

The Churchill Way Flyovers

Deconstructing a 'relic' of the past

£6.75m

/ Project value

September 2019

/ The project commenced

December 2019

/ The project was completed

Recognised as one of the “most complex highways engineering schemes in the UK”, the Churchill Way Flyovers project has made an “outstanding contribution to the daily lives”, and notably the “safety”, of the people of the North West region, specifically the residents of Liverpool. Honoured with the “Constructability Award” by the ICE (North West), this “never before seen in the UK” solution is now an exemplar project and case study for the industry. A range of avenues to strengthen the Flyovers were explored, but the deterioration of the structures, and the limited availability of as-built information, determined that they could not be implemented. The estimated cost of replacing the Flyovers was between £50m and £60m. Our solution, which was considered the safest and most economically viable option, was delivered at a cost of only £6.75m.

The brief

The Churchill Way Flyovers consisted of two separate roads linking Lime Street to Dale Street (South Flyover) and Tithebarn Street (North Flyover), running directly behind the city's museums and galleries. They were closed at the end of September 2018. An engineering report received by Liverpool City Council in February 2019 revealed multiple, irreversible defects to the Flyovers, which originally opened in 1970. Subsequently, it was agreed by the Council that their removal was the “only viable option”.



“A lot of thought went into the methodology to ensure the inconvenience to city centre traffic and surrounding buildings was minimised.”

Joe Anderson
Major of Liverpool

“Against strong competition, GRAHAM and Liverpool City Council demonstrated operational excellence, including the reuse of materials, and a strong focus on safety throughout the demolition, all within a challenging city centre location.”

ICE North West Civil Engineering Awards Judges

The challenges

Taking the Flyovers down was a uniquely challenging task. Consisting of multi-span post-tensioned concrete structures, these spans were cut in-situ following a pre-determined sequence, lowered to the ground using heavy lifting equipment (Self-Propelled Modular Transporters) and then cut into smaller sections to be transported off site. This process was designed to minimise the dust, noise, vibrations and environmental impact to the surrounding area. The footbridges were much smaller than the Flyovers, therefore, we adopted more traditional and cost-effective ways to remove them.

The solution

Constructed in 1969, the Churchill Way Flyovers consisted of two multi-span, cast in situ post-tensioned concrete flyover structures. Post-Tensioned Special Inspections and Structural Assessments, completed between 2016 and 2018, revealed irreversible defects. As a consequence, the “most feasible” option was to demolish the Flyovers with no replacement required. Following our Early Contractor Involvement, and the facilitation of a series of collaborative workshops, we conceived an innovative “cut and lower” methodology that lowered the levels of noise, created only negligible levels of dust, and produced low levels of vibration. Our imaginative concept also provided greater control and management during the release of pre-stress and the cutting of tendons, and reduced traffic disruption. Over a constrained four-month programme, we successfully implemented this solution, adopted 24-hour working, and effectively managed the “complex process” using SPMTs. This unique approach enabled deconstruction to take place without the need to initiate a three-month road closure on two major arterial roads.

Outputs & Benefits

Award winning: Winner of the “Constructability Award” at the ICE North West Awards

Complexity: A complex process “never before seen in the UK”

Collaboration: Early Contractor Involvement ensured the collaborative development of an innovative demolition and sequencing methodology

Implementation: We ensured the safe and successful delivery of the scheme on time, on budget and with minimal disruption to the sensitive location that included antique art, cultural collections and wildlife exhibits housed at the nearby Walker Art Gallery, Central Library and World Museum

Cost/economic benefit: Replacing the Flyovers was estimated to cost between £50-60m. Our innovative deconstruction solution method cost LCC £6.75m



For more information on how we're delivering lasting impact:

+44 (0) 28 9268 9500

info@graham.co.uk

graham.co.uk

GRAHAM