



CODE OF PRACTICE FOR RE-TEXTURING



Foreword

This first edition of the Code of Practice has been produced by the Road Surface Treatments Association (RSTA) Re-texturing Sub-Committee to embrace industry best practice and to reference current specification guidance contained within VOLUME 7 DESIGN MANUAL FOR ROADS AND BRIDGES HD 37/99.

This document has been peer reviewed by ADEPT Soils, Materials, Design and Specifications Committee.

The information contained herein is intended to represent industry best practice. No liability is accepted by RSTA or ADEPT for any damages caused to property or personal injury resulting from using the guidance contained within this document.

RSTA is the Road Surface Treatments Association www.rsta-uk.org

ADEPT is the Association of Directors of Environment, Economy, Planning and Transport
www.adeptnet.org.UK

RSTA Code of Practice for Re-Texturing

CONTENTS	PAGE
1. Preamble	4
1.1 General	4
1.2 Health, Safety, Environment	5
1.3 Training	6
1.4 Quality Assurance	6
2. Selecting The Correct Treatment	6
3. Planning, Programming and Coordination	8
3.1 Site Information	8
3.2 Contract Planning	8
3.3 Programming	8
3.4 Contract Cost Considerations	9
4. Traffic Management	9
4.1 Considerations	9
4.2 Selecting The Correct Traffic Management System	9
4.3 Method of Working and TM Implementation	10
5. Mechanical Plant and Operation	10
Appendix A - Checklists	11
Appendix B - Re-Texturing Techniques	12
Appendix C - References	15
Appendix D - Photos	16
Appendix E: Appropriate circumstances and treatments for re-texturing bitumen-bound surfacings	21

1 PREAMBLE

1.1 General

To the highway engineer, surface re-texturing provides a quick, efficient and cost-effective way of maintaining skid-resistant road surfaces. To obtain the best results it is essential to ensure the correct re-texturing technique is employed and to plan the work carefully. The speed of the re-texturing operation and the short duration of the works helps to minimise road user delays and provides a significant benefit to both clients and motorists.

The purpose of re-texturing is to restore adequate levels of micro and/or macro texture and thereby skid resistance. This latter quality plays a major part in crash / collision reduction and was highlighted by the initiative of the Department of Transport in 1987 when the Minister introduced minimum mean summer SFC values for motorways and trunk roads. The importance of surface texture has been highlighted by **TRL Report LR 286**, which stresses that texture depth is important under both wet and dry conditions.

Up to date guidance is available in the **Design Manual for Roads and Bridges (DMRB): Volume 7 Section 5 Part 2 - HD 37/99. (See also Appendix C – References)**. The DMRB is available from www.dft.gov.uk/ha/standards/dmr/b/.

A useful way of comparing the effectiveness of re-texturing compared to asphalt overlays and other techniques, which involve applying materials to the existing road surface, is to express it in terms of a 'cost life index'. This is the cost per square metre of the work divided by the satisfactory life in years. It provides a measure of the 'value for money' which the highway authority is achieving. A low 'cost life index' and 'high value for money' is the result of using economic treatments and high quality installation.

The purpose of this Code is to identify the important aspects of the various re-texturing techniques and to refer to other documents relating to good re-texturing practice and so give practical guidance on achieving high quality.

A number of re-texturing techniques are identified in **Volume 7 Section 5** of the **DMRB** (see also **Appendix B – Techniques**) as follows;

- Bush Hammering
- Shot Blasting
- Grooving/Grinding
- Longitudinal Scabbling
- Orthogonal grooving *
- Carbonising *
- Water Jetting

There is clearly a range of techniques available in UK and it is vitally important for the correct treatment to be specified to deliver the correct end result. Where appropriate secondary sweeping may need to be implemented several days after the initial treatment. Traffic management might even have to be implemented for difficult or potentially dangerous sites.

