

### INCREASING PAVEMENT RUTTING RESISTANCE SEDGWICK COUNTY, KANSAS, USA

#### ROAD PAVEMENT REINFORCEMENT - ASPHALT OVERLAYS

##### Product: Road Mesh™

##### Problem

Sedgwick County, Kansas, was keen to investigate new methods of rehabilitation of pavements that would offer increased durability and shear resistance. A trial was initiated on a heavily trafficked highway utilizing new reinforcement technologies. The results were to be monitored over time.

83rd Street S. runs South out of Wichita, KS. It is an asphalt pavement which is subjected to high shearing forces as agricultural and heavily laden trucks execute a non-stop left turn from 83rd Street S, into Hillside Road. Severe rutting and 'shoving' of the asphalt surface meant that the junction area required resurfacing every 6-9 months to maintain ride quality. It was an ideal application for steel paving reinforcement mesh.

##### Solution

Steel paving reinforcement mesh is a recent innovation. It is typically installed within the upper bound layers of the pavement structure during rehabilitation or new construction. In common with bitumen impregnated geotextiles, Road Mesh™ offers resistance to reflective cracking. However, that is where the similarity ends. Road Mesh™ is a structural steel mesh and is proven to reduce surface rutting and fatigue resistance. Although Road Mesh™ was developed to reduce fatigue in the asphalt layers alone, research has shown that it can enhance the working life of the **whole** pavement structure, including granular layers.

The existing pavement was removed and new construction started from the base course. A 5" base course and 2" wearing course was to be placed. The Maccaferri Road Mesh™ Type L was installed 2" below the finished pavement surface. The Road Mesh™ was unrolled, and flattened using a pneumatic wheeled roller. It was then fixed to the road surface using 3" long nails with an integral square washer.

3" long fixings were required to provide adequate resistance to pull out in the base course which, due to the high ambient temperatures, was still relatively soft.

Client:

SEDGWICK COUNTY, KANSAS

Main contractor:

CORNEJO & SONS, WICHITA, KS

Consultant:

SEDGWICK Co. PUBLIC WORKS DEPT.

Product used:

2000 SQUARE YARDS ROAD MESH™

Date of building:

JULY 2002



Road Mesh™ delivery on project site



Road Mesh™ unrolled into position



Detail of Hilti fixing at junction between two rolls of Road Mesh™

The fixing of Road Mesh™ is determined on a job-by-job basis, and may require more or less fixings as appropriate.

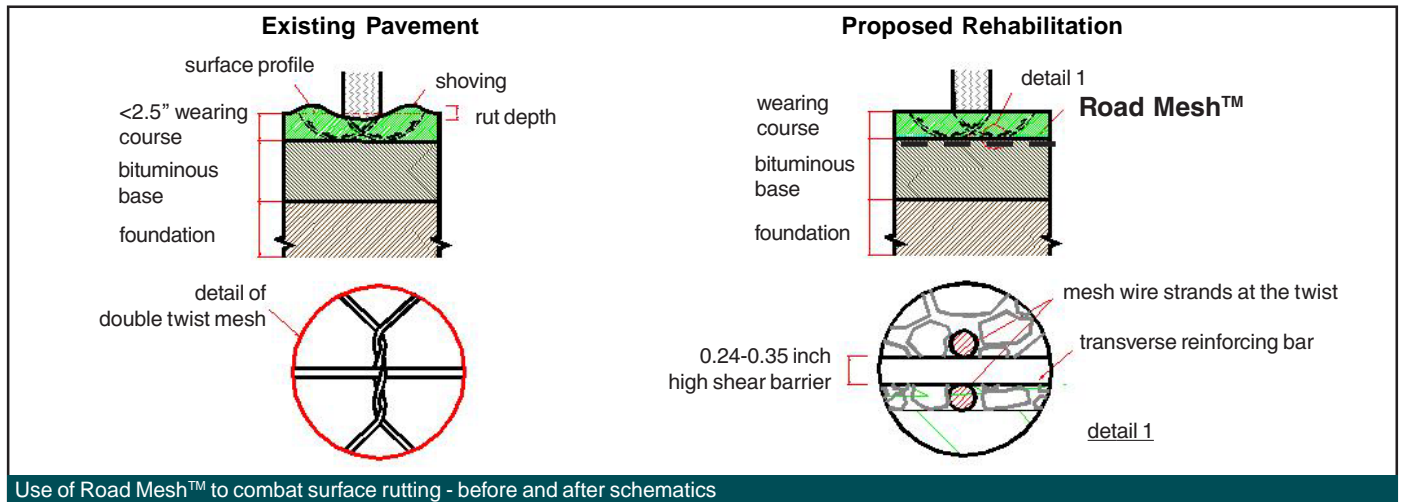
A tack coat was sprayed onto the secured Road Mesh™, followed by a 2" wearing course. 2000 SQY of Road Mesh™ were installed on this trial project.

Regular inspections following the installation revealed that the severe rutting and shearing normally apparent in the unreinforced remediation after this period, had not materialized. 12 months after the project completion, this performance has continued.

Were it not for the Road Mesh™ the road would have been resurfaced already.



Asphalt courses applied directly onto Road Mesh™



Use of Road Mesh™ to combat surface rutting - before and after schematics

**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)

Road Mesh™ typical details

**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.

## Headquarters - East Coast

10303 Governor Lane Blvd, Williamsport, MD, 21795  
Tel.: (301) 223 6910 Fax: (301) 223 4356

## MACCAFERRI INC.

E-mail: [hdqtrs@maccaferri-usa.com](mailto:hdqtrs@maccaferri-usa.com)  
Web site: [www.maccaferri.com](http://www.maccaferri.com)

## West Coast

3650 Seaport Blvd, West Sacramento, CA 95691  
Tel.: (916) 371 5805 Fax: (916) 371 0764