

# *SROH 3<sup>rd</sup> Ed. 2010 (England)*

*Overview for HAUC (UK) – 26th April 2010*

*Kevin Fuller – Hampshire County Council*

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# Overview



- Working Party Brief from HAUC (UK)
- Pre-Revision Industry Consultation
- Key Areas reviewed:
  - *Specification 'S' Sections*
  - *Appendices*
  - *Notes for Guidance*
- Consultation
- Post-Consultation
- Future Work and Issues



# *Working Party Brief from HAUC*



- January 2005 – WP independently canvassed Industry
- Results discussed at HAUC April 2005 – WP asked to :
  - *Undertake a 'Refresh' of the SROH*
  - *Remove known Errors, Ambiguities, Technical Omissions*
  - *Deliver draft to DfT for Consultation by July 2006*
- WP identified new issues to review, extending timeframe
- Lose DfT Consultant (TRL); also turn-over of WP members
- DfT confirmed April 2010 implementation
- WP completed late 2008
- WP delivered to DfT January 2009



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# *Pre-Revision Industry Consultation*



- Broad view across WP:
  - *few issues 'broken'*
  - *Several areas needed updating eg new SHW & EN Standards*
  - *Agreed to undertake its own Industry Consultation via HAUC*
- Simple questionnaire issued in January 2005 – queried:
  - *Navigation and ease of use of SROH*
  - *Usage – frequency, site level, which Sections*
  - *Accessibility – web or hard copy*
  - *Free Text question - changes needed*



# *Pre-Revision Industry Consultation - Response*



## **Feedback through Responses broadly told us:**

- Layout and Content was readily navigated and understood
- Concerns over complexity of the SROH overall:
  - *cross referencing; large number of (too many) options*
  - *strong call for simplification especially for site use.*
- Tabulation of Material Options was a typical request
- Clarity on the purpose and status of 'Notes for Guidance'
- Some 'hot potato' issues
- Call for Handbook (due to be published)



# *Final Scope of SROH Review*



## **Alongside Industry Response, Scope included:**

- ARMs – Approval Process; improve take-up
- Very High Amenity areas - tighter intervention
- Compaction – end performance specification (bound only)
- Stepped-back Surface Course reinstatement ('T' X-Section)
- SMA/Thin Surfacing – experience updates; improved NfGs
- Review of Guarantee Period (Welsh HAs) only
- Compliance Testing – review CSS Report
- Interface with WRAP



