

Case Study

M6 - Orrell Footbridge Reconstruction Wigan, Lancashire



In Partnership With:



Client: Highways England
Design Consultant: Amey
Customer Name: A E Yates
Project Name: M6 - Orrell footbridge reconstruction
Project Location: Wigan, Lancashire
Asset Owner: Project delivered for and on behalf of Highways England.

Project Challenges and Background

During the winter of 2017, the Orrell footbridge near the M6 was hit by an articulated vehicle. The footbridge passes over the A577 slip road and main interchange for the M6 and M58, and links Pemberton to the east of the M6 with Orrell to the west. The footbridge plays a strategic part of transporting foot traffic in the area, and the damage sustained required the complete removal of the footbridge and the installation of a new structure along with the construction of new abutments and foundations. The bridge was subsequently removed with a provisional design on the drawing board for a replacement.

The ground engineering design was governed by the ground conditions on either side of the A577. Underlying coal deposits at varying depths meant that a 'down the hole hammer' solution and a cased bored pile was required. The project was also hampered by restricted access to site, meaning large crawler mounted rigs typically used for these types of projects, could not be employed. Smaller more accessible rigs had to be utilized, but with a system that still achieves good rates of production and high loading capacities. The Ischebeck TITAN micropile self-drilled system is ideal for these situations.

Products Used

Amey were engaged to act as consultant to design a solution for the ground conditions and restricted access. Given the loadings and the overall span of the new bridge, a micropile solution utilising Ischebeck TITAN 103/43 (Ult Load = 4155kN, Yield Load = 3132kN) micropiles was chosen as a permanent solution. The 3.0m TITAN bars were fixed and joined by the Ischebeck coupler and supporting the pile with alignment down and into the casing, were Ischebeck centralisers. Ensuring that the bar remained central to the casing, allowing for adequate cover of grout around the bar. Spherical collar nuts were also used to connect the head plate to the pile cap once the piles were placed and cast.

Each bridge abutment required 15no. 103mm diameter (103/43) Ischebeck TITAN micropiles, drilled to a depth of

7.0m. The drilling methods used by the drilling contractor were rotary-percussive, compressed air flush installation. All piles were fully grouted over whole length using 52.5 CEM1 OPC.

Additional Services & Support

During the planning stage, Ischebeck TITAN engineers worked closely with design consultants Amey, engaging with them at a very early stage on available solutions and applications. Responding to various design queries and providing technical support when needed. Ischebeck also engaged with the drilling contractor to agree material logistics and delivery times. The overall scheme was priced in partnership with the drilling contractor and the successful main contractor, ensuring that best value and best practice was maintained.

Results

Design: Consultant Amey were able to provide a solution that satisfied the loads required, design life of a highways structure and the restricted access onsite.

Construction: Delivery schedule agreed with the main contractor and driller to ensure prompt arrival and unloading in line with the tight road closures and restricted access. Allowing for good production rates with all piles installed on programme.



Find out more...



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