



# Paving excellence

## CATESBY TUNNEL, NORTHAMPTONSHIRE

### The challenge

Precision paving was needed as part of a multi-million pound project to transform this 2.7 kilometre long 8.2 metre wide, former railway tunnel into a world leading aerodynamic test track. This was part of a wider plan to build a science and technology park on the same site to form a hub for high tech companies working in the automotive sector. The client, Aero Research Partners approached Tarmac after learning about the high precision paving work it had successfully undertaken on other projects, notably resurfacing the Silverstone Formula One Grand Prix circuit in 2019.

The required paving tolerances were exceptional, with an IRI requirement of less than 0.7. Tarmac actually achieved an IRI of between 0.2 and 0.3, making it more stringent than many Formula One circuits. However, the tunnel environment meant that work would need to

be completed under exceptionally challenging conditions.

The limited height of the tunnel meant that standard tipper trucks could not directly supply the paving machine. Instead, the asphalt material would need to be transferred using feeders and dumper trucks. The supply of asphalt had to be planned meticulously to ensure a continuous supply to the paver. Maintaining safe working conditions for the paving teams while working in the tunnel would also be a challenge, especially maintaining adequate ventilation and preventing the build-up of fumes. This required careful planning with the help of Tarmac's safety team to design an effective ventilation system and use of an independent consultant to inspect and test this system and confirm a safe working environment.

### Our solution

The chosen asphalt material was a specialist PSV 65, 10 mm gritstone aggregate supplied from Tarmac's world renowned Bayston Hill quarry in Shropshire, the same stone used on Silverstone Grand Prix circuit and other Formula One circuits including Abu Dhabi and Bahrain. A special mix design would be used to ensure that workability was retained while material was being transferred through the tunnel to the paver to ensure the best possible compaction and surface finish.

Achieving the required tolerances, would mean non-stop paving along the full length of the tunnel. This would require a continuous supply of asphalt to the paver and seamless transition of paving teams between each shift. To guarantee this steady supply of asphalt, two Tarmac plants would supply the material: Mountsorrel in Leicestershire and the Elstow plant near Bedford. Careful



planning and exceptional quality control was needed to make sure that exactly the same specification of material was supplied from each plant.

Following an initial trial section installed in 2019, a pad coat was applied to the concrete pad prior to the main surfacing work which was scheduled for December 2021. As planned, 1340 tonnes of asphalt were supplied from Tarmac's asphalt plants. Paving work proceeded non-stop from 7:00 AM until 7:00 PM with a seamless changeover of paving teams at the end of the first shift, achieved without stopping the paver. Twelve dumper trucks operated continuously to transfer asphalt material from the tunnel opening to the paver. To achieve this continuity and level of accuracy, required exceptional preparation and planning and drawing on the experience of other projects like resurfacing of the Silverstone Grand Prix race circuit in 2019. The Paving team deployed BPO to ensure that material tracking and paving speed could be maintained.

## Results and benefits

The seamless way this project was planned and delivered has resulted in a truly world class finish that is amongst the highest known paving standards in the world today. This level of paving accuracy has delivered a surface with the exceptional consistency and uniformity needed to meet the client's aspiration of producing a world leading aerodynamic test site. For the automotive engineer, it has effectively allowed them to take any surface irregularity out of the calculation. The client was delighted with the outcome: "Huge thanks for all your efforts at Catesby over the past years, but specifically for the efforts evident yesterday in delivering a very smooth wearing course surface down the tunnel...We are all aware of the difficulty and complexity in asphaltting down the tunnel and I'm pleased to say that your efforts have both been much appreciated but also delivered an exemplar finish...you have achieved a Flatness of 0.47mm and 0.43mm along each carriageway. A truly remarkable result over such a very long test track."

**Richard Wakeford ICIOB**  
Director, Stepnell (Main Contractor)

"This was a truly ambitious project and one that is unlikely to be replicated in the UK again. Through collaboration with our client and Tarmac's Materials business, we were able to deliver this unique project on time in full and on budget. I'm proud of everybody and every team that was involved with delivering this project from its inception through to the final surfacing, a truly remarkable effort that just shows what Tarmac can deliver."

**Scott Kilby**  
Tarmac Operations Manager  
East Midlands

"This scheme has cemented our reputation for delivery of high precision surfacing following completion of Silverstone racetrack and Mira test facility. All schemes have achieved a level of smoothness that are among the best in the world and have now made Tarmac the go-to company with the experience, confidence and track record to undertake precision surfacing."

**Matthew Fields**  
Tarmac Regional Operations & CI Manager

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