

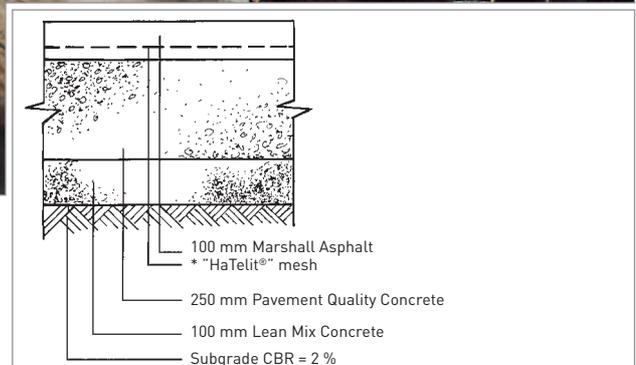
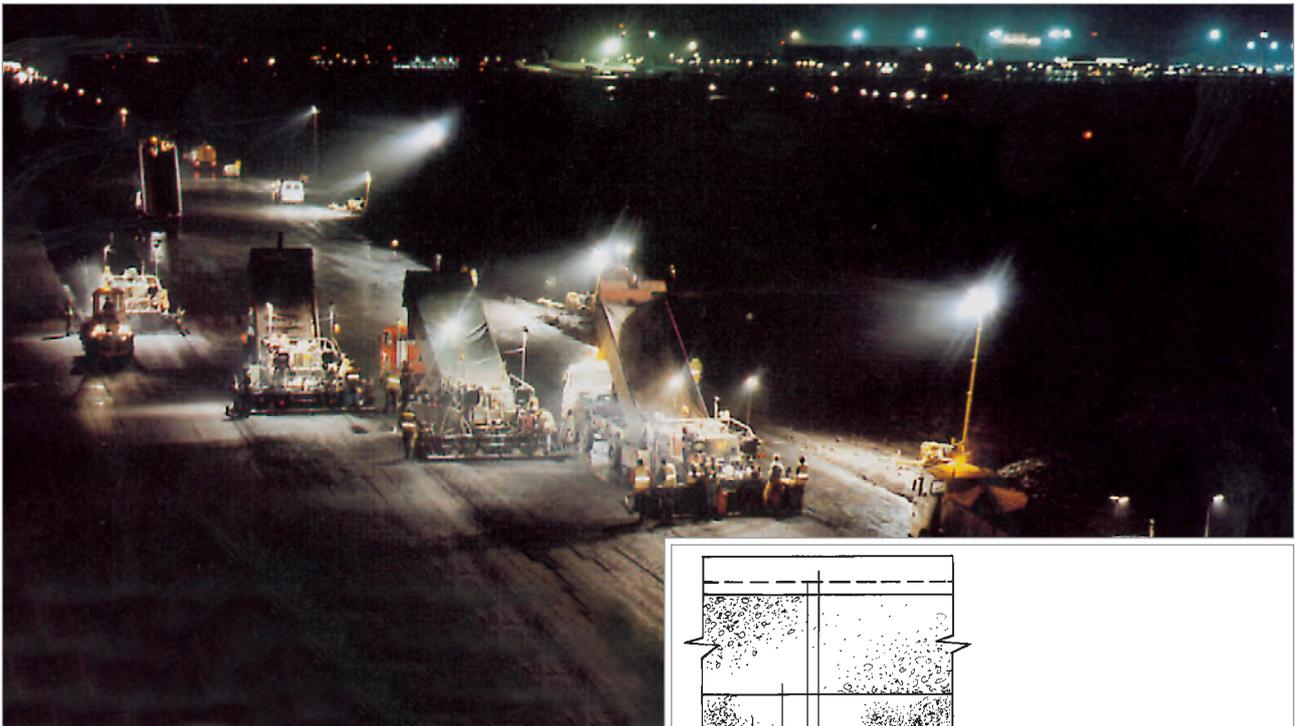


Asphalt Reinforcement

Rehabilitation of Concrete Pavements

London Luton Airport 1988 & 1992

HaTelit® – Polyester grid for asphalt reinforcement



Situation

The original Marshall asphalt runway surfacing was showing extensive reflective cracking from the expansion and construction joints of the underlying pavement quality concrete. Normally 150 mm asphalt overlay is required to reduce the risk of reflective cracking. At the west end of the runway it was impossible to increase the asphalt thickness by this amount, as the runway threshold level and its longitudinal fall had to be maintained.