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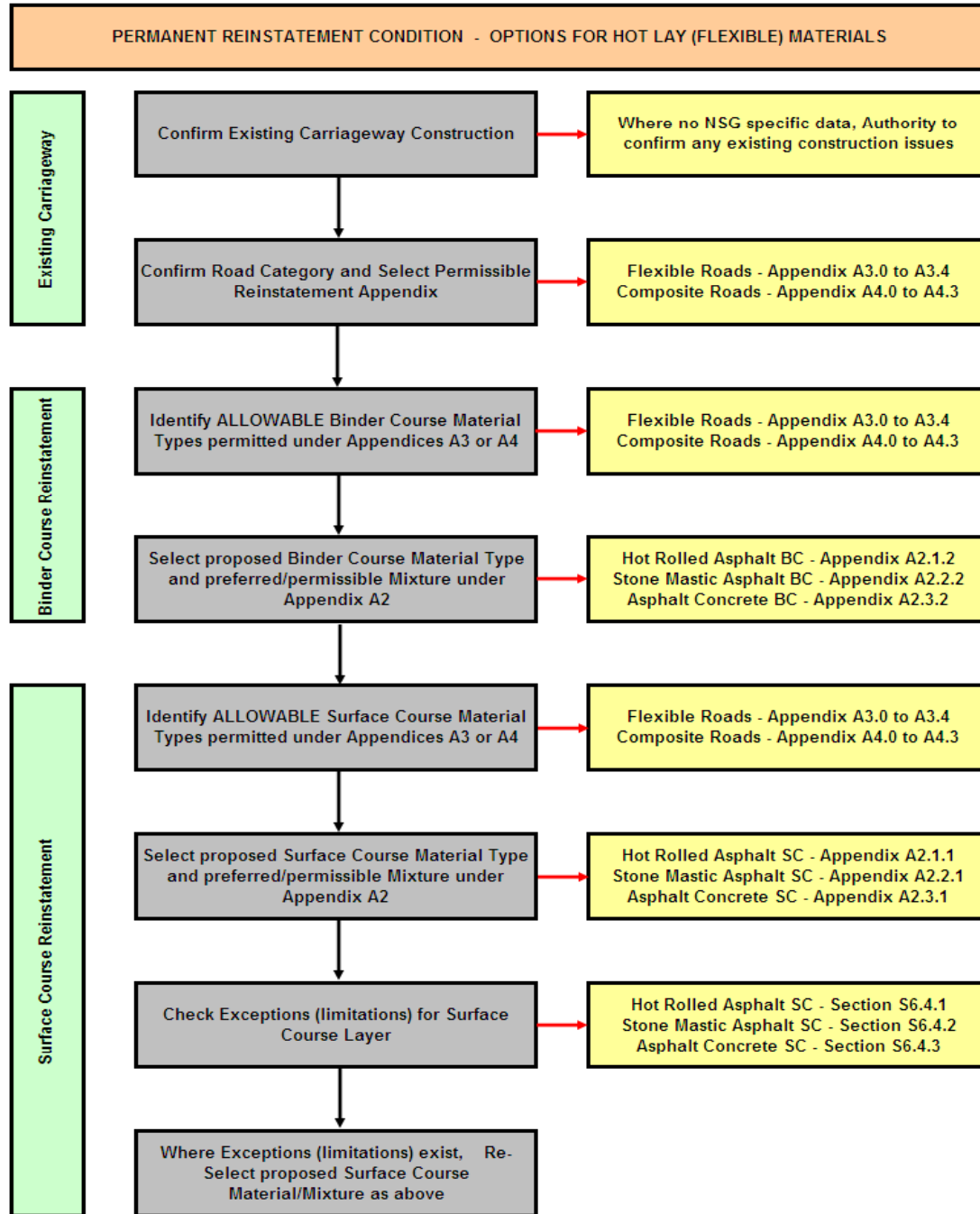
# Section S0 - Preamble to the Specification



- New Section prepared in response to navigation issues
- Provides narrative on inter-link between:
  - *Specification 'S' Sections – reinforce logical ordering*
  - *Appendices – integral to SROH, include technical details*
  - *Notes for Guidance:*
    - *Complimentary information to 'S' Sections and Appendices*
    - *Not legally enforceable*
- Navigation Flow Chart – Fig. S0.1



Figure S0.1 Flexible Reinstatement Material Selection Process



# Section S1 – Operational Principles



- **S1.1 – General** - Introduces EN 13108 Asphalt standards
  - ‘Asphalt’ - generic term for bituminous binder:aggregate mixtures:
    - Hot Rolled Asphalt (HRA)
    - Stone Mastic Asphalt (SMA)
    - Asphalt Concrete (AC) [formerly BS4987 Dense Bituminous Materials]
- **S1.4 – Footways** - Introduces (very) High Amenity Areas
  - Undertaker to match HA standards where HA demonstrates such
- **S1.6 – Alternative Materials** – reference to A9 [ARMs]
  - Phrase “*Subject to the provisions of Appendix A9...*” seeks to prevent circumvention of A9 Trials



## Section S1 – Operational Principles



- **S1.8 – Apparatus in Road et al Structures** - Introduces examples shallow apparatus:
  - *Examples - cover over culverted watercourses, utility apparatus*
  - *SU to consult HA – “approval shall not be unreasonably withheld”*
  - *Post-Consultation:*
    - *demands to prevent routine laying at shallow depth*
    - *DfT legal advice prevented further restrictions being added*
- **S1.10 – Trees** – Introduces NJUG4 Guideline extracts
  - *Bulk of text removed to NfGs post-Consultation*