Note: techniques identified * are not endorsed by the RSTA. The **Orthogonal** technique has apparently been withdrawn; **Carbonising** processes are now little used for retexturing purposes due to environmental and safety issues.

1.2 Health, Safety and Environment

All those involved in preparing and executing re-texturing operations have a legal duty of care for the health, safety and welfare of both the operatives carrying out the works, those who come into contact with the operation whilst in progress and during aftercare.

The planning and organising for health, safety and environmental issues must commence as soon as a re-texturing programme is envisaged. The **Construction Design and Management (CDM) Regulations 2007** will apply to most re-texturing operations. However, the works are only notifiable to the HSE *should* the duration of the works at a particular location be expected to exceed 30 days or 500 person-hours.

Therefore clients are urged to follow closely the advice in the relevant CDM Approved Code of Practice as they have the responsibility under the new version of the Regulations for initiating the framework for safe working practices. This will enable the CDM Co-ordinator and Principal Contractor to plan and prepare the information and documentation necessary to ensure the specific hazards are identified on the various sites and the level of risk that is envisaged. This must take into account the nature of the site, the traffic management requirements and any special health, safety and environment issues that have become evident during the pre-tender stage, (ensure the right information is provided to the right people at the right time).

The Client should employ a competent Contractor with a demonstrable track record and have in place appropriate safety, quality and environmental management systems. National Highway Sector Scheme 13 (Surface Treatments) is designed to regulate workforce training, competency and quality for operatives and supervisors working on the highway network. The aim is for re-texturing to become incorporated within NHSS 13.

Once the contractors have been selected, the pre-construction information contained in the tender document should be detailed enough for the prospective contractors to take account of the health, safety and environment issues in their tender submission.

On the appointment of the Principal Contractor to carry out the re-texturing operations (this might not be the Retexturing Contractor, but is likely to be for Local Authorities in most instances) it will be his duty to prepare a detailed Health and Safety Plan for that particular contract or works from the pre-construction information supplied by the Client, Designers and CDM-Coordinator. This must itemise the methods to be employed to overcome the specifically identified hazards and risk reduction measures that will be in force on this contract. They must also ensure adequate welfare is provided from the start of the contract.

Once the works commence the Principal Contractor is responsible for the control of health, safety and environmental matters. Liaison with the Client or Sub-Contractor, Police and the general public on issues of congestion, diversions or closures must be ongoing throughout the contract.

The Principal Contractor has additional duties under H&S legislation in particular to look after the health and safety not only of his own employees but of other persons who work alongside

them and also of the passing public. Written, specific risk assessments must be prepared by the Principal Contractor or Sub-Contractor, which can be used to identify control measures for both physical and chemical hazards, where appropriate. The measures must form part of the Contractor's safe systems of work, which enhance the safe behaviour of the workforce as well as protect the general public during the various stages of the works. These measures must be communicated to all involved in the project.

Account must also be taken of environmental factors with pollution from fumes, noise and dust being the main concern during the work phase. Disposal of waste and protection from spillage and contamination are other considerations when looking at the overall re-texturing activity. The noise levels of all plant should be ascertained and all operatives must be provided with the correct hearing protection as necessary.

Carbon management is becoming an increasingly important issue for client bodies and highway maintaining authorities are increasingly expected to demonstrate carbon savings on contracts. To illustrate the potential carbon savings from using re-texturing, preliminary research by the University of Nottingham and RSTA on the mechanical re-texturing bush hammer technique indicates up to a 90% saving on CO₂, 'Cradle to Laid' compared to 40mm asphalt surface course (assuming 50kg CO₂e /t for asphalt).

1.3 Training

The selection of the appropriate re-texturing technique / treatment is dependent on a number of factors. To ensure client bodies are aware of the options available the RSTA runs a series of training seminars, details available on www.rsta-uk.org (see also **Appendix B – Techniques**).

