MACCAFERRI

CASE HISTORY

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FLOATING ROADS TRIAL

SCOTTISH HIGHLANDS, UK

PAVEMENTS

Product: RoadMesh

Problem

Highway Engineers in the Highlands of Scotland have adopted a novel approach to reinforcing low traffic-volume rural roads in Sutherland.

Much of their rural road network is single track and built on very weak ground - mainly peat. This poses no problem for light car traffic but this “floating road” construction is unsuitable for use by heavy vehicles serving the local timber extraction industry.

To reinforce the roadways and bring them up to useable standard without resorting to the importation of huge quantities of stone road-base materials, Highland Council worked with Geotechnical Specialists Maccaferri and came up with a more practical and cost effective solution.

The B873 reconstructed with RoadMesh

Solution

Three trial roads serving the communities of Syre, Kinbrace and Helmsdale in Sutherland, have had bituminous overlays applied which incorporate Maccaferri Roadmesh pavement reinforcement mesh.

Roadmesh is a double twist steel wire reinforcing mesh which is sandwiched between the bituminous layers. This reinforcement mesh causes the pavement construction to work as a cohesive mass, absorbing the horizontal tensile stresses and spreading the imposed traffic loadings over a wider footprint, reducing its damaging effect.

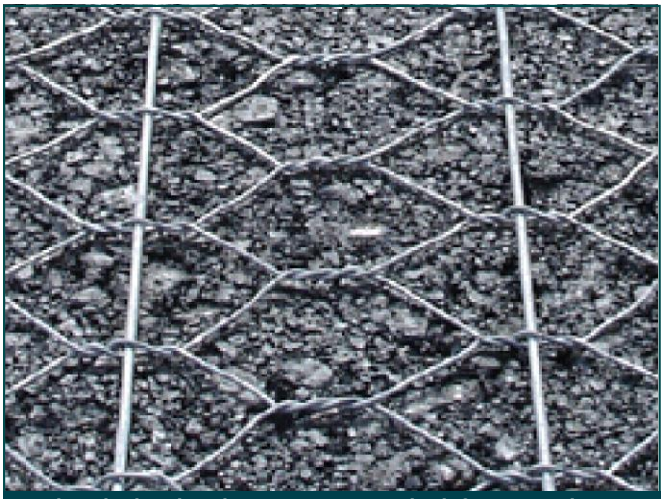
Roadmesh not only reduce reflective cracking, but it additionally structurally reinforces the road structure reducing rutting, ‘shoving’ and differential settlement for the long term.

A tipper truck falls off the Floating Road with dramtic results

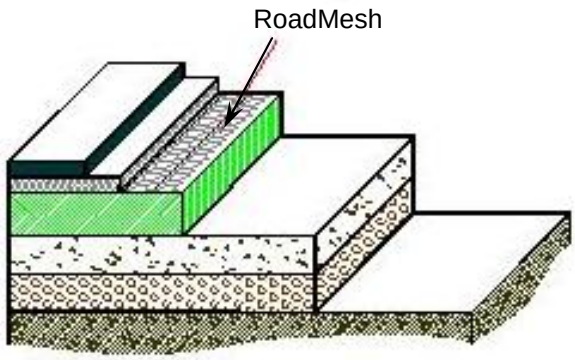
The pavement reinforcement work is being undertaken as a partnership agreement between Forest Enterprise and the Highland Council. The trials, which started in 2001 and run for 25 years, are also being monitored by The Roadex Project, a multi national technical cooperation which brings together Northern European countries to share knowledge on forest road construction techniques.

The heavy lift recovery vehicle in action

Client:	
FOREST ENTERPRISE / HIGHLAND COUNCIL	
Designer:	
MACCAFERRI LTD, (UK)	
Products used:	
ROADMESH	
Date of construction	
1995	



RoadMesh showing the transverse steel reinforcement bars



Indicative section through pavement showing RoadMesh

Norway, Sweden, Iceland, Finland, Greenland, and Scotland are all party to the project and each shares information with the others, with the objective of improving and maintaining local infrastructure.

In earlier work in 1995, a section of the nearby B873 was reconstructed using Roadmesh [see pic]. Immediately after installation, a multi wheeled tipper truck went off the road and became bogged down in the soft verge with dramatic results. As the road was effectively floating on the surrounding peat-based sub-soil, the truck was unable to extricate its-self and had to be dragged back on to the pavement by a heavy lift recovery vehicle [see pic]. Despite the high stresses on the extreme edge of the roadway caused by the tipper truck, the overlay held together thanks to the reinforcement function of the Roadmesh.

This road is still performing as intended 12 years on.

Maccaferri Roadmesh provides high tensile strength at low strain and, together with its unique 3D geometry, creates excellent aggregate interlock to optimise load transfer and shear resistance. The system was initially developed to inhibit reflective cracking in asphalt layers and research has shown that the incorporation of Roadmesh can enhance the working life of the whole pavement. The system has been used widely in Europe and has been shown to increase the duration of pavement maintenance lifecycles.

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