



CODE OF PRACTICE FOR INNOVATIVE PATCHING PRODUCTS



RSTA Code of Practice for Innovative Patching Products

Foreword

This first edition of the Code of Practice has been produced by the RSTA Patching Sub-Committee. This document only covers **Innovative Patching Products (IPP)** specifically Cold Lay Asphalts. These products are proprietary and should not be confused with traditional deferred set macadams.

This document cross references clause 946 in the MCHW Specification for Highway Works Volume 1. It does not cover standard hot mix asphalt products and excludes utility reinstatements regulated under HAUC. Also it does not cover Spray Injection Patching and Thermal Road Repair techniques as these are covered in a separate Code of Practice for Innovative Patch Repair Systems.

The purpose of this Code is to identify the important aspects of these products and provide practical guidance on achieving high quality repairs. All of the products contained herein are regulated by HAPAS.

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

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1 PREAMBLE

1.1 General

Innovative Patching Products (IPP) offer highway authorities an alternative to conventional hot-mix asphalt. They provide a range of benefits including;

- reduced operational cost
- faster installation
- minimal disruption to the road user
- low carbon footprint
- dependent on the type of repair may not require saw cutting and jack hammering so reduced risk of Hand Arm Vibration and less waste produced
- unlimited availability in bags and tubs with prolonged shelf life
- Available in bulk bags and open bulk loads

To the highway engineer **IPP** offer a fast, efficient and cost-effective way of removing defects; safety hazards; maintaining skid-resistance; preserving and protecting roads against the damaging effects of water. To obtain the best results it is necessary to give careful consideration to a wide range of detail, to plan and design the work carefully. The speed of the patching operation and the short duration of time during which motorists are inconvenienced is also an important consideration and advantage on roads carrying high volumes of traffic during peak periods.

Cold Lay Asphalts are essentially asphalt mixtures manufactured using standard aggregates and bituminous binders mixed at elevated temperatures then allowed to cool to ambient prior to packaging in tubs or bags where required. They are cold applied materials used for temporary and permanent repairs. The new repairs can then be trafficked immediately after laying.

1.2 Health, Safety and Environment

All those involved in preparing and executing **IPP** operations have a legal duty of care for the health and safety both of the operatives carrying out the works, and 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 works programme is envisaged.

The client should employ a competent contractor who can demonstrate his operatives and supervisors have been trained by the manufacturer to handle and install the IPP correctly.

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 environmental issues in their tender submission.

It is the appointed Contractor's duty to prepare a detailed Health and Safety Plan for

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the particular contract of works from the Pre-construction information supplied by the Client. 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 Contractor has control of health, safety and environmental matters but liaison with the client, police and the general public on issues of congestion, diversions or closures must be on-going throughout the contract.

The Contractor has additional duties under other legislation 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 which can be used to identify control measures for both physical and chemical hazards. The measures must form 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.

1.3 Training

The quality and durability of the completed installation is largely dependent upon the skill and care of the operatives and supervisor who undertake the installation.

IPP are regulated under HAPAS and as such training for operatives and supervisors is the responsibility of the certificate holder. It is the Association's view that a competent qualified workforce is essential to achieving high quality durable repairs. The RSTA runs regular training courses, details of which can be obtained from the RSTA website www.rsta-uk.org/calendar .

1.4 Quality Assurance

The Road Surface Treatments Association continues its commitment to quality assurance and is a member of HiTAC (Highway Technical Advisory Committee) which regulates all HAPAS Product Certification Schemes including those affecting Patching Products.

All manufacturers of IPP are registered to BSEN ISO 9001 Quality Management Systems and have a HAPAS certificate for their IPP.

All current IPP HAPAS certificates can be obtained from the BBA website www.bbacerts.co.uk .

Membership of the Road Surface Treatment Association is available to manufacturers and contractors who have third party quality assurance (BSEN ISO 9001) for the type of IPP they undertake. The unanimous decision of the Association is to adopt this principle as an indication of its commitment to quality in all its undertakings.

