



ULTILAYER

Proven performance

A55 contracting and materials, beyond Silverstone

A55 west bound, Junction 34-35

The challenge

Back in late 2018 Tarmac & North and Mid Wales Trunk Road Agent (NMWTRA) started to plan how they could resurface the existing A55 carriageway as quickly as possible to minimise delays to the public on North Wales busiest interchanges at the gateway to the holiday resorts and mountains of North Wales.

As the scope of the scheme developed NMWTRA site investigation works identified the need to replace a large number of the existing concrete bays, vacuum grouting to stabilise the remaining slabs along with joint preparation works prior to resurfacing.

As one of the very first major projects to be undertaken in lockdown, an additional challenge to address on site was introducing new social distancing procedures and covid secure working.

Health and safety

With work completed during lockdown daily health and safety briefings were reinforced with regular messaging about the new protocols. HSE officers were on hand to check these were being adhered to. Across the whole supply chain there was no significant impact on productivity.

The new measures were underscored by the introduction of a company-wide Tarmac Covid-19 safety standard. Fundamental to this is the principle that if anyone at any time feels unsafe, they are encouraged and empowered to stop working and raise concerns so they can be addressed.

Our solution

Tarmac engaged the services of fellow CRH company Alun Griffiths to undertake concrete repairs and all other civils works, Geobear to complete vacuum grouting and L&R roadlines to complete jointing works plus final white lining /studding.

NRP another Tarmac company were engaged to undertake all the planing works using their innovative 3.8m planer and Topcon levelling system previously used successfully on Silverstone race track back in the summer of 2019.

All of these works were undertaken at night over a 3 week period under lane closures prior to the weekend closures, thus allowing the resurfacing teams full access to carriageway to maximise production windows and to lay 800-900t of ULTISAMI on the Saturday and 1400-1600t of ULTILAYER on the Sunday. Using 2 pavers laying in echelon with paver feeders and using the Topcon paver levelling systems also used on Silverstone to ensure the best possible surface finish for the client and the end user.

All materials were supplied by Tarmac materials division coating plants at Pant in North Wales and Bredbury in Manchester.

All material deliveries were tracked using Tarmac's BPO planning tool to ensure there was always enough material on site to allow both pavers to operate at the optimum laying speed to achieve programme and the top quality surface finish.

Communication, teamwork and innovation combined throughout the project to ensure that the ambitious programme was achieved on time.

Results and benefits

When it came to executing the accelerated construction programme, Tarmac was appropriately able to call on many of the cutting-edge techniques and pioneering innovations it used to resurface the iconic Silverstone international racing circuit in 2019.

This included sister company NRP's use of two 2.2-metre planing machines. These ran simultaneously to remove the original surface course and even out the subbase, and both were fitted with state-of-the-art multiplex milling technology.

Running two planers concurrently saved a substantial amount of time in the early stages of the programme. Having the multiplex system installed - which was used at Silverstone - for planing the concrete subbase was gamechanger. The millimetre precision achieved from the system's sensors moving the drums up and down made the surface extremely smooth, meaning the subsequent paving could achieve race-track standards of ride quality and smoothness.

The repairs to the concrete foundation were carried out under full overnight closures. A total of 198 slabs needed to be drilled with resin grouting applied to fill any voids and stabilise the road's subbase. Once completed, a 50mm surface course was applied - totalling 9,000 tonnes of material overall - with new technology again playing its part.

Ride quality and durability were critical so various techniques were adopted to guarantee a smooth and robust surface that would survive for years to come.

This involved setting up two paving machines running in echelon fitted with 11m averaging beams and automated digital technology, which delivered up to 1.6km of continuous paving at a time to avoid any joins. These machines were shuttle fed, ensuring that there was no break in material supply and avoided any delivery vehicle-paver interaction to help secure an excellent ride quality.

Tarmac was additionally able to plan and programme as well as monitor the project in meticulous detail by implementing its advanced BPO ASPHALT management system. Using GPS technology, the software accurately calculated the most efficient way of completing a scheme by working out exactly how many delivery trucks are required and precise timings for their arrival and departure - crucial for consistent delivery of material to the pavers. Site supervisors were provided with live updates throughout the project, supporting real-time decision-making through a comprehensive supply of data.

Additional info

Lockdown opportunity

The A55 is a key arterial route running from the north west of England near Chester across north Wales to Anglesey. A notoriously busy section between Junction 33A at Northop Hall and Junction 34 at the A494 St David's Interchange is located immediately on the border of the principality, meaning that maintaining a safe and functional road surface is of high economic and strategic importance.

Managed by North and Mid Wales Trunk Road Agent (NMWTRA), in normal circumstances any disruption caused by temporary closures receives high levels of local scrutiny, making it essential that any maintenance work is carefully planned and advertised in advance.

However, working with supply chain partner Tarmac, the project team identified an opportunity to merge the original plans for four phases of works, due to be spread out over several months, into a period of just three weeks at short notice after lockdown was enforced.

Mike McAndrew, general manager at Tarmac explains: *"The scope of work was relatively complex, requiring repairs to the road's concrete foundations by using resin grouting to fill any voids as well as the installation of a new high-quality surface layer. Once the national lockdown restrictions were announced, the project partners recognised that an 80 per cent fall in traffic volume represented a prime opportunity to carry out the full programme of works in one hit - subject to political buy in.*

"The main challenge was planning and preparing the new 24/7 schedule of works in just a two to three-week period prior to starting on site - all of which had to be done remotely using digital conferencing software. Encouragingly, all key stakeholders including Gwynedd Council, Flintshire County Council and the Welsh Assembly Government were all on board with the proposed construction method and traffic management - providing a great example of what can be achieved when there is a collective will and the ability to collaborate so closely."