

Case Study: 002

CONTRACT DETAILS

Geosynthetic Installer:
Foster Contracting Ltd.

Surface Dressing Contractor:
T E Beach (Contractors) Ltd.

Client:
Transport for London

BACKGROUND:

The A3200 Stamford Street, Lambeth, runs between Waterloo Roundabout to the west and Blackfriars Road to the east. This section of road is 1,400 meters long, single carriageway and is an exceptionally busy part of the central London transport network. The existing pavement construction for this important route comprised a composite construction with a thin bituminous surface overlying an un-reinforced concrete slab road base.

High traffic volumes and dissection of the road base from utility trenches/works had resulted in significant deterioration of the road with extensive reflective cracking, settlement and fretting.

In March 2007, as part of Transport for London's annual capital maintenance programme, essential carriageway repairs were undertaken to restore the integrity of the highway. 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 .



Cracking to the existing road surface



Cracking to the existing road surface

SOLUTION:

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

The 100kN/m paving fabric 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 T E Beach (Contractors) Ltd. planed the carriageway to a depth of up to 100mm, thoroughly cleaned the exposed surface, and filled cracks greater than 4mm width. This process ensures a 100% bond between the planed surface and the paving fabric.

Once this had been successfully undertaken, Foster Contracting Ltd, used their calibrated tanker to spray a bond coat of 160/220 pen bitumen at a rate of 1.1l/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 and seamlessly 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, T E Beach (Contractors) Ltd. overlaid the 100kN/m composite with 60mm Binder course and 40mm Surface course. In total, 5.000m² of road refurbishment was successfully completed over a 6 night period.



Spraying of the bond coat



Installing the composite onto the bond coat

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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