Solution

To reduce the risk of cracking in the new overlay, which at the west end was limited to 100 mm after planing off the old surface down to a minimum of 50 mm, **HaTelit®** asphalt reinforcement grid was installed to supplement the strength of the new surface. A length of approx. 300 m full width runway (46.3 m) was treated with this material, which in turn was covered by 60 - 100 mm of new Marshall asphalt. In 1992, following advice from Sir Alexander Gibb & Ptnrs., **HaTelit®**

was again introduced into the runway maintenance program. Areas of concrete blocks at the end of the runway had to be replaced with an asphalt overlay. To alleviate any reflective cracking, **HaTelit®** 40/17 was placed over concrete joint zones at the base of the pavement. The **HaTelit®** was supplied in rolls of 1.1 m width and was placed between the 60 mm base and 50 mm wearing courses of Marshall asphalt.

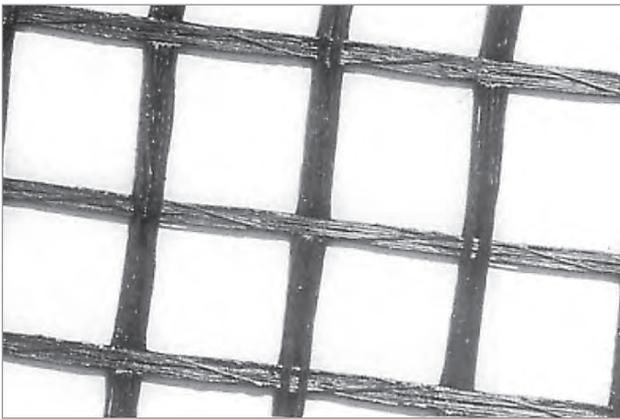
A report from the airport engineer, dated October, 1996, following an inspection of the **HaTelit®** reinforced areas, confirmed that the reflective cracking seems to be under control, eight years after its installation. There were areas





Asphalt Reinforcement

Rehabilitation of Concrete Pavements



where the surfacing has not performed well, notably the infills to manholes, but overall reflective cracking is not in evidence. This performance is encouraging in view of the aircraft traffic volume and the involvement of wide bodied aircraft.

HaTelit® is a flexible reinforcement comprising highmodulus polyester filaments, which are bonded by a special manufacturing technique to produce a widemesh grid. The selection of polyester material is based on its high modulus and low creep: ideal properties to reinforce

pavement asphalt layers. In addition the chosen synthetic filaments have low shrinkage and excellent temperature resistance up to 190 C. **HaTelit®** reinforcing grids are coated with a bituminous material, which provides good adhesion to the asphalt layers. This bonding ensures the reinforcing grids is in a position to accept and distribute tensile stresses. In addition the grid structure has an open area of at least 75 %, which ensures maximum bonding of the asphalt layers through the **HaTelit®**.

HaTelit® is available in various standard constructions. The selection of the correct reinforcing grid is based on its relationship between the grid mesh size and the largest aggregate in the mix. As a rule the mesh should be larger than the largest stone diameter by a factor of 2.0 to 2.5. In most cases this leads to the use of **HaTelit®** 30/13 with a 30 mm mesh or **HaTelit®** 40/17 with 40 mm.

Client: London Luton Airport Ltd.

Specifiers: Luton Borough Council.
Sir Alexander Gibb & Ptnrs.

Contractors: Redland Aggregates Ltd.
Wimpey Hobbs Ltd.

Product		30/13	C40/17	40/17
Raw material		Polyester bituminous		
Coating		Polyester bituminous		
Weight of fabric g/m ²		240	270	250
Mesh size mm		30 X 30	40 X 40	40 X 40
Ultimate strength in kN/m	long./trans.	50/50	50/50	50/50
Elongation at break in %	long./trans.	12/14	12/12	12/14
Strength at 3 % elongation	long./trans.	12/10	12/12	12/10
Heat resistance		up to 190° C		
Shrinkage properties		app. 1 % at 190° C after min.		
Chemical resistance		good to solvents/deicing agents		
Roll dimensions	Length m	150	150	150
	Width m	3.60	5.00	3.60
		2.20		
		1.70		
		1.10		

HUESKER Synthetic GmbH

Fabrikstraße 13-15
D-48712 Gescher, Germany
Phone: +49 (0) 25 42 / 7 01-0
Fax: +49 (0) 25 42 / 7 01-499
E-mail: info@HUESKER.de
Internet: www.HUESKER.com



HaTelit® is a registered trademark of HUESKER Synthetic GmbH.