Birtley Phase 3

Ongoing industry collaboration provides an innovative and rounded king post wall solution

Aarsleff Ground Engineering were contracted by Vistry Partnerships to install a 133.5m king post wall at the top of their Birtley development in order to allow excavation for gardens and house foundations to take place. The wall is retaining up to 3.7m and will be timber cladded once complete, forming a desirable 'garden fence' effect to the rear of the plots.

Due to early engagement from the client, Aarsleff's design engineers were able to value-engineer the scheme, increasing the spacing of the king posts to reduce both resources and time. As the posts needed to be pre-bored, a reduction in posts overall not only had an impact on cost and the overall emissions of the project, but also reduced the time needed at both the drilling and post installation phases.

MGF's involvement came from their long-standing working relationship with Aarsleff, they were asked to collaborate with the Aarsleff team on a solution which looked to provide a temporary panel design that would allow for the king post solution to be installed.

This wider spacing and the use of narrow UC203 sections meant that the typical precast concrete infills used for king post walls would be too thick to fit. During the design process, both teams worked collaboratively to design a more cost effective and sustainable solution than the standard concrete infill panels. Looking at a range of options that were available, the teams opted to use MGF KKD 600/8mm trench sheets in a horizontal application, with the sheets overlapped and welded to the king post sections. Where bending moments within the thin panels were too high for a single sheet, the risk was easily mitigated by doubling up the sheets. This allowed for more flexibility on the scheme as well, as the sheets could be cut on site if needed, and are quicker to source than precast panels, allowing us commence work on site earlier.

To ensure the system designed was a sustainable solution, MGF looked to recycle some pre-used sheets by putting them through their re-roll machine and then using them as part of the king post design. This allowed the teams to recycle material that was already available rather than use additional concrete infill panels which would require manufacturing.

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MGF

Speaking on the project, Aarsleff's Graduate Engineer, Alex Boyle, said "Birtley has been a rewarding project to be involved with and presented specific challenges. Temporary works had to be managed closely to ensure the safety of Aasleff welders while fixing panel support brackets to the post below formation level. Due to the large retained height and top down construction method, trench boxes were used in a unique way as temporary support panels. These were lifted behind the posts, retaining the ground in the temporary condition to enable the installation of infill panels at each bay."

MGF's trench sheets were not the only product utilised on site, but their temporary propping was also used to retain the excavated earth during the installation of the king post wall. MGF used their drag box system as temporary infill panels to allow for the works to be carried out. The ability to offer MGF's temporary works equipment as a part of Aarsleff's overall package means the solution delivered to your site is rounded, tailored, and trustworthy.

MGF's Operations Manager, Chris Whitworth, said of the partnership, "Innovation is one of MGF's core values. Working through a close collaboration with Aarsleff, we embarked on a collective endeavour to explore an innovative and sustainable solution for a king post wall requirement. Together we used our engineering and operational specialities, and designed a solution that incorporated repurposing trench sheets to be effectively recycled in a king post system rather than the conventional precast concrete infill panels. Our shared vision of innovation and sustainability at early engagement of the scheme allowed us to provide an innovative and cost effective solution. I am sure the construction industry will recognise the benefits and importance of adapting to a sustainable approach."

The collaboration between Aarsleff and MGF has been ongoing for many years. The combination of MGF's innovative product design and Aarsleff's operational expertise means that we can offer value-added solutions that save our clients on time, cost, and associated emissions.

Aarsleff and MGF are also collaborating on one of the industry's biggest challenges – sustainability. Both companies are in the process of laying out an effective roadmap to reach net zero by 2050, with MGF recently publishing a short-term road map. Working together and sharing knowledge also allows stakeholders to be better informed. Aarsleff and MGF are aware of the importance of focusing on sustainability and know that there can be no more 'business as usual'. Discussions are ongoing regarding the reduction of steel associated emissions, as well as effective reporting and scope 3 management.

Aarsleff Ground Engineering are a choice contractor for the design and delivery of ground engineering projects across the UK. With over 30 years of experience, we are experts in the delivery of operational excellence.

MGF are market leaders in the design, manufacture and provision of modular and bespoke excavation and above ground structural support systems. We deliver this through technical excellence, 40 years of specialist manufacturing experience and absolute commitment to seamless service delivery.

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Data

- 133.5m king post wall
- Retaining up to 3.7m

Client

Vistry Partnerships

Type of contract

Design and build contract

Construction period

March - April 2023

Contact

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