



Department  
for Transport

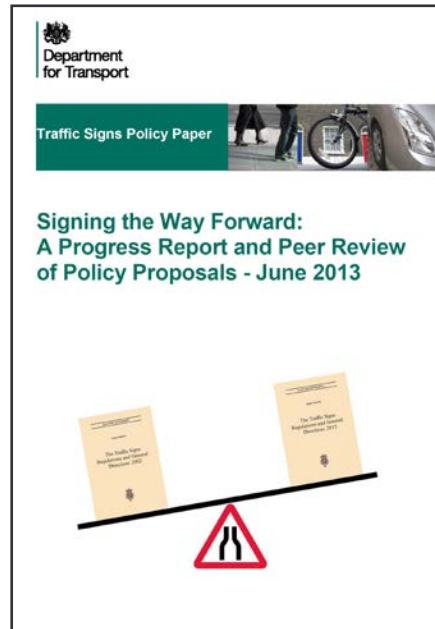
# TSRGD and Sign Lighting

## Highways and Street Lighting Advisory Group





## TSRGD 2016 – The Journey

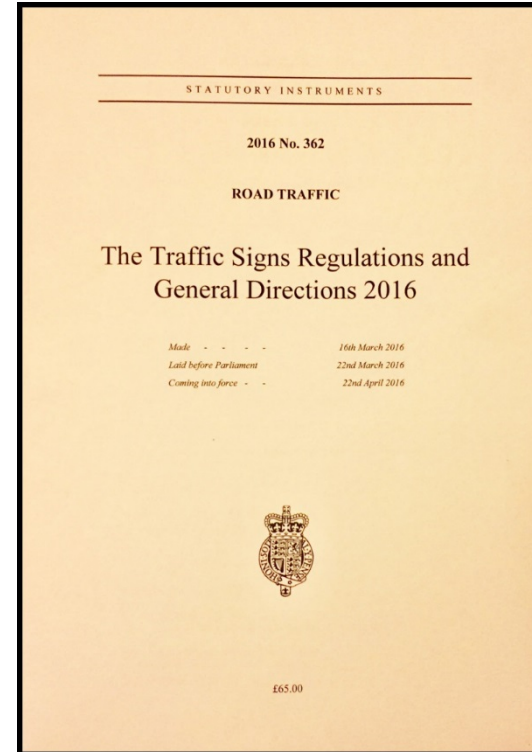


- Eleven roadshows
- Two formal consultations
- One technical review
- Notified to the European Commission



## TSRGD 2016

- ▶ Made 16 March
- ▶ Laid before Parliament 22 March
- ▶ Came into force 22 April





## Gives more flexibility by:

- ▶ Removing many Directions
- ▶ Removing links between signs and markings
- ▶ Relaxing requirements on terminal signs
- ▶ Removing rules about repeater signs
- ▶ Reforming the design of parking signs; and
  
- ▶ Removing requirements for many signs to be illuminated



## Sign illumination

The following signs **must** be illuminated during the hours of darkness when placed within a street lit area:

- ▶ warning and regulatory signs at level crossings
- ▶ headroom restrictions at low bridges or structures
- ▶ warning of requirement to 'Stop' or 'Give Way' ahead
- ▶ speed limit terminal signs on trunk or principal roads
- ▶ regulatory terminal signs including give way, no entry, vehicle restrictions (including for low and narrow bridges) and banned manoeuvres
- ▶ motorway entry, exit and gantry-mounted signs.



Traffic Authorities need to assess whether other signs also need to be lit.

Further guidance is provided in DfT Circular 01/2016 paragraphs 3.33 to 3.39



## TSRGD default lighting requirement:

- ▶ Regulation 8 (page 11)
  - ▶ Those signs no longer needing illumination must be reflectorised as a minimum.
- ▶ Lighting requirements for particular signs that differ from this are set out in individual schedules: e.g.



- ▶ Schedule 10, part 3, paragraph 2 sets out lighting requirements.
- ▶ Where a sign needs to be lit, but street lighting is turned off during part of the hours of darkness, the sign must also be reflectorised unless the sign remains lit when the street lights are turned off.



## Sign lighting can still be applied as before:

- ▶ Local authorities must decide if signs need lighting
- ▶ We recommend robust risk analysis for any decision not to light signs.
- ▶ The following factors could be taken into account:
  - ▶ turning angles
  - ▶ junction layouts
  - ▶ one way traffic conditions
  - ▶ sign mounting height
  - ▶ signs mounted on the off side of the carriageway
  - ▶ proportion of heavy goods vehicles and the relevance of the sign to them





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Now you see it...







... now you don't:



Street lighting is designed to illuminate horizontal surfaces, and is not effective for illuminating upright traffic signs



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Questions?





## Countryside Access:

### Effective Volunteer Management

APSE Highways & Street Lighting Advisory Group

31<sup>st</sup> October 2017



**Note:** These slides are copied from an animated presentation.  
Not all detail / information will show on this static copy.



