



M6 SMART IMPROVEMENT MOTORWAY

Feb 2020

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SCOPE OF WORKS Drilled 42no. probe boreholes across the 11 mile stretch of the north and southbound motorway. Total of 1294m of drilling carried out, 173m of temporary steel casing, Gravitational filtering process

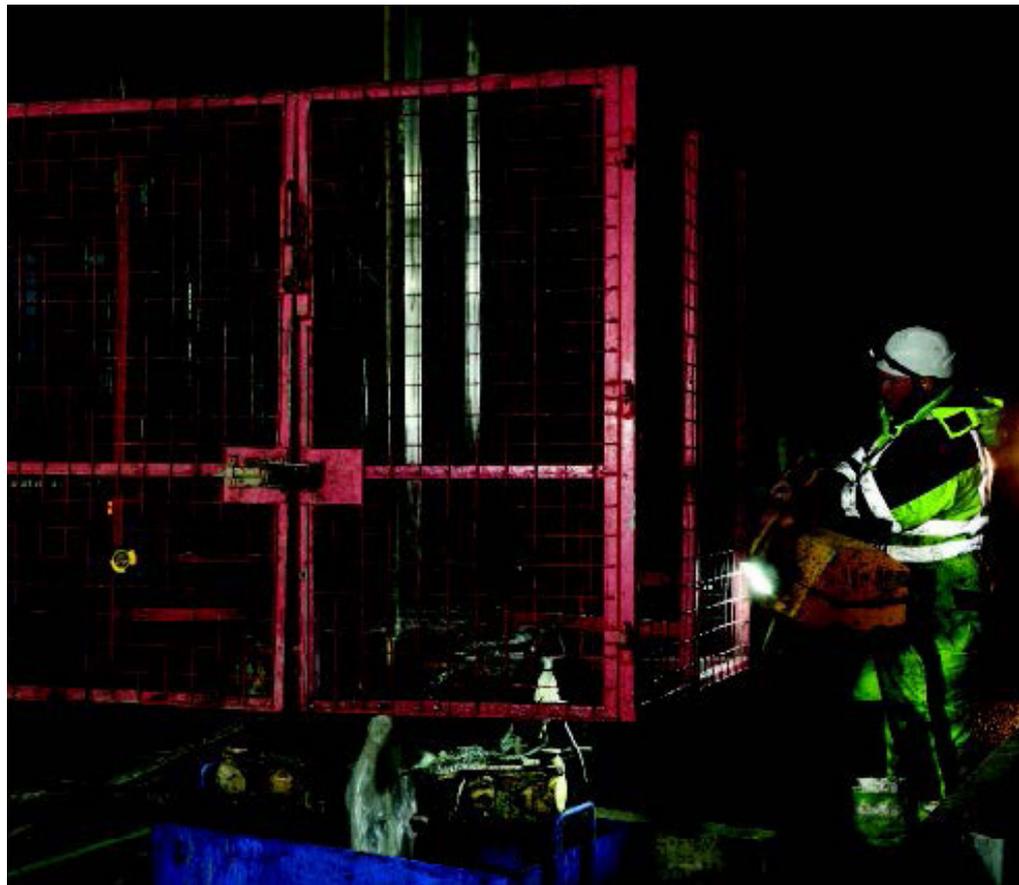
EQUIPMENT • Casagrande C6XP-2 drilling rig, Klemm 806-3G 2x4 rig

MAIN CLIENT Highways England

CLIENT Costain

TYPE OF CONTRACT Subcontract

CONSTRUCTION PERIOD January 2019 - February 2020



BESPOKE DRILLING OPERATIONS DRILLING ACROSS 11 MILES STRETCH

Highways England awarded Costain the contract of delivering the smart motorway scheme across the 16km length to increase capacity and improve journey reliability for commuters.

The scheme also includes road-side technology and new infrastructure, such as CCTV, queue detection and automatic signalling systems, and refuge areas where drivers can stop in an emergency.

Aarsleff Ground Engineering were awarded the drilling works by Costain at the end of 2019, with the works commencing on the 27th January and completed on 26th February 2020.

Specifically, Aarsleff were contracted to drill 42no. probe boreholes across the 11 mile stretch of the north and southbound motorway to establish any shallow coal mine workings that would require further treatment.

Each hole was positioned to target the base of the new gantries to be constructed, with a total of 1294m of drilling carried out and 173m of temporary steel casing being installed. Aarsleff utilised its Klemm 806-3G and Casagrande C6XP-2 drilling rigs (the latter being one of two new machines the company has invested in since December 2019) for the works, which were carried out in the hard shoulder and

in some cases, lane one of the motorway.

The rigs were split into two operations, with one rig working on the Southbound carriage way heading north, and the other working on the northbound carriageway heading towards the south.

For each operation, Aarsleff had a low-loader and flatbed, along with mobile site facilities for the teams carrying out the works.

Aarsleff also sub-contracted a geoenvironmental engineer for each operation, acting as a third-party, to validate the findings of the drilling works.

Aarsleff developed a bespoke recirculation system to capture the water flush off the drilling operations and store it on the back of a flatbed trailer in IBC tanks.

The captured water was taken back to the site compound, where Aarsleff filtered the coarse particles using a gravitational filtering process, allowing them to reuse the water on the following night shift.

Aarsleff's estimator Chris Purvis said

“With our sites spanning across 11 miles of carriageway and with the road closure only being in place for 6 hours of the night, we had to ensure our logistics on the project didn't cause any delays. After waiting for the closure of 2 of the 3 lanes each night, we then transported our equipment to the locations of our drilling work.”

