Road Reinforcement Solution for Forestry Roads Galloway Forest

Dumfries & Galloway, Scotland



TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Asphalt Pavement Reinforcement	**2001**	**Dumfries & Galloway Council**	**Dumfries & Galloway Council**	**Dumfries & Galloway Council**

PROD. RELATED

Challenge

Galloway Forest Park, established in 1947, covers nearly 300 square miles and is one of Scotland's most significant natural and commercial forestry assets. Attracting close to one million visitors annually while producing around 500,000 tonnes of timber each year, the park's road infrastructure is subjected to intense and continuous pressure. Heavy-duty forestry operations rely on the network daily, with over 60 heavily loaded logging trucks travelling across key routes.

One critical section of road, approximately two miles long, is built over boggy and unstable ground. These poor ground conditions result in differential settlement and reduced load-bearing capacity, which are significantly worsened by constant heavy vehicle traffic. The combination of weak subgrade and high axle loads leads to severe pavement deterioration, particularly in the form of cracking and rutting. This ongoing damage created a cycle of frequent maintenance, increasing costs and operational disruption. Dumfries and Galloway Council required a long-term road reinforcement solution capable of improving pavement durability, reducing maintenance frequency, and withstanding heavy traffic in challenging ground conditions.

MACCAFERRI LTD. 9 Blenheim Office Park Fenlock Road, Long Hanborough, Oxfordshire OX29 8LN, UK
PH:+44 1865 770555 E-mail: info.uk@maccaferri.com



Heavy traffic of over 60 logging trucks per day



RoadMesh ™ was installed in 2001

Solution

In 2001, the affected section of the C46 road was rehabilitated using a 60 mm reinforced asphalt overlay incorporating Maccaferri Road Mesh™, an advanced pavement reinforcement system designed for use within bituminous layers. As part of the road rehabilitation process, the existing worn surface was planed off, allowing the Road Mesh™ to be installed directly onto the prepared substrate before applying a new base and wearing course.

The inclusion of Road Mesh™ significantly enhanced the structural performance of the pavement by enabling the overlay to act as a unified, cohesive layer. Its high tensile strength at low strain allows it to absorb horizontal tensile stresses, which are a primary cause of reflective cracking in asphalt roads. At the same time, its unique three-dimensional geometry promotes strong aggregate interlock, improving load distribution and shear resistance. This results in reduced stress concentrations and minimises the formation of rutting and cracking, even under heavy logging traffic.

A follow-up inspection ten years later confirmed the long-term effectiveness of the solution. The reinforced road section showed no major signs of distress and required only surface dressing, demonstrating excellent durability and reduced maintenance needs. In contrast, adjacent unreinforced roads in nearby Ayrshire, exposed to similar traffic volumes and conditions, exhibited significantly greater levels of cracking and rutting.

This project highlights how Maccaferri Road Mesh™ provides a proven, cost-effective solution for road reinforcement, particularly in challenging environments such as weak subgrades and high-load forestry routes. By extending pavement lifespan and reducing lifecycle maintenance costs, it offers substantial benefits for infrastructure resilience and sustainability.



No distress after 9 years



Adjacent distressed unreinforced sections in Ayrshire

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