

Concrete Repair & Cathodic Protection

AC5/AC7 Gravelly Hill Half Joint, Birmingham



Client
Highways Agency Area 9 Framework
Principle Contractor
Amey
Civils Specialist
Osborne Limited
Value
£790,000
Works Commenced
August 2010
Works Completed
August 2011



The AC5/AC7 site is located to the north of Birmingham, below the Gravelly Hill Interchange. Following structural assessment by the Highways Agency in 2008, the existing half joint between support structures AC5 and AC7 was deemed sub-standard and required emergency temporary support. The Amey design team developed a permanent solution and Freyssinet Limited was appointed to carry out concrete repairs and cathodic protection as the specialist contractor within the Highways Agency Area 9 & 10 CMF. Construction of the new support structure and repair of the existing deck had to be undertaken concurrently in order to achieve the programmed completion date. Freyssinet accessed the existing deck soffit from a scaffold system whilst Osborne Limited undertook the construction of new concrete piers directly below.

The concrete surfaces of the deck soffit and half joint were repaired in sequence in order to maintain structural integrity, by avoiding removal of too much structural concrete during each stage. Both flowable repair materials and sprayed concrete methods were used; repair materials placed in each stage had to reach a specified strength before the next stage commenced.

Freyssinet worked closely with Amey to develop a suitable method of undertaking flowable concrete repairs to the suspended span and cantilever span elements of the deck. There were concerns during design stage that, with limited access, it would be difficult to repair the deck soffit without compromising structural integrity. Extensive research and trials with a new pump by Freyssinet proved successful. This innovative system provided benefit to the works and proved to be a cost effective way of reducing construction time and manual handling associated with traditional methods. Amey are looking to adopt this method for future schemes in Area 9.

During the repairs process concrete was removed by Freyssinet's in-house hydro-demolition team, accredited by the Water Jetting Association. Following hydro-demolition, an inspection of the existing reinforcement was undertaken. Where corrosion was present it was necessary to undertake structural reinforcement welding. Once concrete repairs were completed, a Cathodic Protection mesh and overlay system was installed. Freyssinet undertook the installation and commissioning with their in-house CP team Corrosion Control Service Limited (CCSL).

Following completion of the new reinforced concrete support structure by Osborne, it was necessary to transfer the loads from the temporary support into the new structure. Freyssinet supplied and installed the bearing assemblies for the new support structure and transferred the load during a night closure of the AC slip road. A programme of load checks were then undertaken.

As a consequence of dedicated teamwork, a spirit of working towards a common goal, and the availability of Freyssinet's in-house expertise, the works were completed on time and within budget, to the satisfaction of the Amey and the client.

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