

NYLSTROOM ROAD REHABILITATION
NYLSTROOM, LIMPOPO PROVINCE

ROAD PAVEMENTS / SUB-BASE REINFORCEMENT

Product: RoadMesh™

Problem

Cracking, deformation, rutting and potholes were only some of the problems on the T55/1 between Modimolle (previously Nylstroom) and Marble Hall in the Limpopo Province. Escalating construction costs made this road near impossible to rehabilitate.

The road, which had been in use for quite a number of years, had been showing significant signs of distress, mainly due to its age and continued heavy loads, especially from farmers transporting their goods to and from the main markets. While transverse and longitudinal cracking was the most obvious problem, potholes and rutting were also present.

Most of the 83km road could be repaired through conventional patching and resealing. However, one particular section of the road was in such a state that it needed total rehabilitation. With good roadbuilding material becoming increasingly difficult to source, new technologies were sought to act as a replacement in this R3 million project.

Solution

Up to 7 000m² of RoadMesh™ was used in the 1 km section of the T55/1 maintenance project. The mesh was delivered to the site in rolls of 50m long by 3,5m wide.

RoadMesh™ comprises hexagonal woven steel wire mesh reinforced transversely with steel rods inserted through the twist during the manufacturing process. RoadMesh™ is used for asphalt reinforcement or to strengthen the deeper base layers and is incorporated within bound materials.

Before application, the pavement was milled to a depth of 300mm. The first 150mm layer was then stabilised with 3% cement to C3 replaced and compacted to 100% Mod.

The mesh was unrolled manually before being driven over by a pneumatic tyred roller to remove the inherent curvature due to rolling operations. The mesh was then secured by pegs at 10m intervals.

Client name:

NORTHERN PROVINCE ROADS AUTHORITY

Main contractor name:

BLACKTOP SERVICES BATAUNG

Consultant:

WATER SYSTEMS MANAGEMENT (PTY) LTD

Product used:

7000m² ROADMESH™

Construction info:

Construction date: NOVEMBER 2002

Completion date: FEBRUARY 2003



Before construction

Date: Nov 2002



Unrolling the mesh manually

Date: Jan 2003



Flattening the mesh

Date: Jan 2003

Normal paving operations could then continue with the placement of the second 150mm layer stabilised with 3% cement to C3 replaced and compacted with 100% Mod. The pavement was then capped with 25mm TPA premix as a wearing course.

Benefits

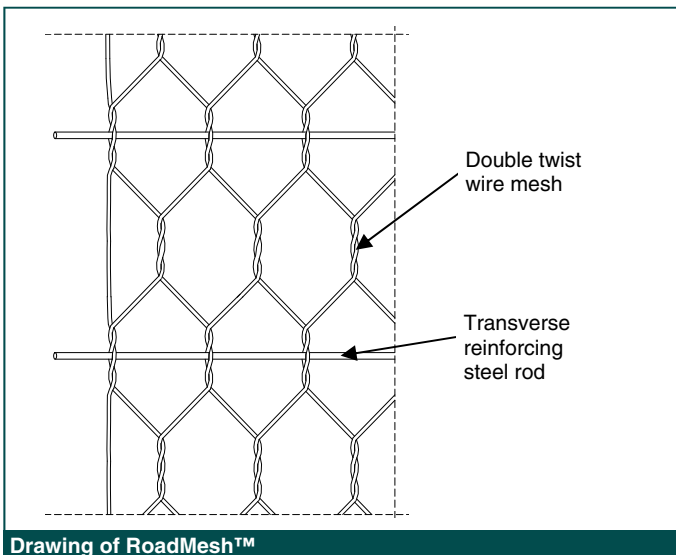
- The mesh is able to absorb the stress caused by reflective cracking by bridging the cracks. The mesh is interlocked into the aggregate matrix of the bound layer (whether stabilised cement or asphalt). This ensures that, if the aggregate matrix is disturbed by a crack stress discontinuity, the surrounding interlocked mesh will offer resistance to the crack stress under traffic.
- The presence of the mesh in the bound layer results in lowering of the maximum horizontal tensile strains at the base of the layer. It is therefore able to offer an increase in fatigue life, especially where high surface deflections are experienced (more than 0,5mm).
- Simplicity and ease of installation: Rolls of mesh were manufactured to the required width, unrolled, flattened and pegged. Normal paving operations were then continued.
- RoadMesh™ allowed for the use of in-situ material, further avoiding additional costs that would have been incurred by having to import material, as well as the opening of a borrow pit with its associated environmental implications.
- For the 1km section, the estimated construction cost of R850,000 was considerably cheaper than other conventional methods which could have been used.



Pegs at 10m intervals Date: Jan 2003



Placement of second layer Date: Jan 2003



Drawing of RoadMesh™

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