***“Through interpretation, understanding...***

***Through understanding, appreciation...***

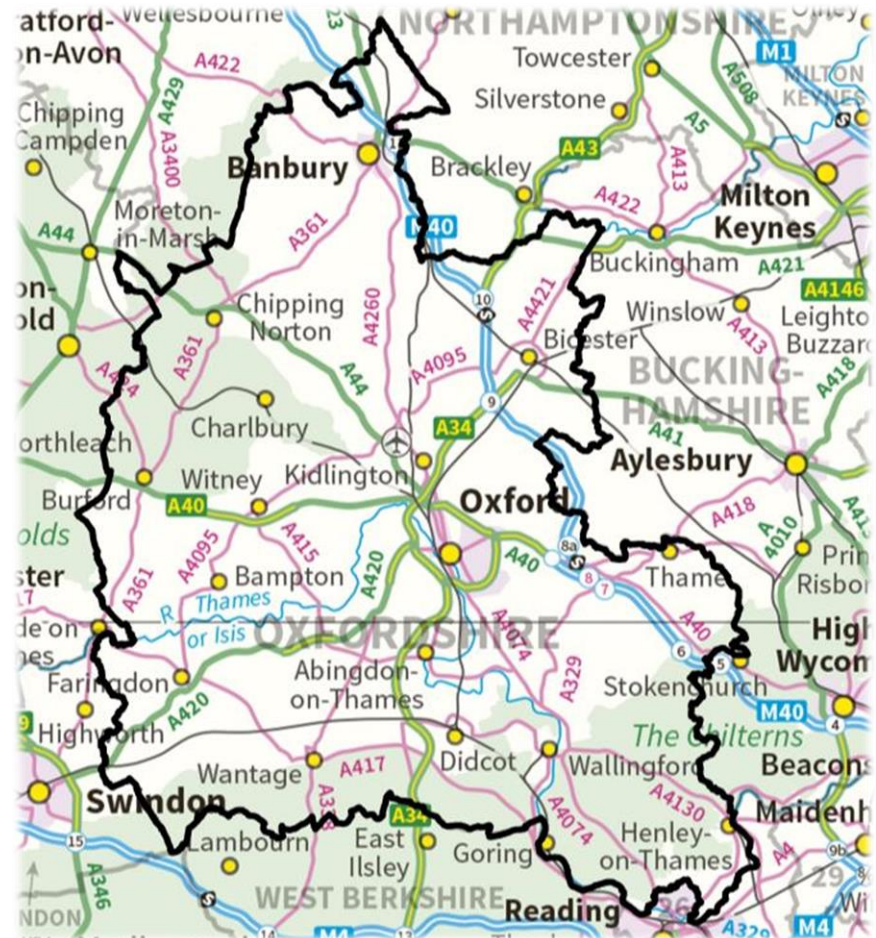
***Through appreciation, protection.”***

Anon, US National Park manual

As quoted in ‘Interpreting Our Heritage’, Freeman Tilden, 1957

# Who are Oxfordshire's path volunteers?

- South Chilterns Path Maintenance Volunteers
- Cotswold Wardens
- Vale Path Volunteers
- Blitz 'n' Clean
- Thames Path National Trail
- Ridgeway National Trail
- Parish Path Wardens
- **Over 600 and counting...**





# What do they do?

- Workparties
- Patrolling and reporting
- Guided walks
- Interpretation
- Eyes and ears
- Back office
- Statistics...





# How do they do it?

- Staff input
- Importance of stats
- Recruitment
- Succession planning
- Volunteers aren't free!





# Why do they do it?

- Countryside
- Working together
- Involvement
- Protection
- Thanks?







***“Through interpretation, understanding...***

***Through understanding, appreciation...***

***Through appreciation, protection.”***

# ***Any questions?***

**James Blockley**

**Countryside Access Team**

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**01685 810226**

**[www.oxfordshire.gov.uk/countrysideaccess](http://www.oxfordshire.gov.uk/countrysideaccess)**





The Road Surface Treatments Association Ltd

# Road Surface Treatments – residential roads

**Dr Howard Robinson, Chief Executive**

APSE Highways & Street Lighting Advisory Group

Oxford 31.10.17

[www.rsta-uk.org](http://www.rsta-uk.org)



# RSTA INTRODUCTION



- Formed in 2008
- Members treat c.100 million m<sup>2</sup> per annum
- 5 sectors and 7 sub-sectors represented
- 86 members – 13 local authority members
- Represents the supply chain
- Activities include; stakeholder engagement, developing guidance, specs and training

# 84 members covering the supply chain



39 Contractors

32 Manufacturers



...including 13 local authority members



# Stakeholder engagement





# Training and qualifications



Approx 400 highway engineers, asset managers and contractors attend an RSTA CPD course each year

[www.rsta-uk.org](http://www.rsta-uk.org)

# SURFACE TREATMENTS

Cost effectiveness, advantages and disadvantages

# Advantages



- Preventative maintenance
- Extends the service life of existing road assets
- Rapid treatments reduce traffic congestion during works
- Improves network resilience to combat climate change
- Improves skid resistance protecting public safety e.g. skid policy
- Improved customer satisfaction – fewer potholes!

# It is important for asset managers to know what treatments are available



# New asset management guidance



- RSTA, ADEPT and MSIG recognised in 2014 the need for new tools/guidance to help highway authorities to make better informed decisions at the pavement level
- This resulted in a panel being set up involving industry stakeholders to collaborate and produce a new tool
- The tool was launched at the 2016 RSTA Conference and is now available through [www.rsta-uk.org](http://www.rsta-uk.org) and [www.trl.co.uk](http://www.trl.co.uk)



# SURFACE DRESSING

Cost effectiveness, advantages and disadvantages

# What is Surface Dressing?



Surface dressing has been used for over a century!

- The process involves spraying an emulsion binder onto a prepared road surface then dressing the binder with chippings
- Sounds simple, but it is a designed process with lots of parameters that need to be controlled to achieve a successful outcome

# What does it do?



- Surface Dressing performs 2 functions;
- **Improves safety by restoring texture depth and skid resistance**
- **Seals the road surface**