National Highway Sector Scheme 13, where appropriate, defines the minimum qualifications required for all personnel involved in the execution of re-texturing techniques. It is the RSTA's view that a competent qualified workforce makes a fundamental contribution to achieving high quality durable re-texturing.

1.4 Quality Assurance.

Re-texturing contractors generally operate to first party quality assurance schemes. However the intention is to embody re-texturing techniques within National Highway Sector Scheme 13 which requires contractors to become registered to BSEN ISO 9001. The RSTA acts as the chair of the Sector Scheme 13 Technical Advisory Committee.

2 SELECTING THE CORRECT TREATMENT

It is essential to choose the correct re-texturing treatment when planning to restore surface characteristics (**see also Appendix B**) to ensure that the existing surface can in fact be treated and that the required level of skid resistance can be restored for the required length of time. Choose the right technique and it is likely that the process can be undertaken again at the same location and on the same surface.

It is important to note that Re-texturing will not cure any underlying problems within the pavement structure and in these circumstances it should be regarded as a temporary holding measure until a permanent solution can be undertaken.

RSTA Code of Practice for Re-Texturing

Whilst process specific specifications are usually available, it must be remembered that the resulting treatment can only be as good as the surface that is being treated. It is only improvements in texture – micro and macro – that will be achieved, NOT improvements to the condition of the surface course itself. Where the aggregate in the existing surfacing is not capable of resisting the polishing action experienced at that site then the restoration of skid resistance will only be temporary.

Treatments that remove surface matrix must be used with caution, particularly on ageing surfaces, to ensure aggregate support is not removed. Treatments that impact the surface must similarly be well controlled – too great an impact pressure will potentially dislodge surface aggregate.

Accordingly, the resulting improvements can be measured by texture depth and / or surface friction measurements. Contractors must assume full responsibility for the quality of the work undertaken and to apply their experience to deliver the best possible outcome. Clients can specify at the outset what they are looking for in terms of improvement, essentially clients can specify end-product performance, but must be realistic in their expectations.

It is essential that the right treatment is chosen. There should be **early contractor involvement** between contractors and their clients, the purpose of which is to ensure total understanding of what the individual treatments provide.

Guidance on the range of re-texturing treatments available can be found in **Table 11.1 ‘Appropriate circumstances and treatments for retexturing bitumen-bound surfacing’**, in the **DMRB Volume 7 Section 5 Part 2 HD37/99** reproduced in Appendix E.

Additionally, as with all specialist highway maintenance processes / techniques, the quality of the treatment is totally dependent upon the effective maintenance and condition of the plant and equipment along with the relevant training, knowledge and skills of the operatives. This should be supported by good company management and relevant experience.

It is also important that Clients inspect/measure sites immediately before and after treatment, supported by appropriate testing, to ensure that they achieve the desired result.

The following are some of the factors the client should consider in selecting the appropriate treatment:

- It is essential to make the right choice - all re-texturing processes **are NOT the same**
- Assess the suitability of a particular re-texturing process and the type and condition of the existing road surface (what needs improving? Micro, Macro texture or both?)
- Assess the potential weather implications (not all processes are weather independent)
- Bear in mind that any treatment that essentially *cuts/grooves* the surface will leave *islands* of potentially polished aggregate between the *cuts/grooves*
- Restoration of micro texture is fundamental if optimum levels of skid resistance are to be achieved
- Restoration of macro texture becomes increasingly important – in addition to micro texture – as vehicle speeds increase
- Ensure a consistent retextured finish has been achieved across the full treated width
- Seek professional advice.

Mechanical and/or pressure wash sweepers as appropriate are used to clean the road after re-texturing is carried out.

3 PLANNING, PROGRAMMING AND CO-ORDINATION

3.1 Site Information

Before any planning or re-texturing is undertaken, the site must be defined and its characteristics established. It is important that the person in charge of the re-texturing operations fully understands the type and extent of the work required; also the effect that particular treatments might have on localised weak or deficient areas. These should be identified and, if appropriate, clear instructions given to the contractor what action should be taken.

