

Additional Post-Tensioning, Strengthening & Concrete Repair

Hammersmith Flyover Strengthening, Hammersmith, West London

Client

Transport for London (TfL)

Principal Contractor

Amey Inter Urban

Consultants

Amey Consulting

Value

£4 million

Works Commenced

January 2012

Works Completed

May 2012



Hammersmith Flyover is an elevated roadway in West London which carries the A4 dual carriageway over the central Hammersmith gyratory system. Completed in 1961, it is one of the first examples of an elevated road constructed using reinforced concrete.

Routine and special inspections revealed a significant corrosion problem with the existing post-tensioning installed in the early 1960s. This necessitated an emergency closure of the bridge just before Christmas 2011 to allow further investigations. The bridge was re-opened a few weeks later in early January but with reduced load limits and lane closures.

In December 2011 Freyssinet were appointed by Amey to assist with the design phase. Various options were considered to strengthen the bridge, with a target to complete the work in order to open the bridge to full traffic prior to the 2012 London Olympic Games. The solution adopted was to install additional post-tensioning (PT) tendons above and below the top slab within a new widened central reserve. The PT was required to be durable, replaceable and adjustable (re-stressable) – all of which are satisfied by the Freyssinet C-Range 'System 2' pre-stressing system.

Freyssinet were awarded the contract to supply and install the additional post-tensioning, valuing approximately £4 million. They commenced work on site in late January 2012, with the removal of around 200 linear metres of the existing concrete central reservation using hydrodemolition and wall sawing techniques. Works progressed well on site using a double shift pattern helped by unseasonably fine weather in February and March.

Once the reservation had been removed, a survey of the existing reinforcement in the deck was completed. An additional top slab was cast in the central reserve. Freyssinet carried out coring for the installation and stressing of vertical PT 'Freyssibars', and cast new PT concrete blisters above and below the top slab. Freyssinet's skilled PT operatives then installed and stressed horizontal 19C15 tendons, un-bonded in pre-grouted HDPE (High Density Polyethylene) ducts. After stressing operations were complete, the Freyssibar ends were finished and capped and treated with corrosion protection.

Freyssinet had operatives working around the clock and contributed to over 30,000 hours being worked on site without a reportable incident. A dedicated health & safety advisor help to ensure that any safety issues were dealt with quickly and that there was good safety co-ordination with the Principal Contractor.

At the height of the work Freyssinet employed up to 80 operatives, supervisors and managers. Using specially developed formwork and PT support systems they were able to remain ahead of the target programme and finish well ahead of a challenging programme in a race to reopen the flyover in time for the London Olympics.

Freyssinet works were completed in early May 2012. The works completed to date bring Hammersmith Flyover back to full load capacity, and it was re-opened on 28 May 2012.

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