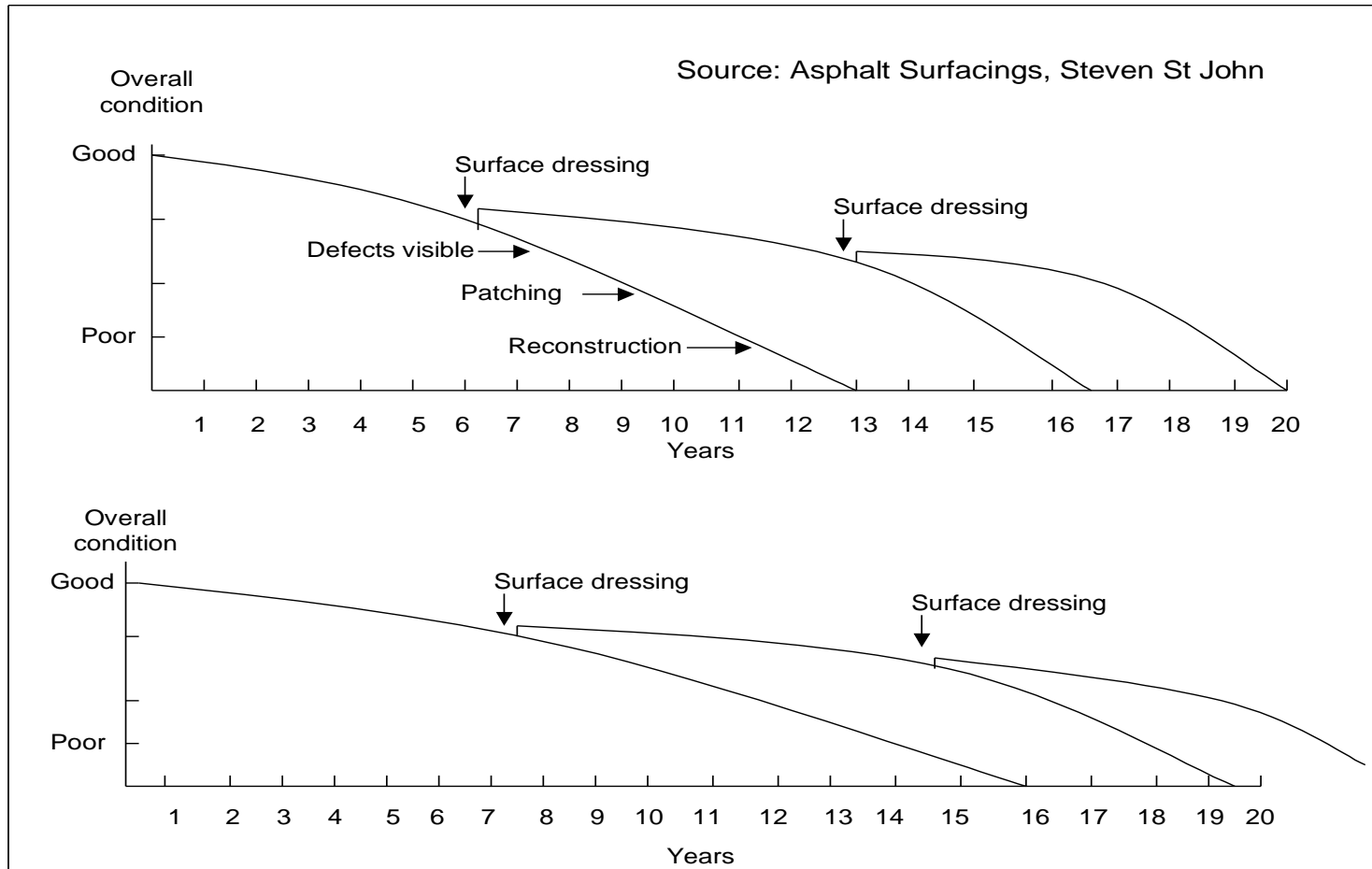
# Asset management



- Surface dressing is a preventative maintenance technique, extending the service life of the road asset and delaying the cost of asset replacement
- It helps to prevent potholing and pavement deterioration
- It is an economic option, stretching budgets
- Cost Life Index typically 25p/ m<sup>2</sup> per annum ( e.g. £2.50 m<sup>2</sup> over 10 years service life)
- Fast installation, high productivity 20-40,000 m<sup>2</sup> per day
- Low carbon footprint



# Preventative Maintenance



# Applications



- Carriageways
- Footways
- Cycle ways
- Car parks



# Site Selection



- **When to surface dress?**
- When skid resistance falls below acceptable levels
- When existing surface shows first signs of distress, for example:
  - Crazing
  - Fretting
  - Loss of Chippings
- Before major patching is required

# Surface dressing limitations

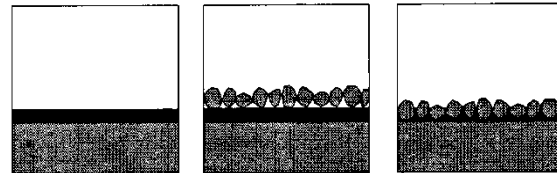


- Will not re-profile a misshapen road surface
- Will not directly strengthen the road structure, but maintains road strength
- High texture increases noise
- Quiet dressing with good texture can be designed
- Potential for loose chippings

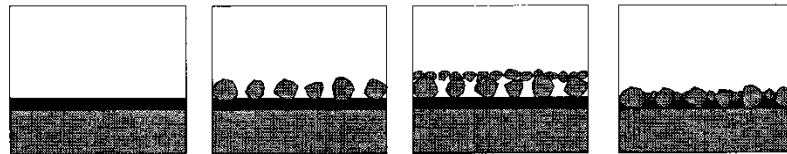
# Types



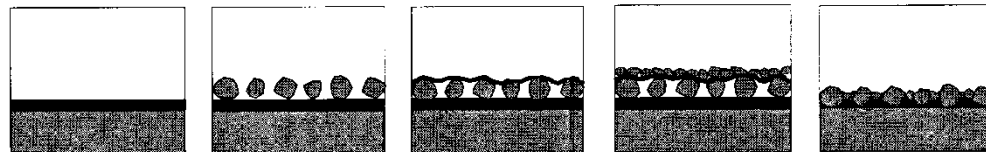
Single Dressing



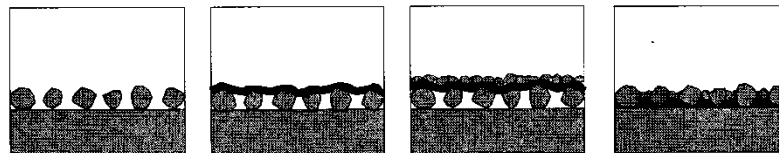
Racked-In



Double Dressing



Sandwich Dressing



# 10 & 6 raked-in dressing







# PREVENTION AND A BETTER CURE

## POTHOLES REVIEW



APRIL 2012

- NHSS23 *Small Scale Pavement Repairs* evolved from this.

