

CASE STUDY

WHERE? A243 Leatherhead Surrey

WHEN? October 2006

WHO WAS THE CLIENT? Transport for London



OVERVIEW:

The A243, in south west London, runs from Junction 9 of London's orbital motorway, the M25, northwards towards Kingston upon Thames. The original pavement construction which comprised a bituminous surface overlying an unreinforced concrete slab road base was suffering from extensive reflective cracking, settlement and fretting. Carriageway deterioration had been caused by the high traffic volumes associated with a busy London road. This had been further exacerbated by various utility companies dissecting the construction to carry out their necessary maintenance and replacement operations. Consequently, as part of Transport for London's annual capital maintenance programme, the decision was taken to resurface of the highway in October 2006.

WHAT WERE THE CHALLENGES?:

The high peak day-time traffic volumes using the road meant that it was not possible to facilitate the repairs during the day. Approval was granted to undertake the works at night, thereby minimising any disruption to the travelling public. Furthermore, all noisy operations were restricted to the early evening, although Foster Contracting's specialist installation plant gave rise to no noise concerns.





THE SOLUTION:

After planing off the old surfacing, the exposed concrete carriageway was covered with the 200kN/m x 200kN/m geosynthetic composite and overlaid with a bituminous surfacing. 200kN/m (in both directions) is the strongest product available and was specified due to the severity of some of the cracks and also because it was understood that previous attempts to restore the carriageway had proved less successful than anticipated. The asphalt reinforcement 200kN/m geosynthetic was installed with the following objectives:

- To retard the formation of reflection cracks in the bituminous inlay
- To seal the cracks in the underlying layers and prevent penetration by water and oxygen
- To reinforce the asphalt layers of the carriageway
- To prolong the life of the carriageway

INSTALLATION:

Prior to the installation of the geosynthetic, main contractor Bardon Contracting Ltd were required to plane the carriageway, thoroughly clean the exposed surface, and fill exposed cracks greater than 4mm width. This essential process ensures a 100% bond between the planed surface and the paving fabric. Once this had been successfully undertaken, a bond coat of 160/220 pen bitumen, at a temperature of 185°C, was sprayed onto the planed surface by Foster Contracting Ltd's calibrated tanker at a rate of 1.1 litre/m². Immediately behind the tanker, Foster Contracting Ltd then used their bespoke laying machine to install the 200kN/m material under tension directly onto the hot bond coat. The geosynthetic used does not need to be installed over a bituminous regulating layer nor does it require any additional fixing. Together these factors reduce the risk of associated problems such as inadequate fixings becoming dislodged. As a pad course is not required, delays to the surfacing operation and overall costs are reduced. Finally, Bardon Contracting Ltd overlaid the geosynthetic with a Supaflex wearing course. Efficient working methods combined with effective coordination between all parties enabled a total of 5,000sq.m of road refurbishment to be successfully completed over a 3 night period.



PRODUCT DETAILS:

The paving geosynthetic was a mechanically bonded continuous filament non woven Geotextile made from 100% polypropylene and reinforced with high modulus glass filaments. The product is characterised by its uniform bonding, optimum bitumen storage capacity and efficient load uptake at very low strains of less than 3% thereby providing the ideal solution for highway maintenance. In addition, construction plant can traffic the geosynthetic during the surfacing operation without damage or picking up.

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