TARMAC
A CRH COMPANY

Product	ULTIFLEX with ULTILAYER Binder Course
Client	Highways England (National Highways)
Main Contractor	Balfour Beatty
Consulting Engineer	Aecom
Surfacing Contractor	Tarmac Contracting
Location	M3 Junction 2 To 4A, Surrey
Completion	2017

Proven performance

THE CHALLENGE

As part of Highways England's Smart Motorways programme, the hard shoulders of the M3 between Junction 2 with the M25 and junction 4A at Farnborough (West) would be converted to 'smart' running lanes. The road was in poor condition, with reflective cracking in the asphalt surface due to underlying movement in the CBGM base. Significant structural resurfacing was required to deliver a long-term solution to this cracking and to upgrade the new running lanes to cope with the 130,000 vehicles that use this busy route each day. Full depth reconstruction would have been extremely expensive, disruptive to road users and both technically and logistically very challenging. It would have meant very large volumes of materials leaving and entering the site. It would also have been practically very challenging to provide a safe working environment for this type of work within the constraints of the traffic management that required three open lanes in each direction. Instead, attention shifted to exploring whether higher performance asphalts could enable Highways England to complete the works in a cost-effective manner with less disruption to motorists.

OUR SOLUTION

Using technical data supplied by Tarmac on comparative fatigue and crack resistance of alternative paving materials, consulting engineer AECOM were able to produce predictive models based on different pavement designs. The initial specification, a geotextile material and HDM binder course, was compared to designs using Tarmac's high-performance polymer modified binder and surface courses. ULTILAYER combines outstanding flexibility and strength to deliver long-term durability, even on the difficult sites where conventional materials have failed. Based on the outcome of this modelling, a hybrid pavement design was chosen, combining a geotextile material and an ULTILAYER polymer modified asphalt binder course to help stabilise the CBGM base and prevent movement being transferred into the upper courses. ULTIFLEX, Tarmac's Clause 942 BBA HAPAS approved polymer modified thin surface course asphalt would then provide a durable, low noise, wear resistant finish.

RESULTS AND BENEFITS

In all, about 205,000 tonnes of asphalt was supplied to complete this major road upgrade including 84,600 tonnes of ULTILAYER for the binder course. The chosen paving solution helped to deliver a long-term solution to the problem of cracking on this busy road without resorting to full depth reconstruction. This meant big up-front savings in time and cost for the client. Since work was completed, the new road surface and upgraded fourth lane has performed well, withstanding daily use by high volumes of cars and heavy goods vehicles. By minimising ongoing maintenance costs and extending paving intervals this has delivered significant whole of life cost reductions for the client. Tarmac's continuing development in asphalt technology means that both ULTILAYER and ULTIFLEX are now available as warm mix asphalts, generating fewer carbon emissions. As warm mix asphalts are supplied at lower temperatures, they can be trafficked earlier, enabling shorter programme times or more paving to be completed within a given time. This approach has now been adopted on other schemes successfully and future projects are in the pipeline.

Building our future