Marshalls

FIBRE REINFORCED PAVING

Fibre Reinforced Paving

Go from this with non reinforced paving...

... to this with fibre reinforced paving (simulated)

Innovation that works

Fibre Reinforced Paving offers improved performance for paved areas subject to occasional vehicular overrun.

Pavement failure will be reduced and will take longer to occur.

The hazards and visual impact of failure is vastly reduced, leading to safer, more pleasing and fully functional paved areas for all users.

THE PROBLEM

Pedestrian paved areas are often subjected to intermittent and occasional vehicle overrun, even when preventative measures are included within the layout of the scheme. Research has shown that the first 1-1.5m strip of pedestrian footpaths immediately adjacent to vehicular roadways is the most vulnerable to vehicle overrun. Damage to paving flags within these areas is likely, especially when the vehicles involved include HGVs, PSVs, building service, maintenance and emergency vehicles.

THE SOLUTION

Marshalls has developed the solution to this problem.

Utilising patented fibre technology, Marshalls Fibre Reinforced Paving offers increased resistance to failure from impact and over-loading. Incorporating STRUX™ synthetic structural fibre reinforcement, the toughness and post failure strength of the concrete flag is vastly increased.

When unit failure does occur, the failed flags actually continue to perform as if no failure has occurred, maintaining the long term integrity and performance of the paved area.

THE BENEFITS

Longer term performance, with significantly reduced maintenance and reinstatement costs are the immediate benefits of using Marshalls Fibre Reinforced Paving. The long term aesthetics of the paved areas are maintained, with no significant cracking, spalling or failure of the flags being visible to users of the paved areas, even after failure of individual units has actually occurred.

Pavement design, construction and installation are exactly the same as for non-reinforced flag units, imposing no additional handling or construction costs.

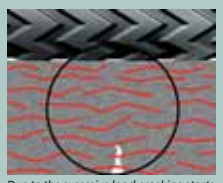
Marshalls Fibre Reinforced Paving address the failure of non-reinforced units exposed to occasional vehicular overrun. Broken, twisted and uneven flags that can cause the potential danger of trip hazards to pedestrians are dramatically reduced, leading to a safer, more pleasing and fully functioning paved area for all users.

Marshalls Fibre Reinforced Paving is available in a range of standard sizes and formats, allowing easy incorporation and use with

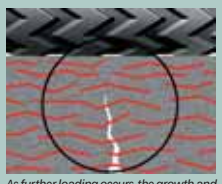
Fibre Reinforced Paving

How it works

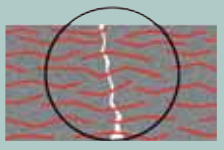
Fibre Reinforced



Due to the excessive load, cracking starts to form on the bottom face of the flag, at the point where the concrete is under tension

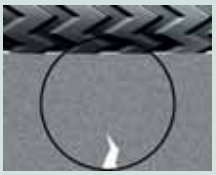


As further loading occurs, the growth and spread of the crack is significantly delayed by the fibres, which reduce the stress at the crack tip, as well as bridging the crack, holding the pieces tightly together.

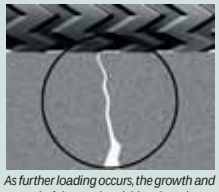


When the crack eventually passes through the flag to the top face, fibres continue to bridge the failure, having sufficient strength and pull out resistance to continue holding the pieces closely together, critically maintaining the alignment of the failed pieces. These then continue to perform as a complete flag unit, as if no failure has taken place.

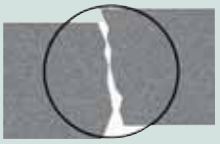
Non Reinforced



Due to the excessive load, cracking starts to form on the bottom face of the flag, at the point where the concrete is under tension



