

Haddricks Mill Metro Bridge

Contiguous pile wall installed for Road Widening Scheme on Killingworth Road in Newcastle



AARSLEFF

Killingworth Road in Newcastle is undergoing a £13.5m investment project, which will see the road widening and a new Metro bridge installed at a well-known pinch point - an important commuter route into Newcastle. In partnership with Nexus, the scheme is part of the wider re-newcastle programme of investment into Newcastle's highways and key junctions - one of the biggest investments the city's roads has seen in over 30 years. Tyne and Wear Passenger Transport Executive (Nexus) needed to replace the 150-year-old bridge which is no longer structurally sound and have utilised this opportunity to widen the road which leads on to Haddricks Mill roundabouts in South Gosforth, to reduce congestion, smooth traffic flow and improve air quality and safety on one of the main commuter routes into Newcastle. Main contractor Esh Construction called upon Aarsleff Ground Engineering to install a contiguous pile wall adjacent to the Metro Bridge on Killingworth Road A189 in

Newcastle. The contiguous pile wall will abut short sections of existing steel sheet pile wall either side of the overbridge eastern abutment. The existing structure comprised the overbridge which has an abutment which is faced with a masonry wall and reinforced concrete capping beam. The contiguous pile wall will extend the existing sheet pile walls on both the North and South side. Aarsleff Ground Engineering deployed a small 4 tonne drill rig with a nominal 3.5m mast to install 450mm \varnothing piles at nominal 600mm centres. The wall will act as a cantilever in both the temporary and permanent cases. The piles were installed from a level of 50mOD and extended 11.0m below the piling platform level. Piles were reinforced with main reinforcement bars inside a 350mm diameter B8 Helical with a minimum cover to the reinforcement of 50mm. The maximum retained height of the piled wall is 4.5m in the permanent case, and allowance has been made for a 0.5m overdig to install the footing to the facing wall.



Due to the close proximity to the live railway, the piles were installed from a temporary working platform built up to the level of the top of the contiguous pile wall. Only light piling plant was utilised with a 3.5 mast height ensuring that the overhead line did not present a risk. Disturbance to the ground and adjacent structure was minimal due to the rotary bored piling technique not requiring percussive driving of the piles or the temporary casing. Upon completion of the contiguous wall on the

Southside, Aarsleff Ground Engineering installed 8no R38-420 Self drilling hollow bars to act as passive ties. These ties were installed at 45 degrees through the piled wall. With a design life of 120 years, the contiguous pile wall has been adopted as it requires minimal disturbance to the slope and can be installed without the need for temporary excavation. The cantilever wall has been adopted to avoid installing ties or anchors beneath the railway embankment.

Scopes of Work

Contiguous Pile Wall
Self Drilling Hollow Bars

Contractor

Esh Group

Construction period

22nd October - 14th December
2018

Aarsleff Ground Engineering Ltd, is the UK trading arm of Danish contracting giant Per Aarsleff A/S, and is one of the UK's leading piling and geotechnical design and installation specialist contractors; actively promoting early consultation to ensure each scheme can be Value Engineered to give clients the

best service, quality design, safety and value. Aarsleff's strategy and philosophy of investment into the future has resulted in its wholly owned subsidiary Centrum Pile Ltd having the most advanced precast pile production facilities in the UK, producing segmentally jointed precast concrete piles to BS En12794 to Class 1A.

Contact

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