# Section S2

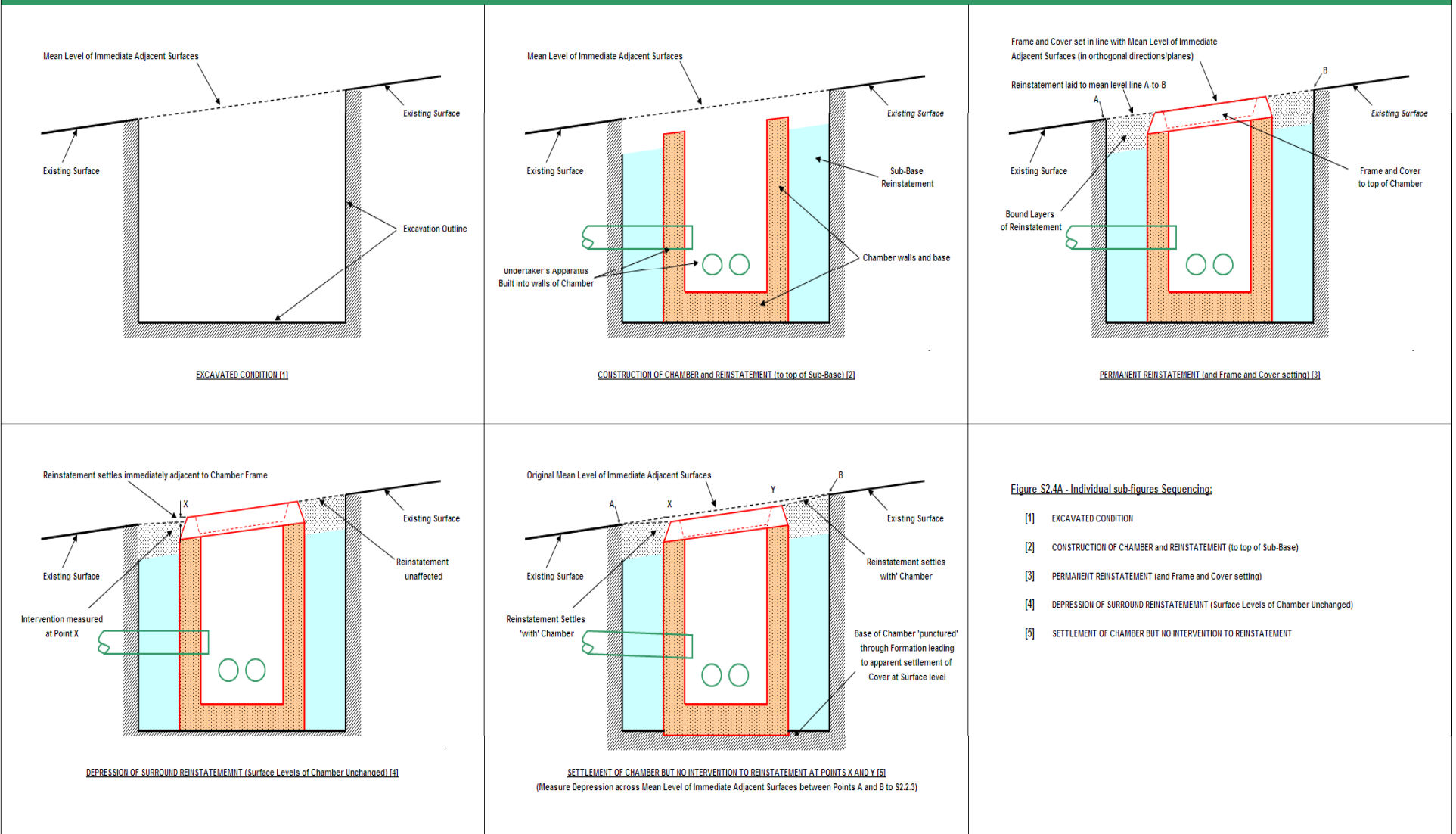
## Performance Requirements



- **S2.3 – Fixed Features**
  - *New Figure introduced post-Consultation*
- **S2.6.2 – Texture Depth**
  - *Table S2.5 adjusted to current Standards*
  - *Sand Patch Testing guidance improved (new Figure)*
- **S2.6.3 – Polished Stone Value (PSV)**
  - *PSV values unchanged*
  - *PSV not to exceed adjacent Surface - S2.6.1(1), but*
  - *HA may specify its own local aggregate standards*



Figure S2.4A As-Laid Profile of Fixed Features and relationship with Immediately Adjacent Surfaces - Examples



# Section S3 – Excavation



- **S3.1 - Breaking the Surface**
  - *First reference to Natural Materials (A12 covers)*
- **S3.5 – Drainage – Water Ingress**
  - *SU to take measures to prevent permanent disturbance of artificial or natural drainage systems/paths*
  - *HA to inform SU if known history of flooding or drainage problems*
  - *SU to inform HA if sub-base materials may impede drainage*
  - *Water Egress moved to S11.4 and NfG11.4*



# Section S6

## Flexible and Composite Roads



- **S6.2 – Sub-base Reinstatement**
  - *Confirms that SMR ARMs may be used up to top side of sub-base*
- **S6.3.3 – Base Equivalence**
  - *Base Course equivalence (sub-base) in Type 3/4 roads unchanged*
- **S6.4.2 – SMA and Thin Surface Course Systems**
  - *For existing SMA Surface Courses:*
    - *Reinstate with generic SMA of same size aggregate, or*
    - *TSC system (at HA's request)*
    - *HA may approve size nominal aggregate size reduction*



# Section S6

## Flexible and Composite Roads



- **S6.4.3 – Asphalt Concrete Surface Course**
  - *Reinstatement with any permitted SC material retained*
- **S6.4.5.2 – High Friction Surfacing**
  - *For cold-applied HFS material, existing SC to be trafficked or aged before applying.*
  - *HFS materials to be laid in different Type Roads by:*
    - *Type 1 - HAPAS-approved Contractors*
    - *Types 2, 3 and 4 - experienced (not HAPAS-approved) Contractors*
  - *Some HFS wear quickly; must last Guarantee Period*



