MACCAFERRI

CASE HISTORY

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REDUCING PAVEMENT REFLECTIVE CRACKING
BLAIR COUNTY, PENNSYLVANIA, USA

ROAD PAVEMENT REINFORCEMENT - ASPHALT OVERLAYS
Product: Road Mesh™

Problem

Pennsylvania DOT wanted to investigate new methods of rehabilitation of pavements that would offer increased durability and fatigue resistance. PennDOT elected to rehabilitate three highway pavements throughout the State, using new reinforcement technologies and monitor the results.

One of those highways, Route SR 453 through Blair County, is an existing concrete road. The pavement had fatigue cracks the entire width and length of the two mile stretch and needed repair. It was an ideal real-life test bed for Steel Paving Reinforcement Mesh.

Project site, showing typical fatigue problems

Solution

Maccaferri Road Mesh™ is a Steel Paving Reinforcement Mesh and it is typically installed within the upper bound layers of the pavement structure during new construction or rehabilitation. Road Mesh™ is a bi-directional structural reinforcement fabric manufactured from double twist steel wire mesh with integral transverse reinforcing rods. It is proven to provide additional tensile stress resistance to the pavement layers, thereby increasing the resistance to reflective cracking, surface rutting and fatigue.

Although Road Mesh™ was developed to reduce fatigue in the aspalt layers alone, research has shown that it can enhance the working life of the **whole** pavement structure, including the sub-base layers.

Delivery of Road Mesh™

Following the placement of a leveling course of asphalt, the Maccaferri Road Mesh™ Type L was deployed and flattened using a rubber tired roller. The mesh was then fixed to the road surface using 2” “Hilti” nails with an integral clip to grasp the mesh. (The fixing of Road Mesh™ is determined on a job-by-job basis, and may require more or less fixings as appropriate).

Deployment of Road Mesh™ using spreader bar

Client:

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

Main contractor:

NEW ENTERPRISE STONE & LIME

Designer:

PENNSYLVANIA DEPT. OF TRANSPORTATION

Product used:

40,000 SQ.Yd OF MACCAFERRI ROAD MESH™

Date of building:

SUMMER 2002

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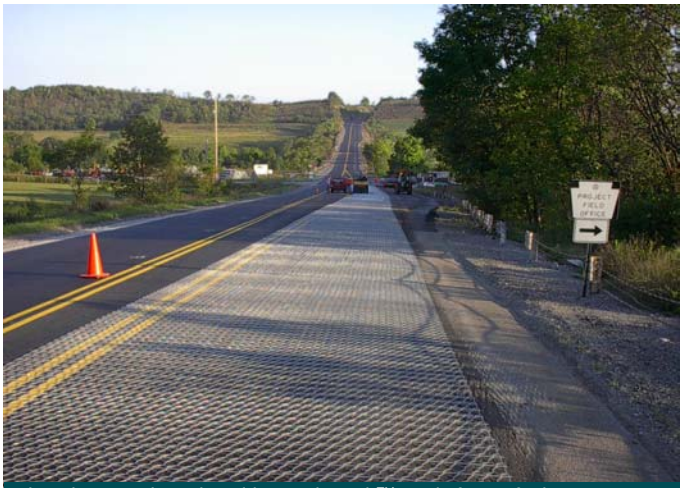
A 2” thick asphalt base course was then placed directly onto the Road Mesh™, followed by a 1” wearing course.

Areas of the project were on steep grades. To limit large shear forces being applied to the Road Mesh™, a tracked paving machine (rather than a wheeled macine) was used successfully to avoid lifting the mesh from the road surface during asphalt placement.

Under the project requirements, the Road Mesh™ had to be installed and covered by the asphalt base course by the end of the work period to allow traffic access. The Road Mesh™ was installed ahead of the paving operation without hindrance to the paving process.

Approximately 40,000 Sq.Yds of Maccaferri Road Mesh™ were installed on the 2 mile project in less than two weeks. Maccaferri personnel were on site to offer assistance throughout the installation.

Road Mesh™ after fixing to levelling course



View down project site with Road Mesh™ ready for surfacing

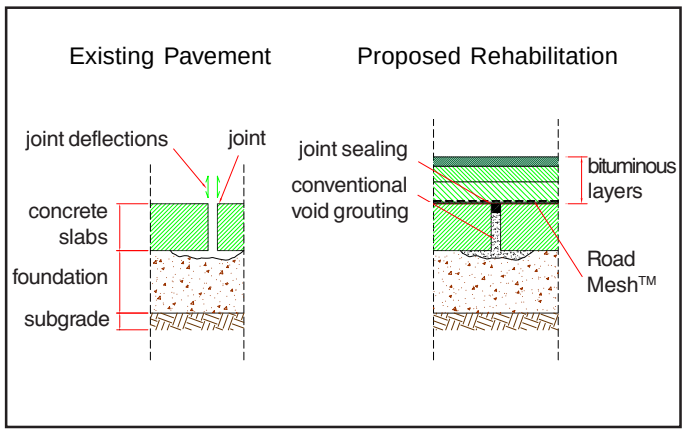


Table 1 - Road Mesh™ Specifications

Type	Mesh Wire ϕ mm (in.)	Breaking Load (kN) Mesh Wire / Transverse Rod	Transverse Rod ϕ mm (in.)	Tensile Strength kN/m (lb/ft) Longit. / Trans.
L	2.4(0.094)	1.9 / 5.1 (428 / 1146)	4.40 (0.173)	39 / 50 (2672 / 3426)
L1	2.2 (0.087)	1.6 / 3.9 (359 / 875)	3.90 (0.154)	32 / 35 (2192 / 2398)

Table 2 - Typical Dimensions and Tolerances

Length m (ft)	Tolerance	Width m (ft)	Tolerance
50 (164)	+/- 1%	4 (13.1)	+/- 5%
50 (164)	+/- 1%	3 (9.8)	+/- 5%
25 (82)	+/- 1%	4 (13.1)	+/- 5%
25 (82)	+/- 1%	3 (9.8)	+/- 5%

Other non standard sizes may be available upon request.

Road Mesh™ typical details

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