One aspect of this is to develop sufficiently detailed site information. It is important to identify the lengths of road and draw up a schedule indicating the sections of road to be treated. The condition, length and average width of each section should be identified along with a sufficiently detailed location map. To assist all concerned, a clearly understandable and marked-out site using a system such as a line, arrow and job number on the road surface is recommended.

The Client will provide the following information (where known);

Details of the site to be treated in terms of its extent and location, its Site Category (HD 36/06 refers) and commercial vehicle traffic levels.

Any restrictions on working hours, occupation periods or minimum road widths to be maintained.

Details of the existing surface type.

Details of the existing properties in respect of skid resistance (as measured by SCRIM, Griptester or Pendulum) and/or macrotexture as measured by the patch method in EN 13036-1 or SCANNER data.

The target skid resistance (as measured by SCRIM, Griptester or Pendulum) and/or macrotexture required to be delivered by the retexturing process immediately after treatment and maintained.

A suggestion as to the most appropriate treatment as set down in HD37/99 Table 11.1.

3.2 Contract Planning

Any contract should commence with a pre-works meeting. Poor planning can result in low daily output, increased costs and public criticism.

3.3 Programming

Careful and detailed planning before works commence is also an important component of a successful re-texturing programme. It is essential that any programme containing several sites be programmed effectively to ensure that the operations flow smoothly from site to site without unnecessary travel.

It is in the interests of both contractors and clients that the road space is put to optimum use,

particularly in terms of *operational windows*. It must be remembered that most retexturing processes are relatively fast. Therefore unnecessarily restrictive road occupancy in terms of time and lengths of closure will seriously impede the way that the programme will proceed and the overall works progress.

Maximum productivity along with optimum safety conditions will obviously be achieved under *road closure* conditions and should be seriously considered, particularly where narrow roads are to be treated. This causes minimum inconvenience to road users and separates traffic from the treatment operations. Temporary diversions should not be introduced casually and will involve consultations between contractors and the highway authority.

Night time working should also be considered under appropriate circumstances.

3.4 Contract Cost Considerations

Contract prices will be provided by contractors based on an indication of the likely size of the client's programme. Accuracy of information at this stage is essential to ensure contractors can price effectively and best value for money is realised. Significant reductions in the size of the indicated programme will increase the contractor's overhead costs - and thus the price per square metre of work undertaken - and where appropriate, contracts should make provision for compensating contractors under these circumstances.

4 TRAFFIC MANAGEMENT

4.1 Considerations

In undertaking re-texturing works the needs of road users must be considered at all stages. The safety of re-texturing operatives and the public, whether on foot or in motor vehicles is of paramount importance.

Recommendations on the signing and traffic management during re-texturing operations are contained in the **Traffic Signs Manual; Chapter 8 – Volume 1** and the '**Red Book**', **Safety at Street Works and Road Works - A Code of Practice**.

Whilst the Code gives general advice, it must always be remembered that the needs of any site should be considered as unique and each re-texturing crew should contain properly trained personnel. For specific sites, a proper risk assessment should be undertaken by an appropriately trained person and acted upon before re-texturing equipment and operatives are dispatched to the site. At some sites, this will require discussion between the contractor and representatives of the highway authority at the pre-contract stage. Where this is the case, the agreement reached between the parties should be passed on to the person controlling site operations.

4.2 Selecting the Correct Traffic Management System

The correct selection of the traffic management system to be adopted is important. The public should not be unduly inconvenienced by detours or long delays, or the reputation of re-texturing as an efficient and economic process is put at risk. When considering traffic management arrangements, the following factors need to be taken into account:

- (a) Traffic flow data - this will include such factors as high peak-hour flows, high percentage

of HGV's etc.