# Section S6

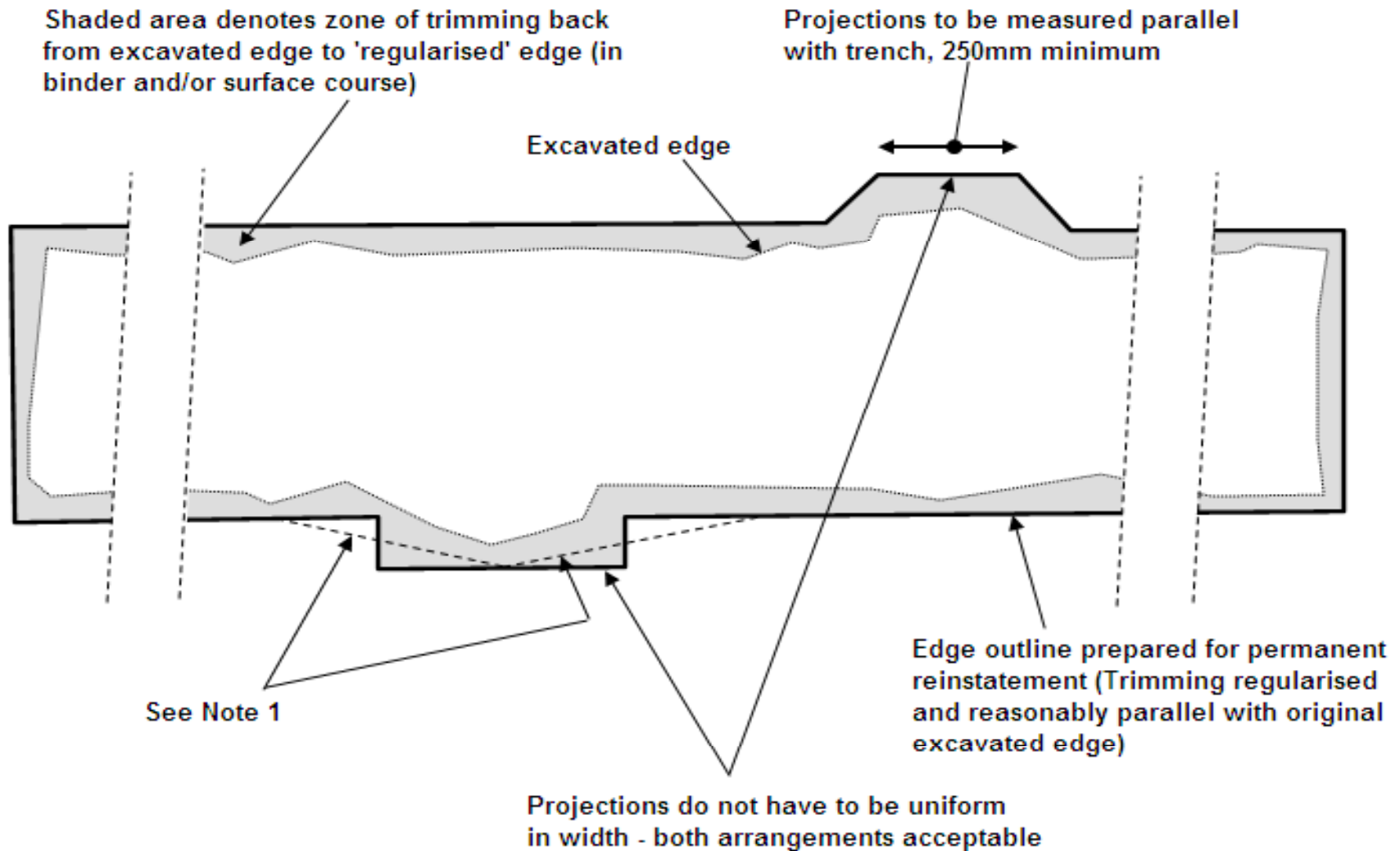
## Flexible and Composite Roads



- **S6.4.10 – Small Excavations et al** – extended use
  - *Permitted SC may replace BC within 350mm of Access Chambers*
- **S6.4.11 – Large Diameter Cores (>150mm)**
  - *New Clause to support new innovations such as key-hole works*
- **S6.5.2 – Edge Preparation**
  - *Improved Clauses and enhanced Figure S6.1*
    - *Angles less than 90° permitted – subject to proof of compaction*
    - *Squaring off not necessary*
    - *250mm parallel cut-back for trenches clarified*