1.5 Planning and Co-ordination

Careful and detailed planning before work commences is an essential element of successful Innovative Patch Repair. There should be close co-ordination between contractors and their clients at every stage, commencing with a pre-works meeting, the purpose of which is to ensure total understanding of the way that the programme will proceed and to confirm suitability of the IPP for each site.

Ideally the client officer overseeing the Planning and Co-ordination of the works will have a clear understanding of the IPP with its advantages and limitations and will have attended the RSTA CPD approved Toolbox Training seminar.

It is in the interests of both contractors and clients that the programme of works flows smoothly from site to site without the need to travel many miles for the purpose of repairing one or two defects on a road.

2 TRAFFIC MANAGEMENT REQUIREMENTS

Traffic management must be managed by suitably qualified contractors in accordance with Chapter 8 Road Signs manual. Contractors will be able to provide evidence of appropriate training and qualifications in accordance with Sector Scheme 12 for Traffic Management.

3 DETERMINING THE SPECIFICATION

3.1 All Innovative Patching Products can be specified in accordance with clause 946 in the MCHW Specification for Highway Works Volume 1 www.dft.gov.uk/ha/standards/mchw/index.htm and also the HMEP Clause 946SR in Guidance for the Development of Standard Specification and Standard Details for Local Highway Maintenance Contracts Version 1 October 2012 published by the DfT.

3.2 Product selection is mainly determined by the contractor based on the depth and the type of defect. Each site must be considered in the light of its unique characteristics, including nature of surface, geography, volume/speed of commercial vehicles and other traffic using the section of road. Some local authorities may decide to select a preferred product particularly on heavily trafficked roads where end performance is deemed to be a high priority. It should be noted these products are proprietary, should not be confused with traditional deferred set macadam and each product is supplied with adequate guidance to ensure appropriate installation on appropriate sites.

4 SITE INFORMATION

Information required from client for Traffic Management purposes will include the following;

4.1 Traffic flow data

This will include such factors as high peak hour flows, high percentage of LGV's etc

4.2 Road Layout

This will identify the type of road under consideration e.g. whether it is an 8 metre wide main road with or without major junctions, or a single lane width country lane.

It is important that the client in charge of an Innovative Patching repairs programme fully understands the process and the type and extent of the work required.

5 PLANNING AND EXECUTION

5.1 Type of Control

The information from 4.1 and 4.2 will give the input necessary to decide the general type of traffic control required, e.g. restricted working hours, maximum site length, availability of alternative routes, advance public warning required. Narrow lanes may require to be temporarily closed or advance warning of delays given.

5.2 Stop and Go signs

The operators of these signs hold the appropriate qualification to operate the stop and go system, be in two way radio communication with one another and one of the operators should be nominated to have overall control of the traffic flow arrangements.

On roads where it is not possible to provide the desirable sideways safety zone between the plant/operatives and moving traffic, the speed of the passing traffic should be restricted to a maximum of 10 mph.

5.3 Traffic Regulation Orders (TRO's)

This is a legal process to allow the closing of roads or imposing a mandatory speed limit and needs to be arranged well in advance of the planned works by the local highway authority.

5.4 Road Markings

Where junction markings are going to be removed by IPP the client must be informed so that the appropriate warning signs can be provided until such a time as the road markings are reinstated.

5.5 Safety Zones

Consideration must be taken at the design stage due to plant size and equipment, to achieve minimum safety zones according to Traffic Signs Manual Chapter 8 and a risk assessment approach adopted.

5.6 Temporary Diversions

Temporary diversions should not be introduced casually and will involve consultations between contractors and the highway authority. Legal processes often need to be followed to arrange closures or diversions.

5.7 Publicity

Poor planning can result in low daily output, increased costs and public criticism. Supervisory staff will give proper consideration to the order in which various sections are treated, the number of vehicle movements transporting materials to the site.