# New Surface Dressing Design Guide



## DESIGN GUIDE FOR ROAD SURFACE DRESSING

by D Bateman

With the advice of a panel representing the Industry and the Clients under the Chairmanship of Dr H  
L Robinson, The Road Surface Treatments Association

Road Note 39 (Seventh Edition)

# Sealed Surface Dressing



- Spray applied binder locks in 'loose aggregate' reducing excess loose chippings (flyers)
- Reduces scuffing and fretting on stress areas
- Blackens road surface ; transforms appearance from a dressing to look more like asphalt



# SLURRY SURFACING

Cost effectiveness, advantages and disadvantages

# Slurry surfacing: footways



# Microsurfacing: carriageways



# Finished Job



# Why use slurry surfacing?



- Extends asset life
- Suitable for urban roads
- Long history of successful use
- Restores skid resistance
- 10-15 year service life if done properly
- Cold mix – low environmental impact
- Fast and efficient



# Slurry surfacing: other benefits



- Can be laid in tight areas
- Low traffic management, minimal disruption
- Regulates undulating surfaces giving a smooth textured finish
- No waste generated, cold applied
- Can be pigmented

# Thin Film Slurry Surfacing



Typical thin film site (3mm)



# Thick Film Slurry Surfacing



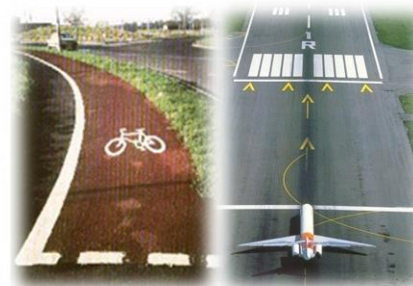
Typical thick film site (6mm)



# Slurry surfacing: applications



- Carriageways – traffic restrictions
- Footways
- Cycle ways
- Car parks
- Playgrounds
- Airfield runways
- Reservations and Islands



# Slurry surfacing: Preparation



- **Preparation:**
- Removal of vegetation
- Verge & edge trimming
- Scrape & high pressure air
- High pressure water
- Ironwork adjustment & protection
- Kerb & driveway protection



# Masking Trenching Works



# Improved Aesthetics



# Estate Roads





# Urban roads and footpaths



# Urban road – no loose chippings



# Fine textured finish





# HIGH FRICTION SURFACING

Cost effectiveness, advantages and disadvantages

# High Friction Surfacing or Antiskid



# How does HFS work?



Durable Micro-texture (**Calcined Bauxite aggregate**), reduced contact points, high contact pressure points and improved hydraulic conductivity are critical for high skid resistance and reduced braking distances ( Parry, TRL 1996 )



HRA



HFS



# GLC Trials



In 1967 the Greater London Council and the Metropolitan Police recognised the need for a durable skid resistant surface tough enough to withstand the harshest traffic environment.

Trials of high friction surfacing started in 1968 – cold applied bitumen extended epoxy resin + calcined bauxite





- Accidents and casualties reduced by **50% in year 1**
- **Cost of treatment recovered within 1 year**
- 10 year programme was instigated
- Programme cost to be covered 8 fold in reduced accident costs
- Effective life of HFS found to exceed **10 years**



# Saving lives and money



- HFS has been found to reduce wet weather accidents by 57% and could reduce the overall number of accidents on our roads by 5.5%

**TRL Research – BRF Road fact 1997**

- 1,700 sites treated in one year with HFS at a cost of £3 million saved us £24 million through accident prevention.

**The London Accident Analysis Unit**

# RSTA ADEPT Code of Practice



RSTA Code of Practice for High Friction Surfacing



**ADEPT**  
ASSOCIATION OF DIRECTORS OF ENVIRONMENT, ECONOMY  
PLANNING AND TRANSPORT

## CODE OF PRACTICE FOR HIGH FRICTION SURFACING



Hand Applied Systems



Machine Applied Systems

- Re-issued 2017
- ADEPT peer review
- SG1 endorsed

# The end result should be this





**PUBLISHED PROJECT REPORT PPR789**

**Use of high PSV asphalt surfacings to replace high friction surfacings (HFS) - performance review**

**M Militzer (TRL) and A Premathilaka (CH2M)**

---

**Prepared for:** Highways England, PTS

**Project Ref:** T-TEAR Task 355

**Quality approved:**

Helen Viner

(Project Manager)

Martin Greene

(Technical Referee)

HFS outperforms high PSV  
asphalt

# Independent study on HFS durability



## Site information and data gathering – 2013 to 2014

- ▶ 304 inspections recorded on 272 different sites
- ▶ 12 months to 14 years of age
- ▶ Sites are located throughout the UK
- ▶ All sites are traceable to BBA HAPAS High Friction from:
  - ▶ Five year reviews
  - ▶ Routine surveillance



# INNOVATIVE PATCHING

Cost effectiveness, advantages and disadvantages

# Thermal Patch Repairs



- Stage 1:- Applying 180°C heat over 8 minute heat cycle



# Thermal Patch Repairs



- Checking and recording the temperature of repair



- Checking surface is +90c prior to compacting
- If below 90c then area reheated



# Thermal Patch Repairs



- Compaction of repair



- HRA – use Bomag 75 – largest pedestrian roller – towed behind van
- DBM and SMA's – Bomag 55 as in photo is used - winched into van
- All equipment is winched into the van – there is no manual handling

# Spray Injection Patching



- Varies from a 1 man to a 3 man operation
- Classed as mobile works – just uses stop and go – no cones, no signs
- 3-6mm chippings open graded
- Fast & economic
- Quality relies on workforce skill

# Spray Injection Patching



- Compaction may be required to ensure the correct finish and a durable product
- A vibrating plate is often used for heavier trafficked applications and on sites with turning traffic.