(b) Road layout and junctions - this will identify the type of road under consideration, e.g. whether it is a 7.3 metre wide single carriageway principal road with no major junctions or a narrow country lane.

(c) Type of control - the information from (a) and (b) above will give the input necessary to decide the general type of traffic control required, e.g. restricted hours of working, maximum working lengths, availability of alternative routes, level of advance publicity needed, etc. Narrow country lanes, for instance, may need to be temporarily closed or a warning of delays may need to be given.

(d) Traffic regulation orders - legal processes, such as allowing the closure of a road or imposing mandatory speed limits, need to be arranged by the highway authority well in advance of the works.

(e) Publicity - Re-texturing works are normally of a short duration. Under normal circumstances the client will advise the public of impending works. Road users do not like being delayed and will take alternative routes if they are given adequate information.

4.3 Method of Working and Traffic Management Implementation

On single carriageway trunk and principal roads, re-texturing falls into the category of 'Mobile Works'. Under this type of working, traffic will be controlled by the use of stop and go signs, with radio communication between operatives, as described in the Traffic Signs Manual. The length subjected to this operation should be kept as short as possible consistent with safety requirements.

Whilst it makes no difference to the effectiveness of the treatments, for safety purposes the decision on the direction of travel to be adopted will depend on factors such as the type of road, speed of traffic and visibility available.

Re-texturing always involves treating one side of the carriageway at a time. Therefore it is essential to ensure that the width of road available to passing traffic is not less than the desirable minimum of 3.25 metres or the absolute minimum of 3 metres set out in paragraph 2.5.1.6 of Chapter 8 of the Traffic Signs Manual.

Where these widths are not available, in the interests of safety, bespoke traffic management techniques may need to be introduced which might include either convoy working or alternatively traffic diversions may need to be introduced in extreme cases.

Where for this purpose a road is to be temporarily closed to allow treatment operations to be carried out safely, proper contingency arrangements must be made to allow for the passage of emergency vehicles.

5 MECHANICAL PLANT AND OPERATION

All plant and equipment used in re-texturing operations should be well maintained in good working order. All service providers should have an equipment maintenance schedule and retain maintenance records as appropriate.

APPENDIX A

Pre-Contract Checklist

- 1 Has the contractor all relevant site information i.e. location of schools, bus route, market days, events etc?
- 2 What type of traffic control is to be operated and is there enough labour to carry out the works in a safe and proper manner?
- 3 Have all supervisors/operatives received the appropriate training?
- 4 Has the correct and adequate plant been allocated as required under the contract?
- 5 Have appropriate tests/surveys of the existing surface course been carried out and analysed.

Site Checklist

- 1 Is pre-patching (if required) complete and satisfactory?
- 2 Is the road clear of parked vehicles or any other obstructions?
- 3 Are the correct signs in place?
- 4 Are the operatives all present and correct and wearing the relevant Personal Protection Equipment?
- 5 Is all the plant present and in safe working order?
- 6 Are the weather conditions appropriate to commence work?
- 7 Is the planned method of operation safe, both to the operatives and the public?
- 8 What type of traffic control is to be implemented and does everybody understand the method of operation?
- 9 Has appropriate aftercare been arranged i.e. sweeping?

Post Contract Checklist.

- 1 Have arrangements been made for post-contract inspections and any required further sweeping?
- 2 Is the required contract information being collected and documented?
- 3 Have arrangements been made for road safety marking replacement – if necessary?
- 4 Have appropriate tests on the treated surface been carried out and analysed?