Leafleting the public and street notification/signing in advance will help to inform the public of intended works and hopefully minimise public complaints.

6. INSTALLATION

Refer to the appendices for detailed technical information regarding the installation of Innovative Patching Products.

APPENDIX A - COLD LAY ASPHALTS

Product Description

Cold Lay Asphalts are available in different aggregate grades typically 3mm, 6mm, 8mm and 10 mm to accommodate the need for varying repair layer thicknesses. These products contain a proprietary bituminous binder and graded aggregates to BS EN 13043: 2002.

Cold Lay Asphalts are generally supplied in pre-packed, ready to use, polythene bags or plastic tubs, one tonne bulk bags and bulk open loads. The product packaging is stamped with the product name and aggregate size, weight, storage information, handling and usage instructions plus health and safety information. In addition, there is a batch number for traceability to the date of production. When stored correctly in the sealed container the product will have a storage life of at least three months in bags or six months in plastic tubs and in some cases in bulk open loads and one tonne bags.

PSV requirement is site specific and is normally specified by the local authority as determined from the Design Manual for Roads and Bridges volume 7, section 5, HD36/06 Table 3.1. Cold lay asphalt products usually contain aggregate with a PSV above 60.

Site Suitability

Cold Lay Asphalts can be used for temporary repairs and also as a permanent cold-lay surfacing material when formulated to give a performance equivalent to hot-lay materials. Cold Lay Asphalts are particularly suitable for reactive (Category 1 within 24 hours) or planned maintenance (Category 2 within 28 days) small works such as pothole repairs, street ironwork, repairs to footways, access covers, link boxes and tobies.

Manufacture Quality Control

Cold Lay Asphalt manufacture is regulated under HAPAS and manufacturers should also be registered to BSEN ISO 9001.

The manufacture details are as shown on the products HAPAS certificate.

On Site Storage

Cold Lay Asphalts, bond coats including sprays and skid resistant over-banding tape, must be stored in cool, well-ventilated, dry conditions, protected from frost and high temperatures.

Climatic Considerations

Cold Lay Asphalt Repairs can be applied when air and road temperatures are between -5°C and 40°C. Refer to BS 434-2: 2006 clause 13 for further information.

Surface Preparation

The damaged area to be repaired should be marked out and the edges normally saw cut back to sound material. The prepared area should be regular in shape. For high-speed roads BS 434-2:2006 recommends a diamond shape. Note some product manufacturers claim saw cutting is not always required for their products.

Prior to patching the area should be cleaned and free from debris and contaminants such as loose materials and standing water.



In accordance with the Specification for the Reinstatement of Openings in Highways (SROH) some manufacturers recommend applying a bond coat to the vertical edge of the repair prior to compaction to ensure good bond is achieved when the cold lay asphalt is fully compacted. For ease of use, bond coats are now available in spray cans and brush pouring grades.



Compaction

The manufacturer will advise the contractor regarding how best to compact the Cold Lay asphalt, including surcharge, to ensure it is well compacted achieving a durable dense finish.

The material is compacted to the surrounding level using a suitable compactor/roller in accordance with the Certificate holder's instructions or Section S10 and Appendix A8 *Compaction Requirements* of the SROH.



The product must be fully compacted. Compaction must cease before migration of binder to the surface or crushing of aggregates is observed.



Installation of a HAPAS approved anti-skid thermoplastic over-banding system to the edges of the reinstatement is recommended by some manufacturers to seal and waterproof the joints.

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On completion the installer should visually inspect the finished surface for uniformity and any discernible faults and remedy these if necessary.

APPENDIX B

GLOSSARY OF TERMS

ADEPT

Association of Directors of Environment, Economy, Planning and Transport, previously known as the County Surveyors Society (CSS).

ADHESION

The property by means of which a binder sticks to the surface of a solid body, e.g. the road or chippings.

AGGREGATES

Aggregate from mineral sources which has been subjected to nothing more than mechanical processing and which has a particular grading.