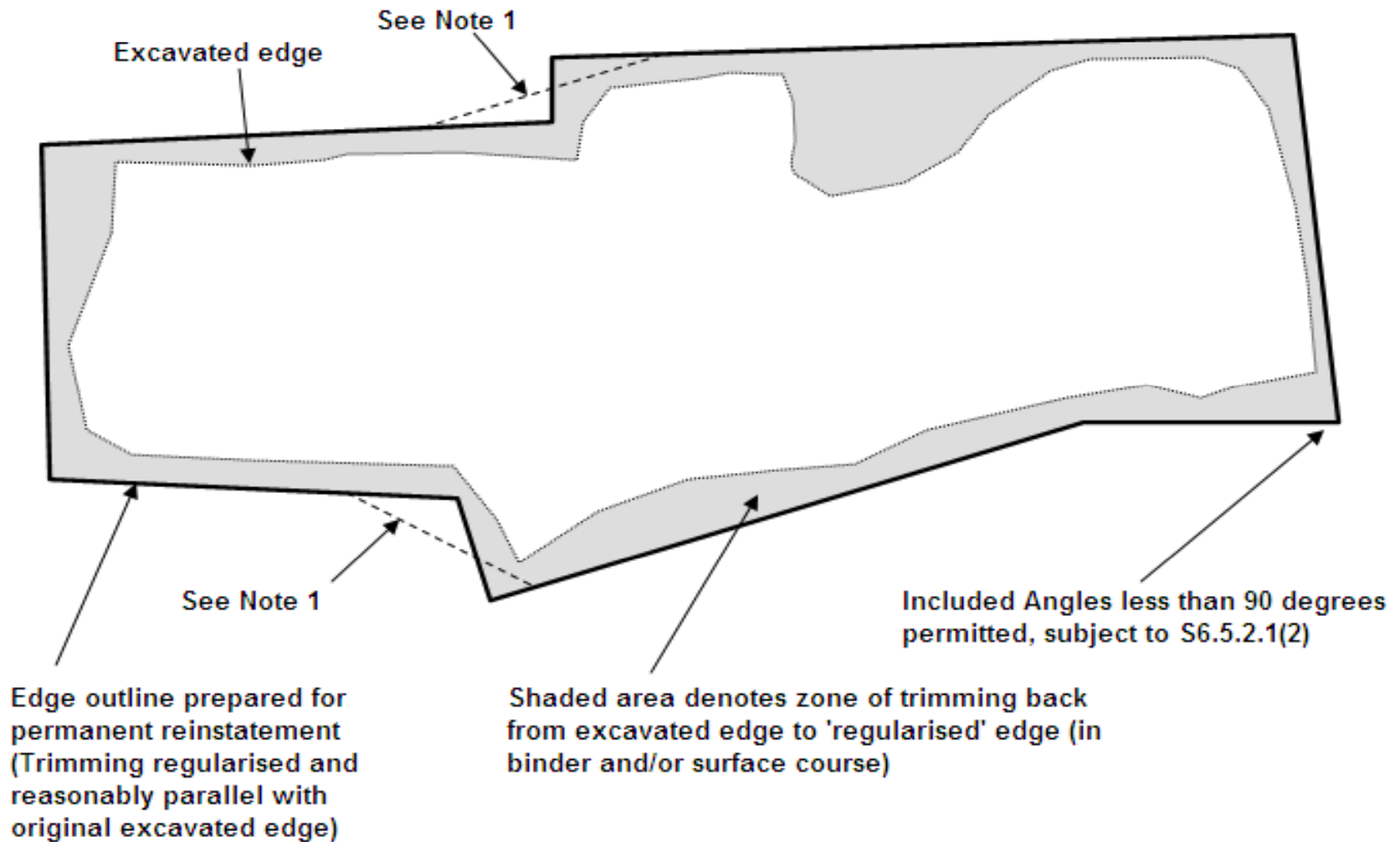
Figure S6.1 Examples of Prepared Edge (Example 1)



EXAMPLE 1 - LONGER TRENCH OPENING

Note 1: Alternative trimmed edge outline avoids squared-off areas and improves ease of compaction.

Figure S6.1 Examples of Prepared Edge (Example 2)



**EXAMPLE 2 - SMALLER PATCH OPENING**

**Note 1:** Alternative trimmed edge outline avoids squared-off areas and improves ease of compaction.

# Section S6

## Flexible and Composite Roads



- **S6.5.2.3 – Proximity to Edges/Fixed Features**
  - *New Figure S6.2 provides improved clarity*
- **S6.5.2.5 – Stepped Joints**
  - *Limited to Type 0 and 1 Roads where it is HA custom and practice*
  - *Restricted to Surface and/or Binder course*
  - *Small reinstatements and narrow transverse trenches excluded*
  - *Stepped profile to match HA's policy – not greater than 75mm*
  - *New Figure S6.4 provided*



