Integrated Construction Engineering

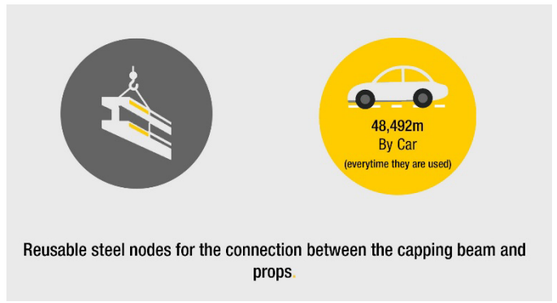
Carrington Street

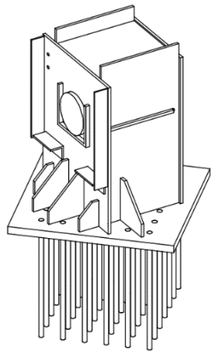
We reduced carbon by 47.4tCO2e through the reuse of temporary propping. We also saved 41tCO2e through our own development of the tender stage design to remove a steel gantry and utilise the permanent works for our logistics slab.

We also designed and fabricated a reusable Tower Crane pile cap, which is reusable and will reach it's carbon payback on the next site; saving 70tCO2e, when compared with a traditional RC Tower Crane pile cap.

This project was also the first time we trialled the use of Cemfree concrete as an alternative to standard concrete using Ordinary Portland Cement. However given the finite supply of GGBS in the UK, this is not currently deemed a longterm to solution to the issues around the Greenhouse Gas Emissions associated with the production and use of concrete.

Nine Elms



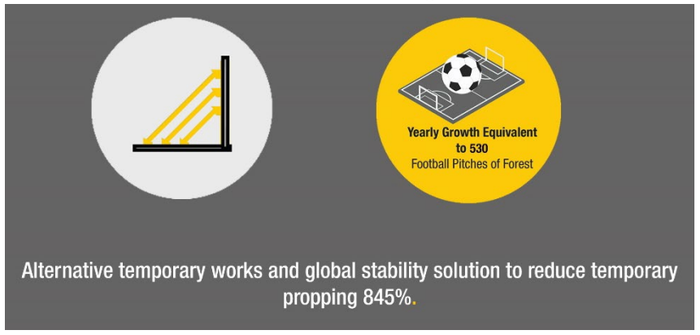


We have created a reusable steel nodes (shear blocks) for the connection between the capping beam and the reusable prop. Whilst these might appear CO2e intensive, by the end of the their second use they reach their carbon payback, and therefore become a truly sustainable solution. In future these nodes will save 15tCO2e every time they are used.

McGee were able to provide significant value to the Client through the use of Slipform for the core, this shortened the programme, and we completed the exercise ahead of schedule.

90 Long Acre

90 Long acre consists of a series of existing concrete blocks varying from 4 to 11 stories. McGee were given a temporary works scheme and sequence by the Client's Engineer, Arup, however McGee through our engineering excellence and expertise were able to redesign and propose a suitable alternative (which was then Category 3 checked).



The piecemeal demolition of interlinking blocks meant that 3 towers were detached from the main structural stability, altering the lateral load paths. Issues of differential stresses, drift, lateral deflections, along with a brittle retained façade, meant that the parameters for the temporary stability systems were tight. Our McGee modular propping systems modelled by our in house construction engineering, unlocked significant carbon savings and commercial value for our Client.

The tower cranes at 90 Long Acre posed a complex challenge. The constraints of the site meant that tower crane bases were required within the footprint of the existing building and required to service both the demolition and construction phases. McGee designed and proved that short mast tower cranes could be installed on top of the existing the existing towers. The configuration overcame tensile cracking, in the existing superstructure, from uplift. This was achieved through optimisation of the location and geometry of a steel grillage to significantly reduce the loadings. This crane base is reusable and will reach is carbon payback at the end of it's second use.