

Case Study: 006

CONTRACT DETAILS

Geosynthetic Installer:
Foster Contracting Ltd.

Main Contractor:
Tarmac Ltd.

Client:
Transport for London

BACKGROUND:

The A3 Robin Hood Way dual carriageway in south west London runs along the western perimeter of Wimbledon Common, between Coombe Lane to the south and Kingston Vale to the north. The 2.2 km long dual carriageway makes up part of the Kingston by pass and is therefore a very busy part of the London transport network. The pavement construction comprised a bituminous surface overlying an unreinforced concrete slab road base.

In common with many roads, high traffic volumes and dissection of the road construction from utility works had caused significant deterioration of the carriageway with extensive reflective cracking, settlement and fretting.

As a consequence of the carriageway's deterioration, the decision was taken to resurface the highway in September 2006. The works were undertaken as part of Transport for London's annual capital maintenance programme.

To limit disruption to the travelling public and maintain traffic flows during peak periods, the work was approved to be undertaken at night, as is the usual practice on London's busy streets. Noisy operations were restricted to the early evening. Foster Contracting Ltd's specialist plant for installing geosynthetics raised no concerns over noise.



The restored carriageway

SOLUTION:

After planing off the old surfacing, the exposed concrete carriageway was covered with 100kN/m x 100kN/m polymeric geosynthetic, and overlaid with bitumen binder and surfacelayers.

The asphalt reinforcement 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 100kN/m geosynthetic, main contractor Tarmac Ltd were required to plane the carriageway, thoroughly clean the exposed surface, and fill exposed cracks greater than 4mm width. This process ensures a 100% bond between the planed surface and the paving fabric.



Installation of the wearing course

Once this had been successfully undertaken, specialist installation contractor, Foster Contracting Ltd, used their calibrated tanker to spray a bond coat of 160/220 pen bitumen at a rate of approximately 1.1 litre/m² and at a temperature of 185°C onto the planed surface.

Immediately behind the tanker, the geosynthetic was laid under tension onto the hot bond coat. Using their bespoke laying machine Foster Contracting was able to do this smoothly on straight roads and also around radii such as roundabouts.

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, Tarmac Ltd overlaid the geosynthetic with 60mm Binder course and 40mm Surface course. Efficient working methods and coordination between all parties enabled a total of 8,000sq.m of road refurbishment to be successfully completed over a 6 night period.



Installation of the wearing course

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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