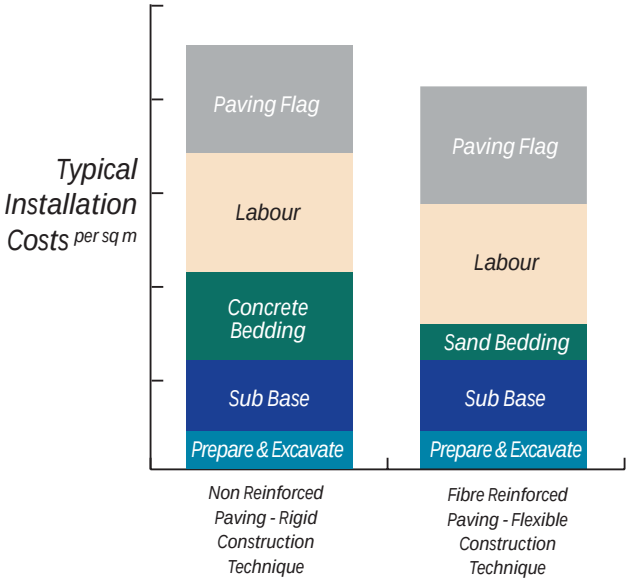
As further loading occurs, the growth and spread of the crack quickly takes place, passing through the flag to the top face. Movement and abrasion failure at the face continue to open up the crack.



As the two, now separate pieces, continue to move relative to each other, abrasion and crumbling continue to open up the crack face. Subsequent loading leads to further, separate movement of each piece, eventually leading to total pavement failure, unit failure, further misalignment and the presence of dangerous trip hazards.

REDUCED INSTALLATION COSTS

Marshalls research and development of Fibre Reinforced Paving has shown that the maximum performance benefits of the product are realised by using a flexible construction technique.



The sand bed and sand jointing used in flexible construction also has the added benefit of reducing the overall installation costs, meaning that, when prepared to rigid lay installation, an initial saving is made.

For further information and guidance on the correct use, specification and installation of Marshalls Fibre Reinforced Paving, contact our Sales Office on 0845 3020600 or our technical Advisory Services team on 08704 113344.

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Fibre Reinforced Paving
Commercial use
600 x 600 x 63mm, 450 x 600 x 63mm

Product Name	Concrete Fibre Reinforced Pimple Paving
Manufacturing Process	Hydraulically pressed concrete
Base Raw Material	Pigmented & unpigmented concrete with STRUX ™ 90/40 Structural Synthetic Fibre reinforcement
Governing Standards	All data where relevant to be established in accordance with BS 7263: Part 1: 2001, BS EN 1339:2003 & BS 7932:2003
Specification	
Nominal size	600 x 600 x 63mm & 450 x 600 x 63mm
Colour	Natural
Nominal Weight	600 x 600: 52kg, 450 x 600: 39kg
Transverse Strength	Typical mean of 6.0 MPa compared to a quoted mean of 3.7 MPa for standard non reinforced grey pimple paving
Durability	Mean of 1.0kg/m^2 with no individual result greater than 1.5kg/m^2
Abrasions Resistance	Wide Wheel Abrasion 20.7mm (specification <23mm)
Skid Resistance	Mean wet unpolished skid resistance value (UPV) : 76 (specification >45) Mean wet polished skid resistance value (PPV) : 70 (specification >45)
Size Tolerances	Length ± 2mm, Width ± 2mm, Thickness ± 3mm Deviations of flatness and bow (600 x 600) : maximum convex 2.5mm, maximum concave 1.5mm (length of gauge 400mm) Deviations of flatness and bow (450 x 600) : maximum convex 2.0mm, maximum concave 1.5mm Maximum differences between the measurement of diagonals : 5mm
Material Density	2300 kg/m^3 (typical)
Design Guidance	
Suitability	Laid in accordance with BS 7533 : Part 4 : 1998 suitable for the construction of footways for public adoption
Site Works	
Technical Information	Reference should be made to BS 7533 : Part 4 : 1998 & Interpave data sheets
Supply	
Packaging	All packs are suitable for crane off- load. Fork lift off-load on request
Paving units per pack	16 No
Average pack weight	600 x 600 : 832kg & 450 x 600 : 624kg

Paving Product	Thickness (mm)	Plan Size (mm)	Edge	BS Size	Weight (kg approx)	Grey (Ref No.)
Pimple Texture	63mm	450 x 600	Square	A63	39.0	**FL1505650**
		600 x 600	Square	B63	52.0	**FL1505600**
Conservation	Fibre reinforced paving products in Marshalls Conservation range will be available during 2004[1]					
Saxon	Fibre reinforced paving products in Marshalls Saxon range will be available during 2004[1]					
Perfecta	Fibre reinforced paving products in Marshalls Perfecta range will be available during 2004[1]					

[1] Contact our sales office for further information

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For further information on fibre reinforced paving contact our sales office: 0845 3020600 or our technical advisory service: 08704 113344
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