# Spray Injection Patching

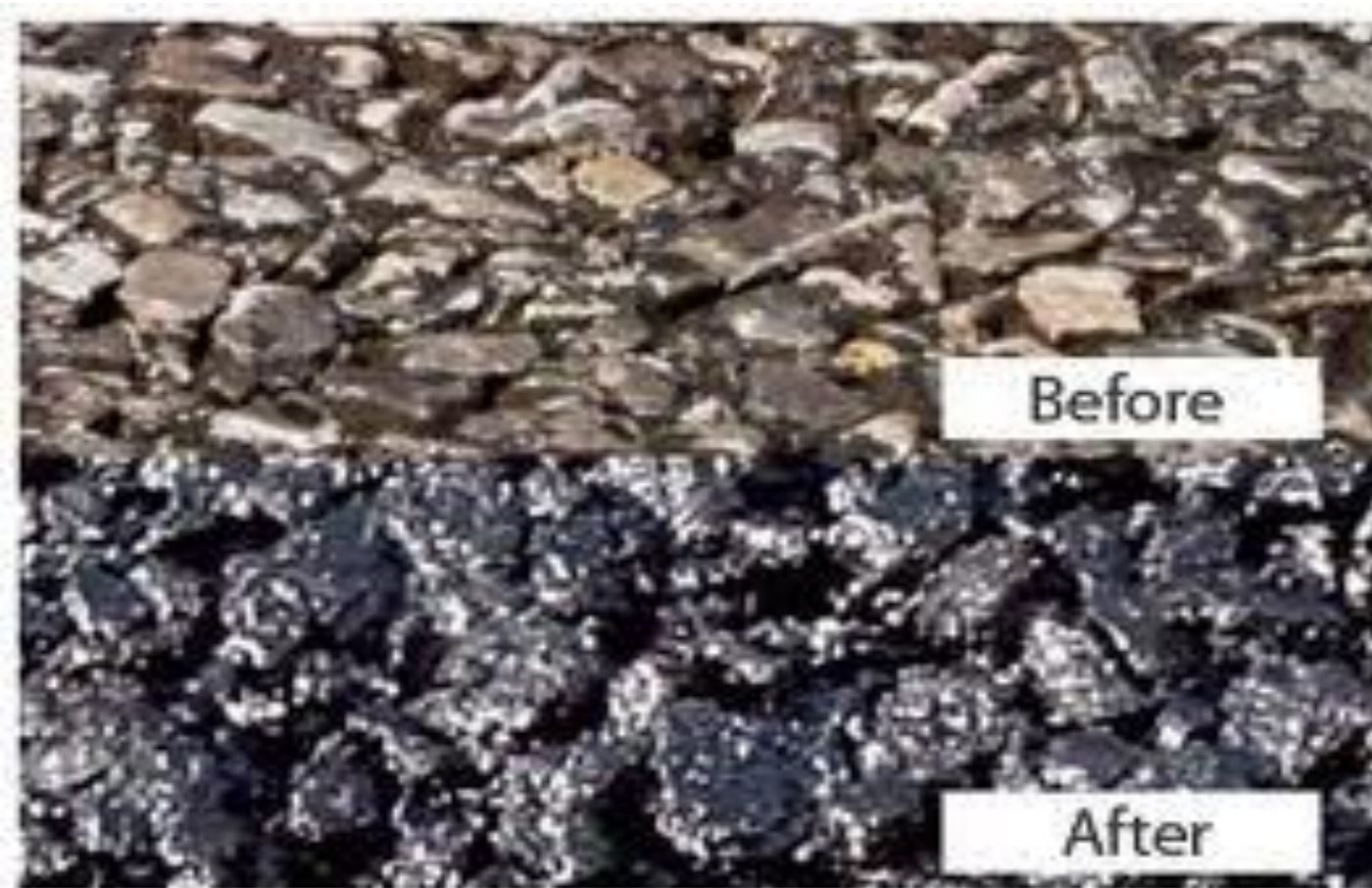




# ASPHALT PRESERVATION

Cost effectiveness, advantages and disadvantages

# Road Preservation/Sealants



# Road Preservation/Sealants

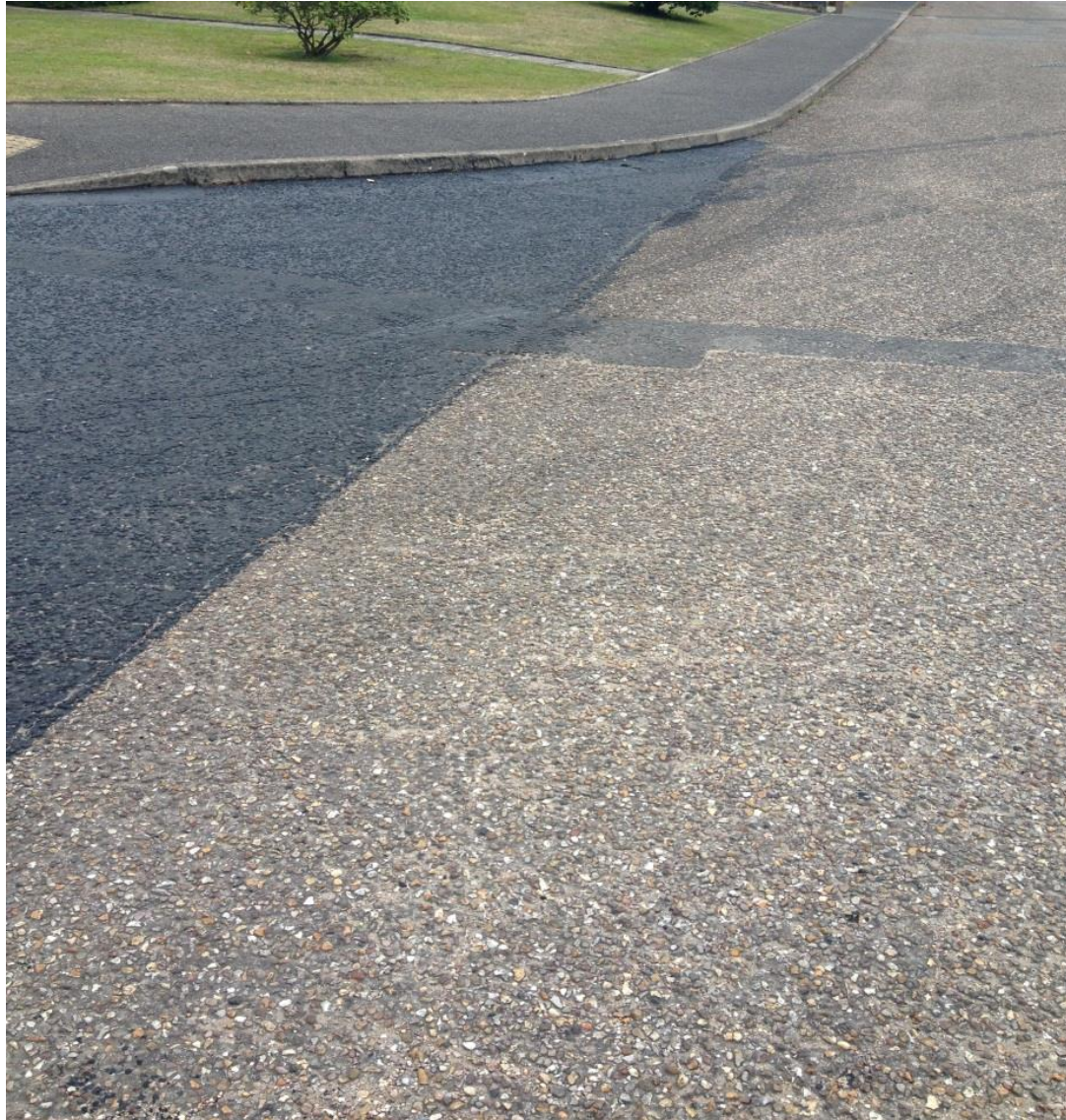


# Finished job





# The difference



# Asphalt Preservation Systems



- A new HD is being developed by RSTA and Highways England
- Clause 950 is also being updated

# RETEXTURING

Cost effectiveness, advantages and disadvantages

