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Mastic Asphalt Highways

Technical Guide

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Introduction

The Mastic Asphalt Industry are aware that traffic levels on our highways are greater than ever.

Therefore, demands on road surfaces and the requirement to repair them quickly has never been higher. Local Authorities cannot afford for roads to be shut longer than necessary and they must therefore rely on the industry's leading maintenance and reinstatement systems.

MAC's Manufacturing Members are at the very forefront of bituminous technology and UK manufacturing and are committed to delivering total excellence, from product development and design through to technical specification and consultation during the installation process.

Working closely with local authorities, National Highways and many of the UK's leading specialist installation contractors, these Manufacturers have not only built an enviable reputation, but also a portfolio of prestigious projects the length and breadth of the country.

Mastic asphalt is the ideal choice for a wide range of highways applications, offering many benefits including:

- Proven durability for long-term road reinstatement
- No void system - impermeable and monolithic refurbishment solution
- No compaction required with roller or plate
- Quick and easy to lay with no extended road closures
- System materials guarantee available
- Sustainable material which is 100% recyclable
- Versatility - suitable for numerous applications
- Installed by trained craftsmen
- Excellent value for money

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Ironworks Reinstatement System

Overview

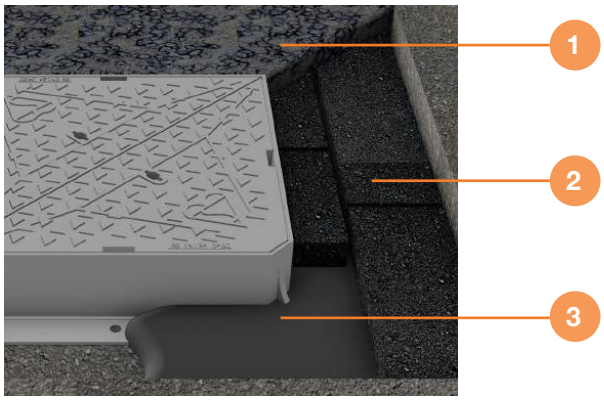
The Mastic Asphalt Ironworks Reinstatement System is a long-lasting repair solution designed to reinstate failing surfaces surrounding manholes, drainage gullies and other public utilities ironworks. Mastic Asphalt has a long-track record of being specified by local authorities and utilities across the country for over twenty years.

System overview

The Mastic Asphalt Ironworks Reinstatement System is a simple two part system comprising of a mastic asphalt grout and a mastic asphalt brick.

The brick forms the bulk of the system providing dimensional stability and aid the cooling of the grout. Bricks can be broken as necessary depending on the shape and size of the reinstatement.

Grout is mastic asphalt utilised as the in-fill material. The molten material flows around the Bricks to create an impervious and voidless reinstatement system.



System benefits

The Mastic Asphalt Ironworks Reinstatement System offers the following benefits:

- No costly second visit - mastic asphalt gives a long-term road reinstatement installation every time
- No void system - Impermeable and monolithic mastic asphalt reinstatement solution
- No compaction required - No roller or plate compactor required and no more damage to ironwork seating
- No extended road closures - Quick and easy to lay for a faster installation. Installation can be completed in under 30 minutes
- Smoother transition from ironwork to flexible pavement for improved structural continuity
- System materials guarantee available from Manufacturers
- Conforms with BS EN 13108-6

Table 1

	PRODUCT	DESCRIPTION	FORMAT / NOMINAL WEIGHT
1	Grout (Final Layer)	Mastic asphalt utilised as the in-fill material, it flows around the bricks to create an impervious and voidless reinstatement system	Block / 20kg
2	Brick	Manufactured with a high percentage of recycled material and forms the bulk of the system providing dimensional stability and aiding the cooling of the grout	Brick / 6kg
3	Grout (First Layer)	Mastic asphalt utilised as base layer	Block / 20kg

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Bridge Expansion Joint System

Overview

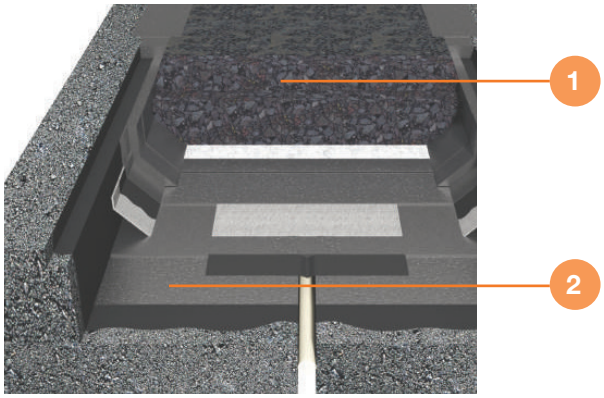
Bridge expansion joints can become distorted through heavy, slow moving vehicles or overloading, leading to irreversible damage - especially with low movement asphaltic plug type systems. Mastic Asphalt Bridge Expansion Joints offer a heavy duty, highly flexible solution.