Aarsleff's Geotechnical Engineer Andrew Shaw oversaw the project and ensured that site logistics and operations were carried out smoothly with minimal disruption to the programme.

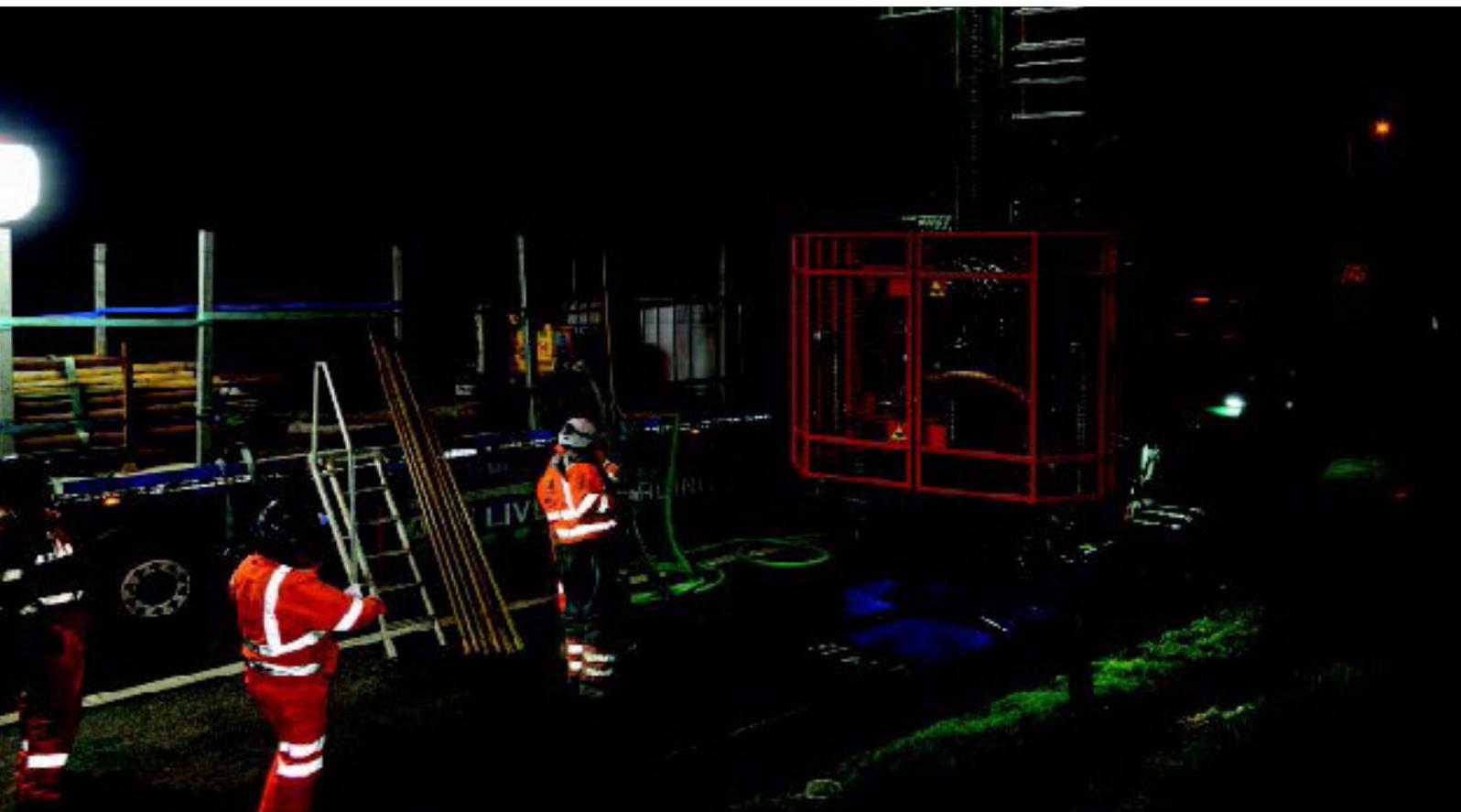
“The biggest challenge of this project was the time constraints in place to allow for the road to fully open again. Our works not only involved drilling 42no. holes, but also included reinstating the carriageway after we had drilled them. We filled each hole with a cement bentonite mixture till 300mm from the top, with the blacktop surface being reinstated using an extra rapid setting cement which we compacted to cover the hole and allow for the carriageway to be reopened.”

Aarsleff ensured that it not only maintained the safety of its team, but also made sure that traffic going past their section of works complied to the established safety measures.

Andrew further said “Safety was paramount throughout the project, making sure we had a safe working distance away from the open lane.”

On reflection of the completed project, Andrew Shaw said,

“Overall the project was a success and has added value to our portfolio of highways and infrastructure works. By establishing a different method of working, we were able to sustainably save and reuse water, along with reinstate the carriageway after our workings were carried out. It has been a pleasure to work with Costain and Highways England on a successful phase of their project, and we look forward to working with them again in the future.”



Aarsleff Ground Engineering Ltd is the UK trading arm of Danish contracting giant, Per Aarsleff A/S. Incorporated in the UK in 1991, Aarsleff Ground Engineering is one of the UK's leading ground engineering specialist contractors, with piling, geotechnical, and retaining walls divisions. An in-house design team means Aarsleff can offer you a full package of design and installation and we actively promote early consultation for value-engineering to give our clients the best service, design quality, safety factor, and value.

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