Figure S6.2 Edge Requirements and Trim Lines in Carriageways

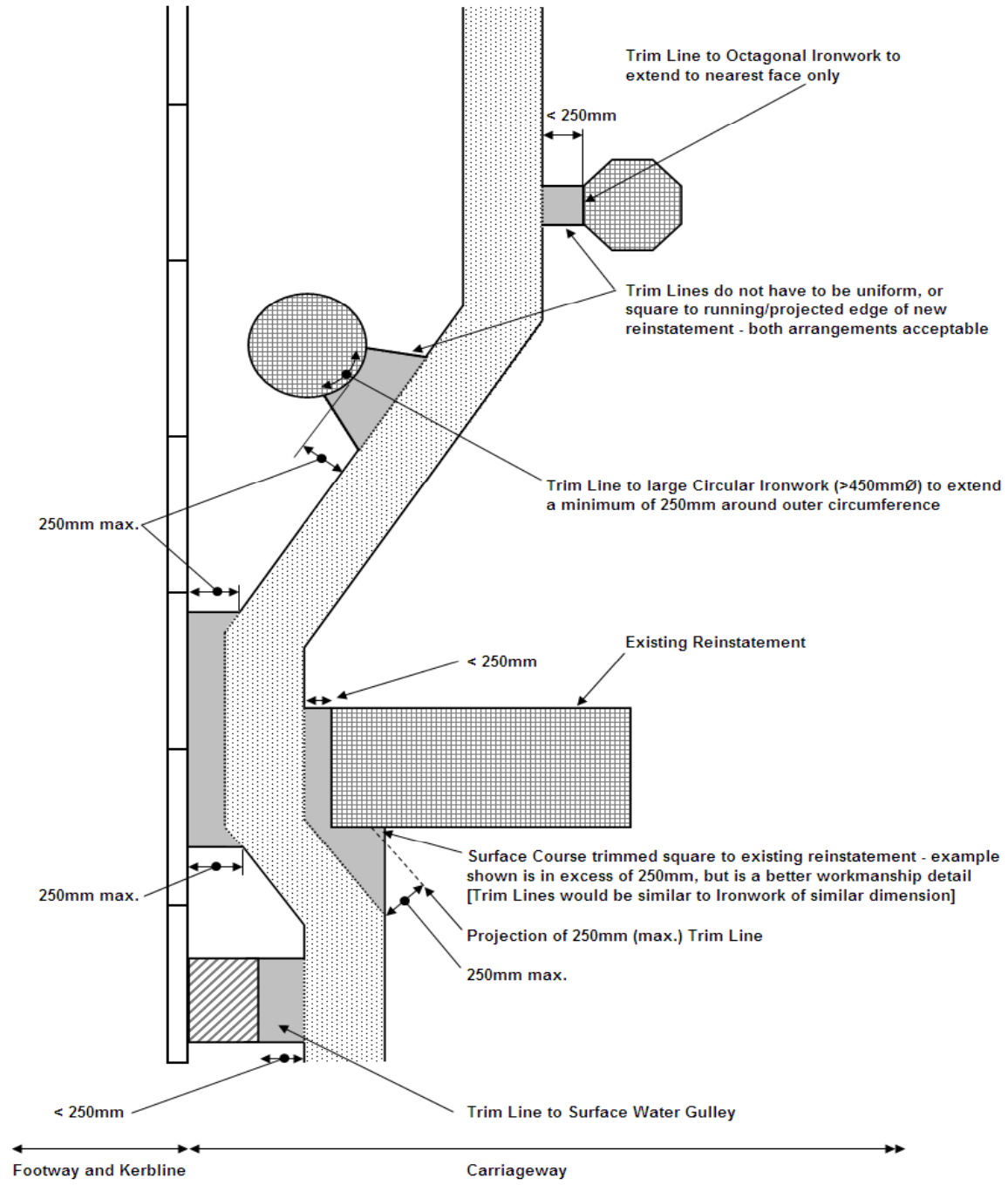
