

GEOSYNTHETICS

Case Study Ref: 501

Paving – Rehabilitation of A617 Millennium Way, Nottinghamshire UK

Challenge

The A617 Millennium Way, Rainworth, was opened in the year 2000. The original construction comprised a high modulus base 200mm thick, 60mm of binder course and 40mm of SMA surface course. After a few years of use, signs of reflective cracking from the lower joints became apparent along the whole length of the road and in more recent times surface course failure was occurring in large areas. Core samples were taken and while the structural integrity of the bituminous layers was good there was no bond between the base and binder course layer. The assumption was made that this was contributing to the surface course failure with the upper layers flexing over a stiff base.

Solution

Following consultation with Tarmac, the decision was made to plane the existing material to a depth of 140mm, to ensure the entire existing binder course layer was removed followed by an asphalt reinforcing grid. This would ensure an excellent bond between the layers and prevent future reflective cracking. Tarmac proposed Tencate PGM-G100/100 supplied and installed by Asphalt Grid Systems Ltd as they have had previous experience and success in Nottinghamshire. Additionally, the proposed binder course, ultilayer 20 and surface course layer ultipave D would utilise polymer modified binders to give a highly flexible road surface.

Benefit

Tencate PGM G 100/100 turned out to be the most cost effective and technically sound solution, providing increase in lifetime. Installed asphalt inter-layer system Tencate PGM G 100/100 provides crack retardation, sealing function and stress absorption in one product. The product consists of non-woven fabric which is reinforced by high strength glass fibres preventing the ingress of water and oxygen in the lower layers; it reduces the stress between existing sub-base and wearing course and provides reinforcement for the new asphalt.

Project Data

Application: Asphalt inlay
Location: A617 Millennium Way, Rainworth.
Products: Tencate PGM-G 100/100
Quantity: 12,000 m²
Client: Nottinghamshire Highways
Main Contractor: Tarmac
Date: March 2015



Top Left: Road surface prior to surfacing works

Bottom Left: The main section of the A617 leading up to the roundabout. All work was successfully carried out overnight ready for Tarmac the next morning.

Top Right: Tencate PGM-G100/100 being overlaid with utililayer 20

Bottom Right: The asphalt grid and bitumen bond coat was laid over two shifts (Saturday and Sunday evening) this tied in with Tarmac's programme. All works were completed within 9 days and the road reopened a shift earlier than originally programmed.