System overview

The Mastic Asphalt Heavy Duty Bridge Expansion Joint System is a structurally enhanced movement joint ideal for repairing and replacing such damage, able to accommodate the movement inherent in bridges.

The system can be installed to any depth or width, and any localised surface deterioration can be taken into account, avoiding the need to use a more expensive system of jointing.

MAC Manufacturer Members have a fully-registered National Highways product.



System benefits

The Mastic Asphalt Heavy Duty Bridge Expansion Joint System offers the following benefits:

- Versatile and waterproof system
- Rapid installation reducing delays and inconvenience
- Unlimited joint width and depth
- Long term durability
- Withstands heavy traffic
- Cost effective
- Range of finishes to match different surfaces and skid resistance levels
- High bond strength to substrate
- Accommodates differential movement

Table 2

	PRODUCT	DESCRIPTION	FORMAT / NOMINAL WEIGHT
1	Mastic Asphalt Heavy Duty Bridge Deck Epansion Joint	A high-modulus material that uses a binder of SBS modified bitumen and Trinidad Lake Asphalt giving low temperature flexibility and high temperature stabilities required for heavily trafficked roads	Block / 20kg Hot-charge (molten state)
2	PSB	A rubberised waterproofing layer designed to increase flexibility and improve adhesion to existing surfacing	Block / 12kg

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Inlaid Crack Repair System

Overview

The Mastic Asphalt Inlaid Crack Repair System is ideal for completing rapid road repairs. It can be installed quickly and efficiently and is designed to withstand even heavy traffic, providing a long-term solution to reflective cracking in tarmac or concrete.

System overview

The structurally enhanced material supports the adjacent wear surfaces and can accommodate movement within the substrate - and its impervious nature protects substrates from deterioration caused by moisture and de-icing salts.

A wide variety of finish options is available, all meeting the National Highways' highest skid-resistant specifications.

System benefits

The Mastic Asphalt Inlaid Crack Repair System offers the following benefits:

- Simple, versatile system
- Unlimited repair width and depth
- Rapid installation reducing delays and inconvenience
- Long term durability
- Withstands heavy traffic, including aircraft, trucks and tracked vehicles
- Cost effective
- Range of finishes to match different road surfaces
- High bond strength to substrate
- Accommodates differential/substrate movement

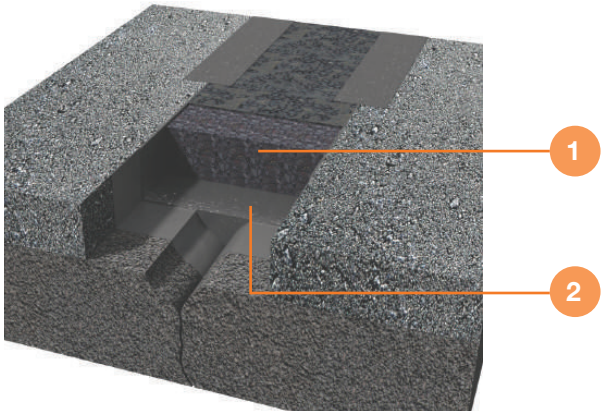

Table 3

	PRODUCT	DESCRIPTION	FORMAT / NOMINAL WEIGHT
1	Inlaid Crack Repair (ICR)	A high-modulus material that uses a binder of SBS modified bitumen and Trinidad Lake Asphalt giving low temperature flexibility and high temperature stabilities required for heavily trafficked roads	Block / 20kg Hot-charge (molten state)
2	PSB	A rubberised waterproofing layer designed to increase flexibility and improve adhesion to existing surfacing	Block / 12kg

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Transitional Joint System

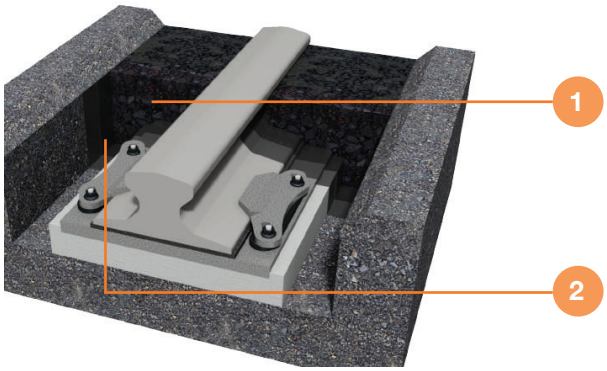
Overview

Where road surfaces meet metal tram and train rails, severe fatiguing and traffic damage can occur. This is caused not only by road vehicles, but also from the increased vibration and excessive tensile movements within the rails at crossovers and bends. The Mastic Asphalt Transitional Joint System has been specifically developed to resist these stresses.