# Typical HRA Site – After Shotblasting



# Captive Shotblasting unit



**Computer  
Controlled**

**Consistent Full  
Width**

**Improves both  
Macro and Micro  
Texture**

**Treats any Surface**

**Markings Cats Eyes**

# Pedestrianised Area



## The Effect

# Hydro-retexturing



# IN-SITU RECYCLING

Cost effectiveness, advantages and disadvantages



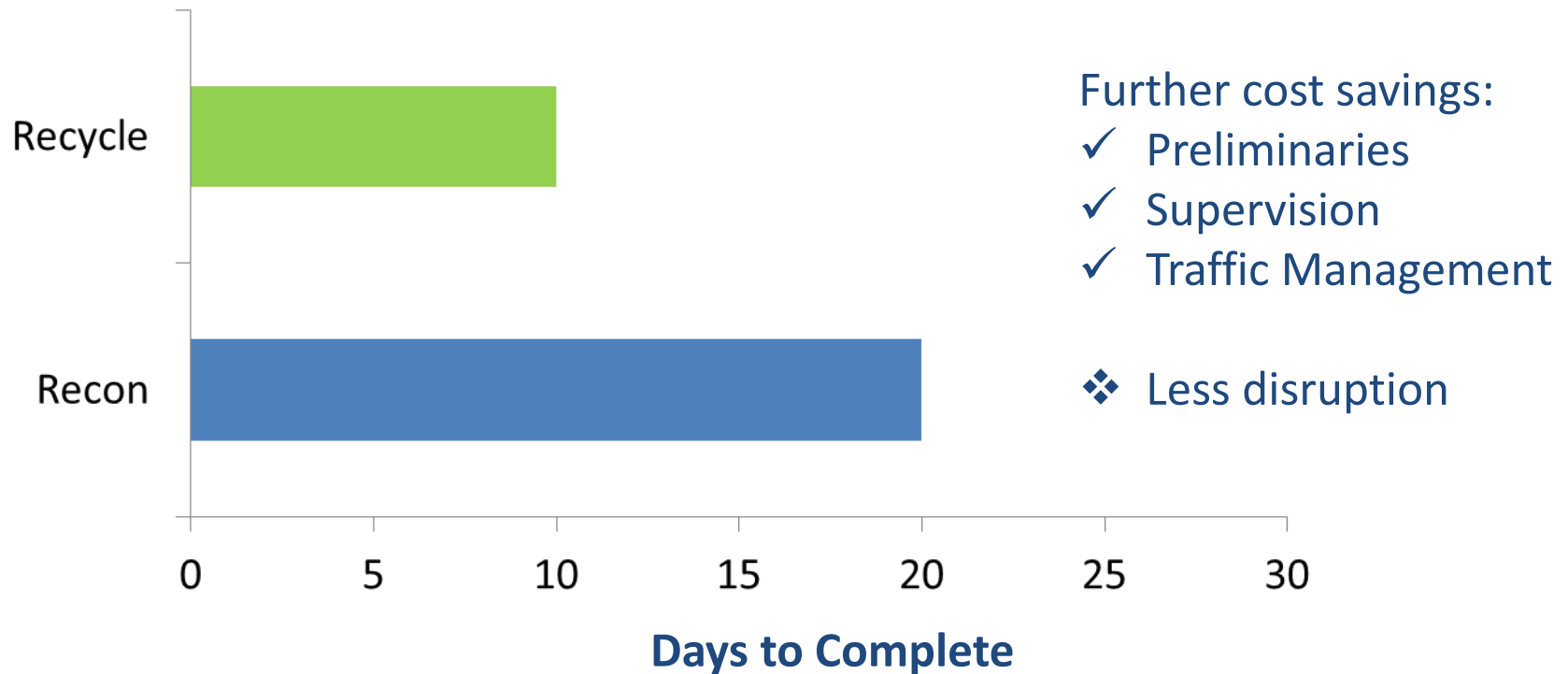
# Grading and re-profiling the recycled material



