

PRESERVATION OF THE ROAD HERITAGE

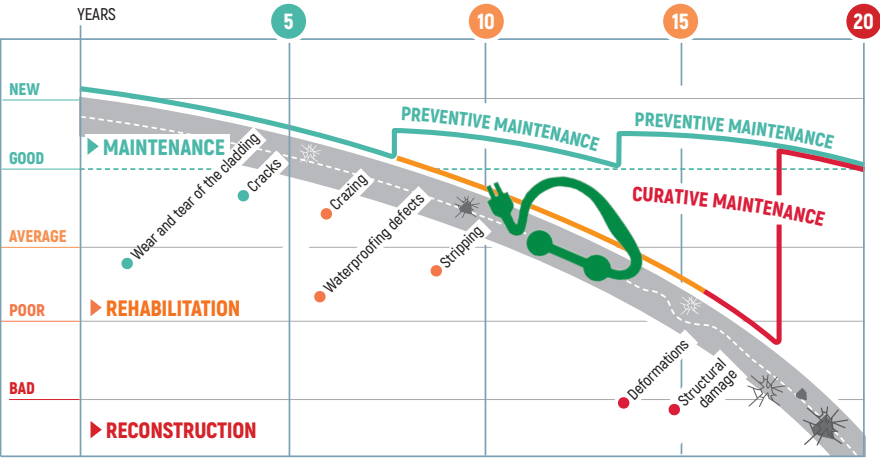
Preventive surface maintenance, occasional repairs, more or less structural curative maintenance... bitumen emulsion techniques meet your various needs to preserve your roads and streets in the long term, while ensuring the safety of users. In parallel with "hot" techniques, they offer a choice of solutions depending on the nature and level of deterioration of the pavement.

Bitumen emulsion techniques allow for particularly economical preventive maintenance.

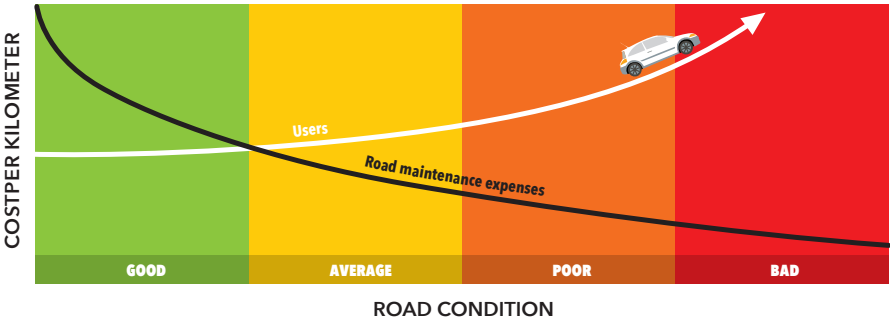
Generally less rigid, materials made from bitumen emulsion are particularly well suited to pavements with a flexible structure and low to medium traffic. Some formulations also allow for use in heavy traffic.

These cold techniques offer comfort to applicators. They are energy efficient and contribute to the reduction of greenhouse gas emissions from road works.

ROAD AGEING AND MAINTENANCE



IMPACT OF DELAYED ROAD MAINTENANCE ON ROAD USERS



Source SABITA, Cape Town 2012

ASPHALT CONCRETE
BITUMINOUS EMULSION



MICRO-SURFACING



SURFACE DRESSING



IN SITU RECYCLING WITH
BITUMEN EMULSION

BITUMEN EMULSIONS
...
Relevant solutions for road maintenance

*With flexible and energy-saving techniques
let's preserve our road heritage*



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THE DIAGNOSIS



Regular diagnostics on a network as a whole allow monitoring of its average condition. The manager will be able to highlight the consequences of any maintenance deficiencies and will be able to redirect his or her maintenance policy and/or priorities in order to correct any deviations from the minimum serviceability targets as best as possible.

Diagnostics should be carried out at regular intervals to monitor the condition of the pavement without waiting for the untimely detection of more or less serious deterioration. Today, high-performance investigation equipment is available to record condition parameters (visual aspects, deformations, structural performance, etc.) and the tools to exploit them. It is thus possible to study maintenance scenarios and to select the optimal one from a technical and financial point of view.



The diagnosis includes at least a visual examination of the surface defects.

Structural examinations by drilling, coring and/or deflection measurements will complete this first examination if necessary.

SURFACE WEAR

The chippings are polished by the traffic and the pavement gradually loses its roughness.

- > Loss of pavement surface drainage
- > Loss of vehicle grip on wet roads (compromised safety)

YOU MUST

- > strengthen the grip

CRACKING OF THE WEARING COURSE



Cracks appear in the pavement and open up progressively, particularly through lip spalling. Transverse cracks are often due to the rigid nature of the structural layers.



Longitudinal cracks, mainly at the wheel arches, are a sign of structural weakness. In the absence of appropriate maintenance, they often develop into cracks.

- > Water penetration at the interface of the layers and towards the bottom of the structure
- > Structural fragility

YOU MUST

- > ensure watertightness
- > possibly reinforce the structure if it is not (any longer) adequate for the amount of traffic.

TYPES OF DAMAGE AND ACTIONS REQUIRED

STRIPPING AND POTHOLES



This stage of deterioration usually occurs after the wearing course has crazed. Material is torn out of the layer, the defects become deeper and potholes are formed by starting over all or part of the thickness of the wearing course, or even the underlying structure layer.

- > Stagnation and penetration of water at the interface of the layers and towards the bottom of the structure
- > Rapid increase in the extent of degradation

YOU MUST

- > emergency repair
- > treat adjacent cracks before they develop into potholes (over-seal banding, sealing, etc.)

DEFORMATIONS



The cross profile of the roadway is deformed by traffic (at wheel arches, at the edges, and/or at specific points...). The linear deformations disturb the way of driving, the hollows retain water.

- > Danger of losing control of driving
- > Water penetration if cracking associated with deformations

YOU MUST

- > correct deformations
- > possibly reinforce the structure if it is not (any longer) in line with the amount of traffic

CHOICE OF ADAPTED TECHNIQUES

ACTIONS NEEDED YOU MUST	EMULSION SOLUTIONS					
	SURFACE MAINTENANCE			REPROFILING		STRUCTURAL* MAINTENANCE
	Surface dressing (SD)	Micro-surfacing (MS)	Emulsion asphalt concrete (ACBE)	Cold mix asphalt	Emulsion stabilized aggregates (GE*)	In-place pavement retreat
Improve skid-resistance (braking distance)	●	●	●			
Ensure waterproofing	●	●	●		●	●
Repair emergencies... (crack/pothole)			●	●	●	
Adjust slight deformations		●				
Correct deformations			●	●	●	●
Correct severe deformations						●
Maintain the elevation datum	●	●				●
Strengthen the structure facing the heavy structure						●
Reduce inconvenience to the user: • by the speed of implementation • by eliminating induced traffic	●	●				
						●
Recycle pavement materials to be reclaimed						●

* If the formula allows it, these techniques can be "circulated" for several months, or even several years, before receiving the final wearing course as part of a progressive development.

The guide "Maintenance using bitumen emulsion techniques" specifies the content of this brochure and describes in particular each of the techniques (choice of formulations, fields of application, advantages and limits).