth, we needed to remain in regular contact with the Environment Agency, monitoring heavy rainfall and flood warnings. Emergency evacuation procedures and contingency plans were required, as well as the need to keep the quantity of plant equipment on site to a minimum due to ground weight capacity.