APPENDIX B

Re-Texturing Techniques

a) Impact Methods

Processes in this category involve striking the road surface with either hard-tipped tools or hard particles (steel shot) to effectively improve skid resistance and / or texture depth. These processes are effective where the loss of skid resistance is mainly due to polishing of the aggregate particles and include:

Bush Hammering:

- total operational control of impact / treatment heads (including pressure) and variable width control; ensures effective and consistent treatment of any existing surface (applicable for all surface types including surface dressing / thin surfacing / concrete)
- arisings are swept up separately
- restores the micro texture and marginally improves macro texture as it imparts cuts into the surface of individual pieces of aggregate
- can cope with surface deformation and variations in road width
- can be used under all weather conditions

Shot Blasting:

- uses steel shot projected at high speed from a rotating wheel – variable treatment pressure and effective treatment consistent over the machine width (limited treatment width control and not applicable for all surface types, particularly surface dressing)
- both shot and arisings are recovered and separated
- micro texture improved by effective *cleaning* of the aggregate surface
- both skidding resistance and surface texture depth restored (particularly that of chipped hot rolled asphalt surfacings)
- a dry weather process although a wet Shot Blasting technique is currently being trialled

b) Cutting and Scabbling / Flailing Methods

Longitudinal Scabbling:

- uses hardened tips set into steel washers, loosely mounted side-by-side hydraulically loaded and drawn / rotated (on several axles around a central axle) along the road surface
- arisings are swept up separately
- micro texture improved by cutting through the surface aggregate and exposing new aggregate faces, creating a corduroy effect
- initially surface texture depth also improved by creation of longitudinal grooves
- relatively slow to carry out and substantial quantities of material are sometimes removed from the road surface, particularly where the existing surface is deformed (wheel track rutting)

Grooving / Grinding:

- uses diamond tipped blades
- pressure washing required to remove slurry
- macro texture can be reduced if the blades are in close configuration
- can be used to provide discreet grooving patterns
- where the blades are more widely spaced micro-texture on the original (untreated) plateaux between grooves is unaffected

Currently neither system can cope with surface/wheel track deformation. Both have a tendency to hold-up cross-carriageway flow of surface water. Transverse Grooving can be used to aid surface water drainage (has little effect on skid resistance) but relatively slow and disruptive to implement. However 'floating' **Longitudinal Scabbling** and **Grooving/Grinding** techniques are currently being trialled. All are wet weather processes.

Orthogonal Grooving

Similar in concept to **Longitudinal Scabbling** and **Grooving/Grinding** but consists of deeper longitudinal and transverse grooving combined with scabbling, creating a heavy criss-cross pattern. Substantial quantities of surface material are removed in the process. Whilst texture depth and skid resistance are improved, the resulting regular grooved pattern can give rise to increased noise levels. These issues have led to the process being withdrawn.

c) Fluid Action

NB. These systems are **NOT** mechanical reworking of the road surface. They are however extremely effective removal / cleaning systems.

Water Jetting

- uses water under high/ultra-high pressure – the latter more recent development uses less water
- effective treatment consistent over the machine width (width of treatment can vary from about 150mm to 2m per pass).
- new aggregate surfaces exposed from under bituminous films - texture depth is improved
- removes surface contaminants, rubber deposits and carriageway markings
- thoroughly cleans the surface aggregate but does not restore micro texture of polished aggregate

Where the process requires water, the Contractor shall ensure that all relevant permits/licenses are obtained and that all relevant fees and charges are paid to the appropriate provider.

d) Carbonising

Uses a combination of gas and hot compressed air to remove excess bitumen and carriageway markings. Extremely dangerous and noisy resulting in the technique being

RSTA Code of Practice for Re-Texturing

little used now for retexturing purposes because of health, safety and environmental concerns.

Waste Management

All the liquids or solid detritus shall be removed from the road surface by the equipment leaving the surface clean and suitable for unrestricted traffic. Residual water shall not be more than is present after light rainfall, there shall be no puddles, standing water or water running in surface channels. No abrasives, grit or other solids should enter the drainage system.

Any waste generated by the retexturing process shall be disposed of to a waste management facility licensed by the Environment Agency to accept this kind of waste.