System overview

The Mastic Asphalt Transitional Joint System offers a flexible and long-lasting solution. In particularly heavy traffic areas, an additional 20mm buffer zone can even be added on either side of the Mastic Asphalt sections.

The area is finished with Mastic Asphalt and topped by an anti-skid dressing equal to the highest National Highways skid resistance specification, while the actual finish can be aesthetically matched to the adjacent road surface.



System benefits

The Mastic Asphalt Transitional Joint System offers the following benefits:

- Versatile and waterproof system
- Rapid installation reducing delays and inconvenience
- Unlimited joint width and depth
- Long term durability
- Withstands heavy traffic
- Cost effective
- Range of finishes to match different surfaces and skid resistance
- High bond strength to substrate
- Accommodates differential movement

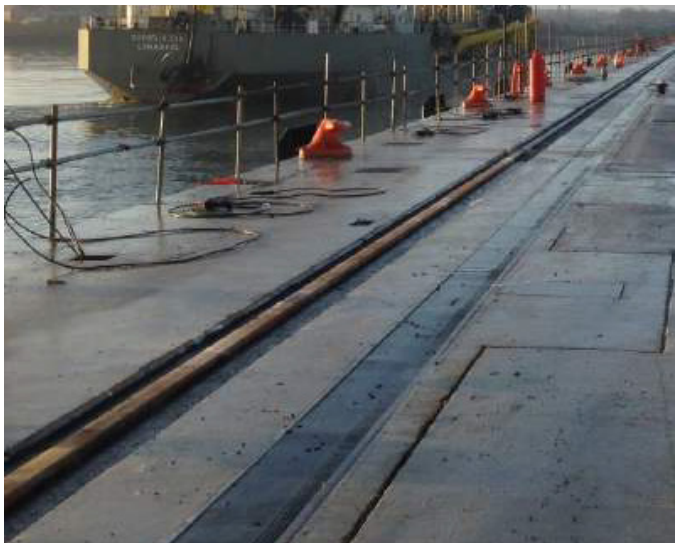


Table 4

	PRODUCT	DESCRIPTION	FORMAT / NOMINAL WEIGHT
1	Rail Infill (RI)	A high-modulus material that uses a binder of 585 modified bitumen and Trinidad Lake Asphalt giving low temperature flexibility and high temperature stabilities required for heavily trafficked roads	Block / 20kg Hot-charge (molten state)
2	PSB	A rubberised waterproofing layer designed to increase flexibility and improve adhesion to existing surfacing	Block / 12kg

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Road Surface Patch Repairs

Overview

The combination of increased traffic levels and severe weather events has led to a marked increase in potholes in recent years - and their appearance puts pressure on highway engineers to repair them quickly with minimum disruption. Mastic asphalt offers a simple solution for road surface patch repairs.

System overview

The Mastic Asphalt Patch Repair System has been specifically designed to address the pothole problem, along with larger delaminated areas such as bus stops, HGV pull-ins or areas with severe sub-base problems.

The material arrives on site ready mixed, and after removing the defective area by cold milling it is levelled into place. Traffic can pass over the area within just two hours, meaning not only less inconvenience for road users but lower highway maintenance costs.

System benefits

Mastic Asphalt Road Surface Patch Repairs offer the following benefits:

- Minimum depth of repair 40mm
- Traffic can return within just 2 hours
- No maximum depth
- Repairs thin wearing layers with no need for large patch removal, including SMA
- Rut resistance @ 50°C 3mm/hr
- Excellent skid resistance properties
- Long service life, even in high shear situations and standing traffic areas
- Proven in even the most demanding situations

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Environmental Statement

A carbon-zero industry

The Mastic Asphalt Council is a trade association representing specialist mastic asphalt contractors and manufacturers. It provides member support in all aspects of manufacture and application as well as providing architects, surveyors, local authorities and members of the general public with free technical and practical advice.