BINDER

Material serving to coat the particles of an aggregate and to assure its cohesion.

BITUMEN

Virtually in-volatile, adhesive and waterproofing material derived from crude petroleum, or present in natural asphalt, which is completely or nearly completely soluble in toluene, and very viscous or nearly solid at ambient temperatures.

BITUMEN – EMULSION

Liquid product in which a substantial amount of bitumen is suspended in a finely divided condition in an aqueous medium by means of one or more suitable emulsifying agents

BOND

The adhesion between the Patching material and the underlying substrate.

BSI

British Standards Institution.

BSEN 13043:2002

European Product Standard for Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas.

CATIONIC BITUMEN EMULSION

Emulsion in which the cation of the emulsifier is at the interface with the bitumen particle that is positively charged and in which the aqueous phase is normally acid.

MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS (MCHW) VOLUME 1 SPECIFICATION FOR HIGHWAY WORKS SERIES 900

COST LIFE INDEX

The cost of Patching expressed as the cost per square metre divided by the service life.

DURABILITY

Ability of a product to maintain its required performance, under the influence of foreseeable actions, for a reasonable economic working life.

JOINTS

Longitudinal or horizontal lengths along or across the pavement surface.

POLISHED STONE VALUE (PSV)

A relative measure of the extent to which different types of aggregate in the surface course will polish under traffic.

QUALITY ASSURANCE

Quality assurance, or QA for short, is the systematic monitoring and evaluation of the various aspects of a Patching operation to maximize the probability that minimum standards of quality are being attained by the production process.

Registration to BSEN ISO 9001 given to a contractor by a certification body indicates minimum standards are being attained.

ROLLER

Mobile plant/equipment used to compact Patching materials.

RSTA

The Road Surface Treatments Association is the trade body representing the road surface treatments industry. www.rsta-uk.org

THERMOPLASTIC

A term used to describe the materials used in most road markings.

TRAFFIC SIGNS MANUAL

Regulatory guidance on the use of traffic signs at mobile works. Traffic Signs Manual Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations.

APPENDIX C

REFERENCES

BS434-2:2006 British Standards Institution, London.

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

- HD 24/06 Traffic assessment (DMRB 7.2.1).
- HD 28/04 Skidding resistance (DMRB 7.3.1).
- HD 36/06 Surfacing material for new and maintenance construction (DMRB 7.5.1).
- HD 37/99 Bituminous surfacing materials and techniques (DMRB 7.5.2).

Manual of Contract Documents for Highway Works. Her Majesty's Stationery Office, London.

- Volume 1: Specification for Highway Works (MCHW 1) www.dft.gov.uk/ha/standards/mchw/vol1/
- Volume 2: Notes for Guidance on the Specification for Highway Works (MCHW 2) www.dft.gov.uk/ha/standards/mchw/vol2/

BRITISH STANDARDS INSTITUTION Aggregates for bituminous mixtures and surface dressings for roads, airfields and other trafficked areas. BS EN 13043.

BRITISH STANDARDS INSTITUTION Bitumen and bituminous binders – Framework for specifying cationic bitumen emulsions. BS EN 13808. British Standards Institution, London.

DEPARTMENT OF TRANSPORT (2006*). Traffic Signs Manual, Chapter 8; Traffic safety measures & signs for road works and temporary situations. Her Majesty's Stationery Office, London.

HOUSE OF COMMONS (1974). Health and Safety at Work, etc., Act 1974. Her Majesty's Stationery Office, London.

HOUSE OF COMMONS (1988). Control of Substances Hazardous to Health (COSHH) Regulations 1988. Her Majesty's Stationery Office, London.

APPENDIX D

FEEDBACK ON THIS DOCUMENT

Any observations, feedback or complaints ***relating to the content of this document or the process described*** herein should be addressed (using the form below) to:

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Issue Identified:

Suggested Action:

Name:

Organization:

Address:

Contact details:

Date:

APPENDIX E

DOCUMENT CONTROL

Issue Statement

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