Any water used in the process shall not be discharged into gulleys, drains or watercourses. Process water shall be recovered by vacuum tanker and disposed of in accordance with the above requirements

The contractor shall ensure that adequate provision is made by physical means as necessary to restrict and prevent any flow of contaminants into these areas and features.

Should inadvertent discharge occur, the contractor shall take all practical steps to collect the water. The Environment Agency shall be informed and they may undertake monitoring of local sensitive watercourses and catchment areas.

Any liquid waste, including any contaminated water from road gullies, must be disposed of to a licensed facility capable of treating liquids with a chemical oxygen demand (COD). In the event of any third party involvement waste transfer notes shall be produced.

If solid waste is to be stored temporarily prior to bulk delivery to a licensed waste management facility then the Contractor shall be responsible for obtaining the necessary permissions/exemptions and putting into place whatever containment measures are required to prevent any environmental contamination in the intervening period.

APPENDIX C

References

Design Manual for Roads and Bridges. Her Majesty's Stationery Office, London.

HD 24/06 Traffic assessment (DMRB 7.2.1)

HD 28/04 Skid resistance (DMRB 7.3.1)

HD 36/06 Surfacing materials for new and maintenance construction (DMRB 7.5.1)

HD 37/99 Bituminous surfacing materials and techniques (DMRB 7.5.2)

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Traffic Signs Manual Chapter 8: Road Works and temporary situations (2009)

Current at time of publication; latest versions to be used.