All mastic asphalt produced by member manufacturers and applied by MAC contractors is carbon zero. This “carbon off-set” policy ensures that unavoidable emissions in both manufacture and application are calculated by an independent assessor; this information is then converted into a monetary amount (levy) which is used to support carbon reduction initiatives in both the UK and Africa (further details are available upon request).

Manufacture

MAC’s manufacturers are committed to continuing the development of reduced temperature melt materials thus further minimising the industry’s energy consumption.

Compliance

MAC strives to ensure that all member activities meet relevant regulation and legislation at a national and local level.

Suppliers

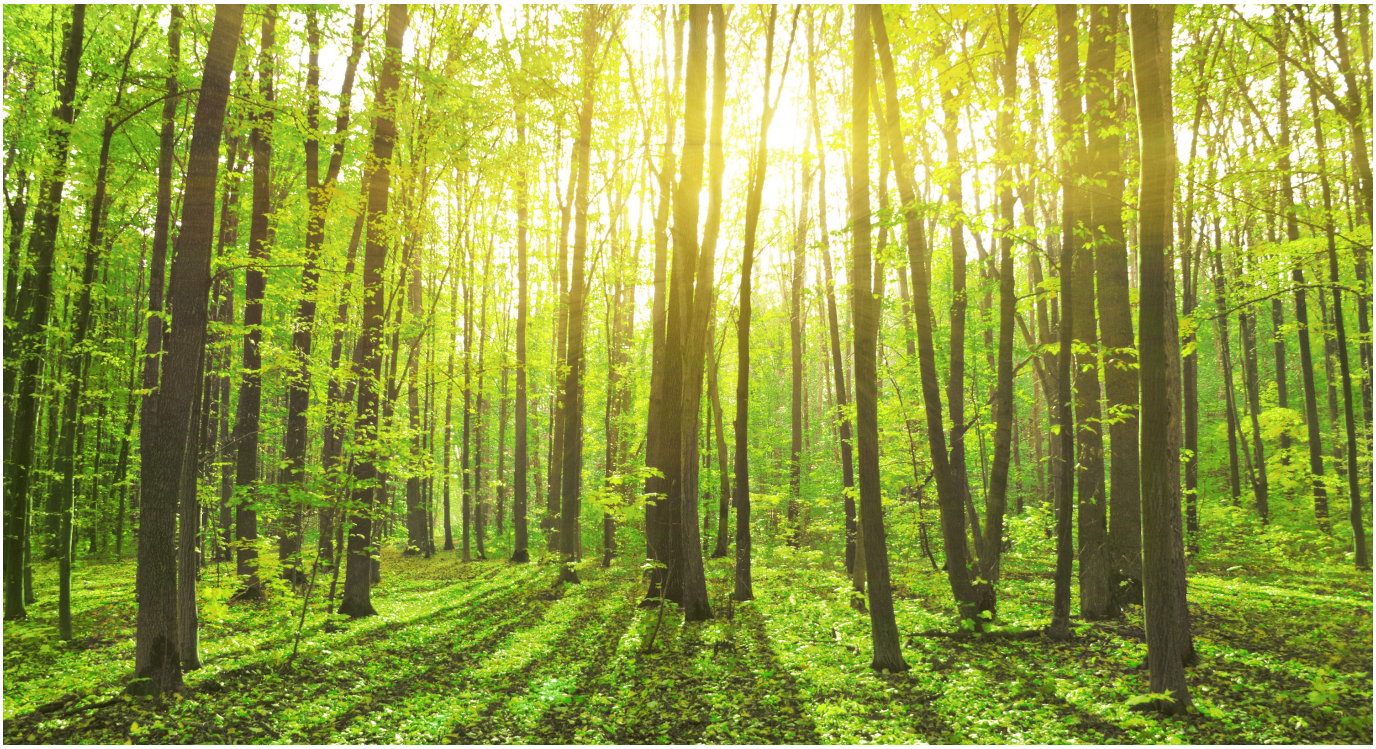
MAC encourages its members to work with material suppliers, contractors and subcontractors through partnerships designed to develop sustainable activities and best practice.

Environment and resource use

MAC campaigns with its members to demonstrate that any activities have a controlled and mitigated environmental impact, that they are safe in their intended use and are efficient in their consumption of energy and natural resources.

Continuous improvement

MAC works with members to develop a framework for continual improvement by conducting regular audits to improve understanding, customer and client needs and community expectations.



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Mastic Asphalt Council
Promoting excellence in construction