# Faster build times



Rural project example: Outputs 2,000 m<sup>2</sup> per day



## Reduction in emissions, noise and disruption

✓ Reduction in lorry movements to recycle 1km of road

- In-situ  17
- Ex-situ  33
- Recon  65

# Other considerations?



## Tar bound roads – lock it in

Encapsulates the contaminated material within the Pulverising Process

Environment Agency confirmed outside scope of Waste Management Regulations

Majority of Tar is found in the top 100mm

### Memorandum of Understanding:

- Environment Agency
- SPL
- Oxfordshire CC
- Bardon Contracting

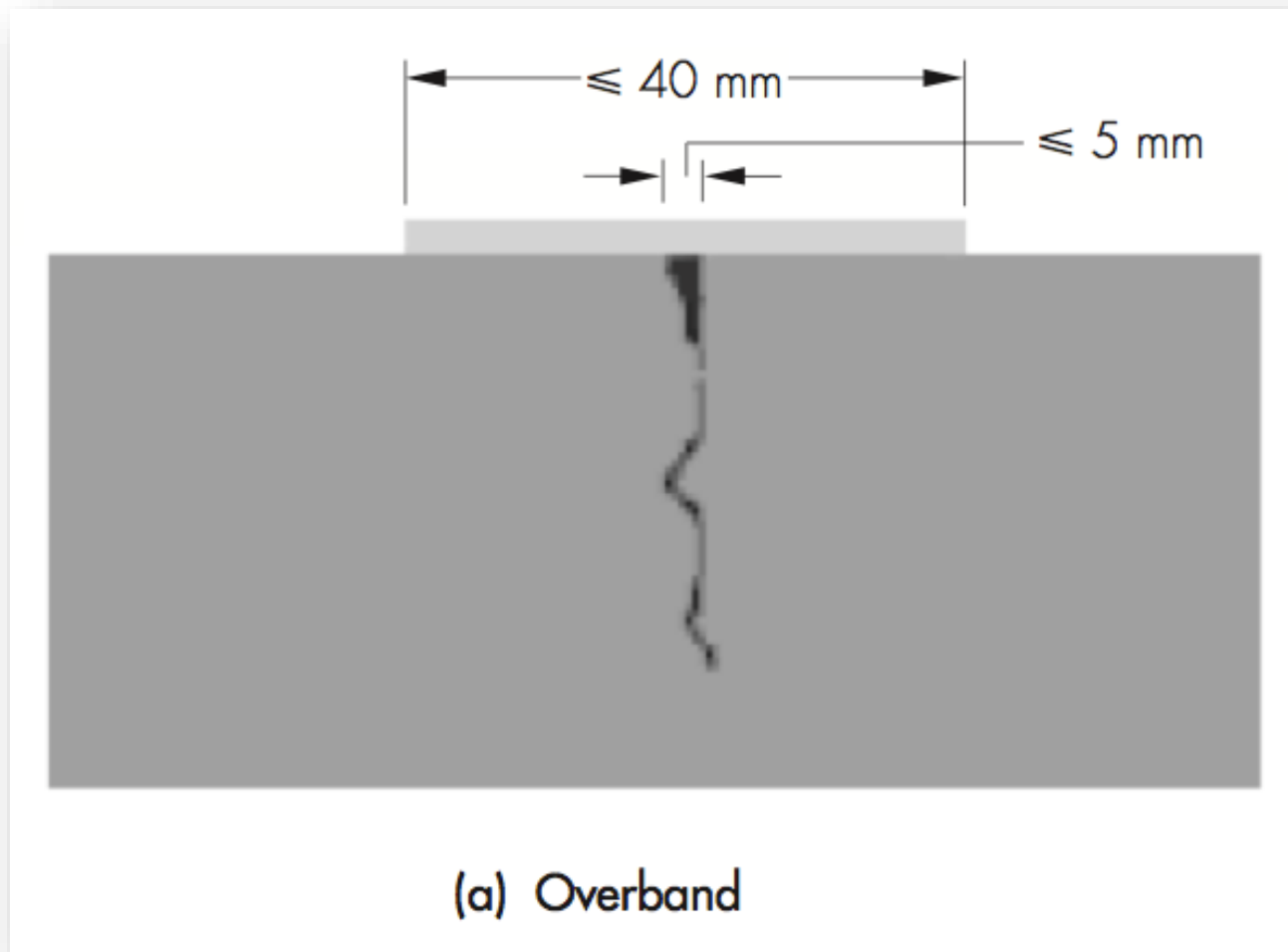




# CRACK & JOINT REPAIRS

Cost effectiveness, advantages and disadvantages

# Types of crack & joint repair systems



# Overband



# New Overbanding Products

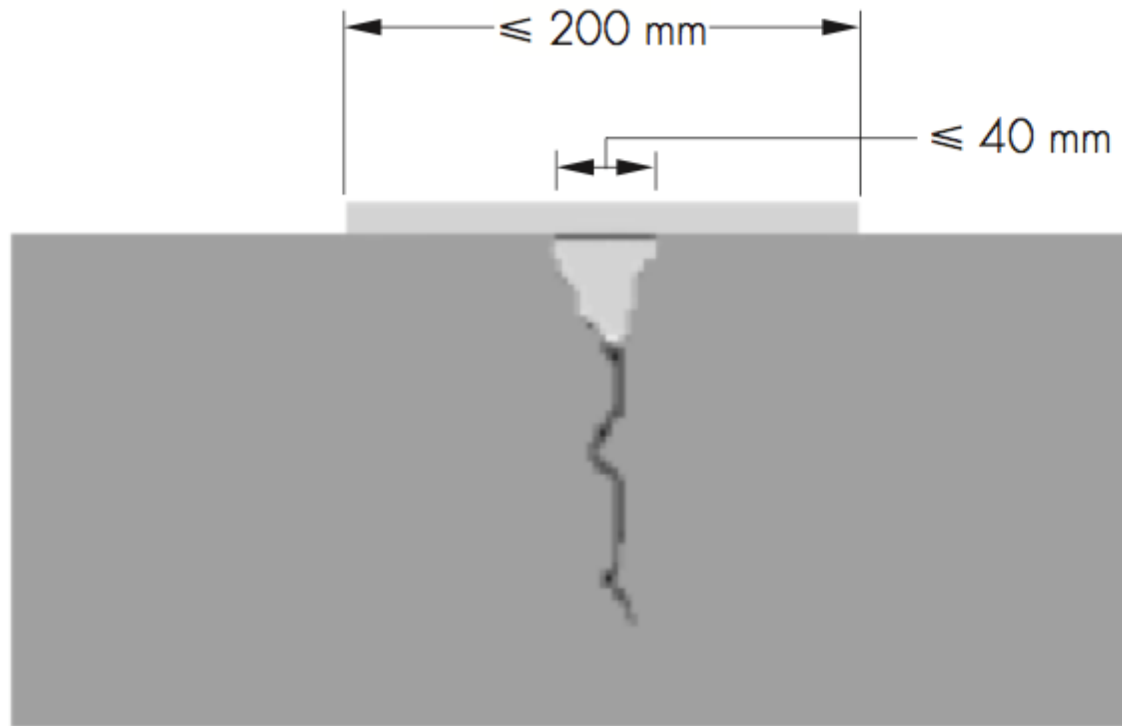


- Skid resistant / retained long term
- No spread (thermoset)
- Hard wearing
- Safe to use
- Low cost / minimal disruption
- HAPAS certification





# Fill & Overband systems



(b) Fill and overband

# Fill and overband



# Inlaid – Single or Multiple Cracks



Suitable for both Concrete & Asphalt Repairs



Can also use an over-band system to seal edges



Flexible (Grade F) and High Modulus (Grade H) systems available



# CODES OF PRACTICE

Produced jointly by RSTA and ADEPT

# Codes of practice



- We now have 10 Codes of Practice, we had 1 in 2009
- **How can we work together to raise industry awareness?**

RSTA Code of Practice for Surface Dressing 2014



**ADEPT**

CODE OF PRACTICE FOR SURFACE DRESSING



RSTA Code of Practice for Slurry surfacing incorporating Microsurfacing



**ADEPT**

CODE OF PRACTICE FOR SLURRY SURFACING  
INCORPORATING MICROSURFACING



Machine applied Microsurfacing

Hand applied Slurry surfacing

RSTA Code of Practice for High Friction Surfacing



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PLANNING AND TRANSPORT

CODE OF PRACTICE FOR HIGH FRICTION SURFACING



Hand Applied Systems

Machine Applied Systems

RSTA Code of Practice for Innovative Patching Systems



**ADEPT**

CODE OF PRACTICE FOR INNOVATIVE PATCHING  
SYSTEMS