APPENDIX D

PHOTOS

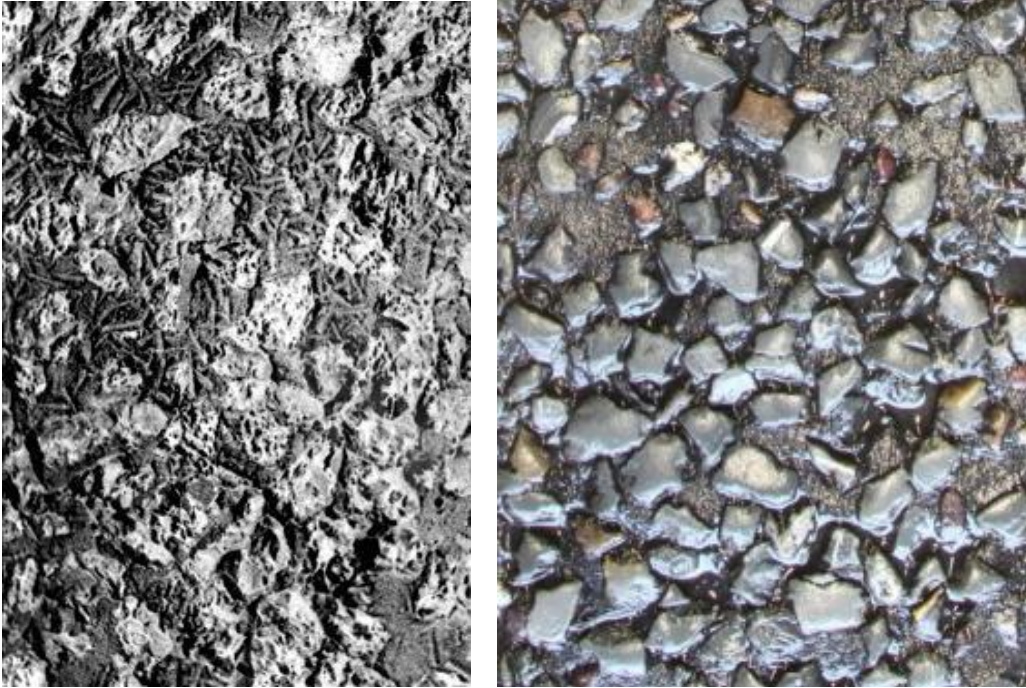


Bush Hammer Machines in Echelon



HRA before/after Bush Hammer re-texturing

RSTA Code of Practice for Re-Texturing



HRA before/after bush hammer retexturing

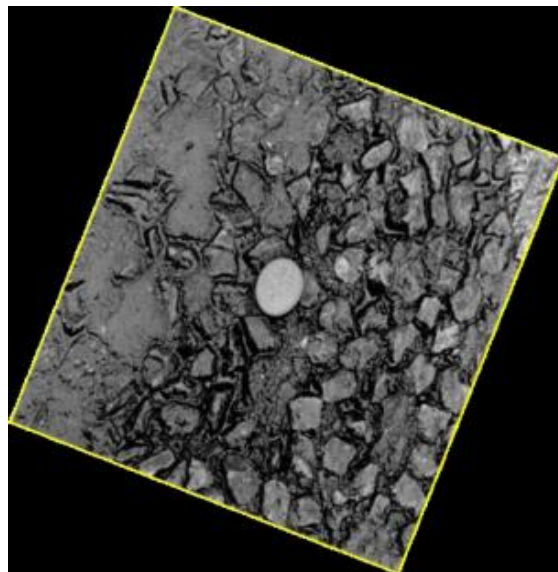


Scabbling/Flailing Machine

RSTA Code of Practice for Re-Texturing



High Pressure Water Jetting Machine



HRA before/after high pressure water retexturing

RSTA Code of Practice for Re-Texturing



(Wet) Shot Blasting Machine



(Dry) Shot Blasting Machine

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Micro-grooving machine



Transverse grooving (concrete)



Longitudinal micro-grooving (SMA)

RSTA Code of Practice for Re-Texturing

**Appendix E: Table 11.1 Appropriate circumstances and treatments for retexturing bitumen-bound surfacings
Volume 7 Section 5 Part 2 HD 37/99 Chapter 11 Retexturing (Bituminous)**

Surfacing type	Original condition: effect required from treatment	Suitability of treatment processes						
		Bush hammering	Shot blasting	Grooving / grinding	Longitudinal scabbling	Orthogonal grooving	Carbonising	Water-jetting
Chipped rolled asphalt	Polished aggregate: recovery of skidding resistance	✓	✓	✓	✓	✓	O	O
	good texture:	✓	✓	✓	✓	✓	O	O
	poor texture:	✓	✓	✓	x	x	O	O
	Embedded chippings recovery of texture depth							
good SR:	O	✓	O	x	✓	✓	✓	
poor SR:	O	✓	O	x	O	✓	✓	
Excessive noise/ excessive texture	good SR	✓	x	O	✓	x	x	x
Surface dressing	Polished aggregate: recovery of skidding resistance	✓	x	x	O	x	x	x
	good texture:	✓	O	x	x	x	x	x
	poor texture:	✓	O	x	x	x	x	x
	Fatted-up: recovery of texture depth						✓	✓
good SR:	x	x	x	x	x	✓	✓	
poor SR:	x	x	x	x	x	✓	✓	
Thin surfacing	Polished aggregate: recovery of skidding resistance.							
	good texture:	✓	✓	✓	✓	x	x	x
	poor texture:	✓	✓	✓	x	x	x	x
Removal of binder film								
good SR:	O	O	x	x	x	O	O	
Close textured macadam	Polished aggregate: recovery of skidding resistance							
	good texture:	✓	✓	O	✓	x	x	x
	poor texture:	✓	✓	O	x	x	x	x
Removal of binder film								
good SR :	O	O	x	✓	x	✓	✓	

Key: SR Skidding Resistance; O Treatment may be appropriate in some circumstances; ✓ Appropriate treatment but effects will be limited and depend on surfacing condition; x Not recommended

Notes:

1 SMTD = Sensor Measured Texture Depth.

2 When referring to skidding resistance, "good" and "poor" When referring to texture in this context, denote above or below investigatory level respectively. "good" and "poor" are approximately the following: SMTD > 1.2 mm, good; SMTD < 0.6 mm, poor.