# New Code of Practice



RSTA ADEPT Code of Practice for Ironwork Systems Installation and Refurbishment



# ADEPT

CODE OF PRACTICE

FOR IRONWORK SYSTEMS INSTALLATION AND  
REFURBISHMENT



## INSTARMAC



## TARSTONE





# FREE CPD TRAINING

Lunchtime seminars at your place

# Munch & Learn Lunchtime Seminars



LUNCHTIME SEMINARS IN 2015

NO NEED TO TRAVEL!  
WE COME TO YOU

During 2015 the RSTA will be running a series of six, free lunchtime seminars around the UK introducing High Friction Surfacing and Crack & Joint Repair systems.



## munch 'n' learn

High Friction Surfacing and Crack & Joint Repair Systems

The 2 hour sessions will be held between June and September and are offered on a first come, first served basis.

The seminars will be held at your premises on a date to suit between 12 - 2pm with a buffet lunch provided for up to 20 delegates.

The courses are designed to give engineers and technicians a detailed insight into the principles and practice of high friction surfacing and crack and joint repair systems including applications (site selection), types of systems, benefits and service life.

There will be ample time during the session to ask questions and discuss any practical issues or experiences gained from using these products.

Seminar hosts:

**Howard Robinson**  
Chief Executive, RSTA

**Mike Harper**  
Stirling Lloyd and RSTA Chairman

BOOK NOW TO  
SECURE YOUR  
FREE SESSION

Email  
[kathy@rsta-uk.org](mailto:kathy@rsta-uk.org)

Call Kathy on  
**01902 824325**

FIRST COME FIRST SERVED!



[WWW.RSTA-UK.ORG](http://WWW.RSTA-UK.ORG)



Mouchel & Shropshire CC  
30<sup>th</sup> July 2015



[www.rsta-uk.org](http://www.rsta-uk.org)



# University Diploma in Road Surface Technology



- Launched in 2014, standard is Foundation Level Degree
- Entirely by web based distance learning
- Three modules: Contracts Management, Surface Treatments and Pavement Solutions – counts as 60 credits (25% of a degree)
- Sept – May – assignments and three exams
- **35** graduates in 2015, **6** last year and **11** now - majority from local authorities



# Thankyou for your attention



Any Questions?