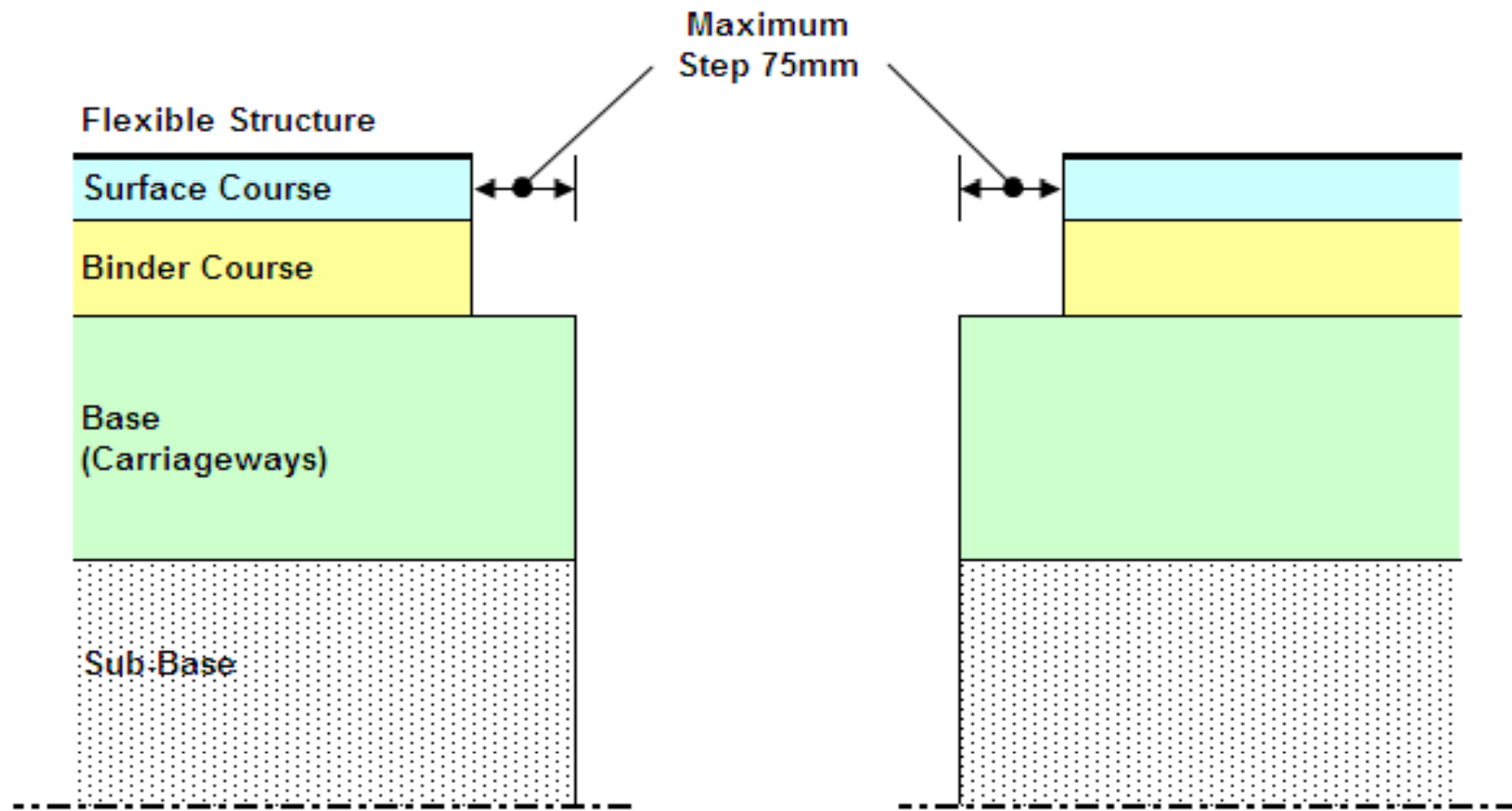


Figure S6.4 Stepped Joint in Flexible Carriageway Types 0 and 1



# Section S8

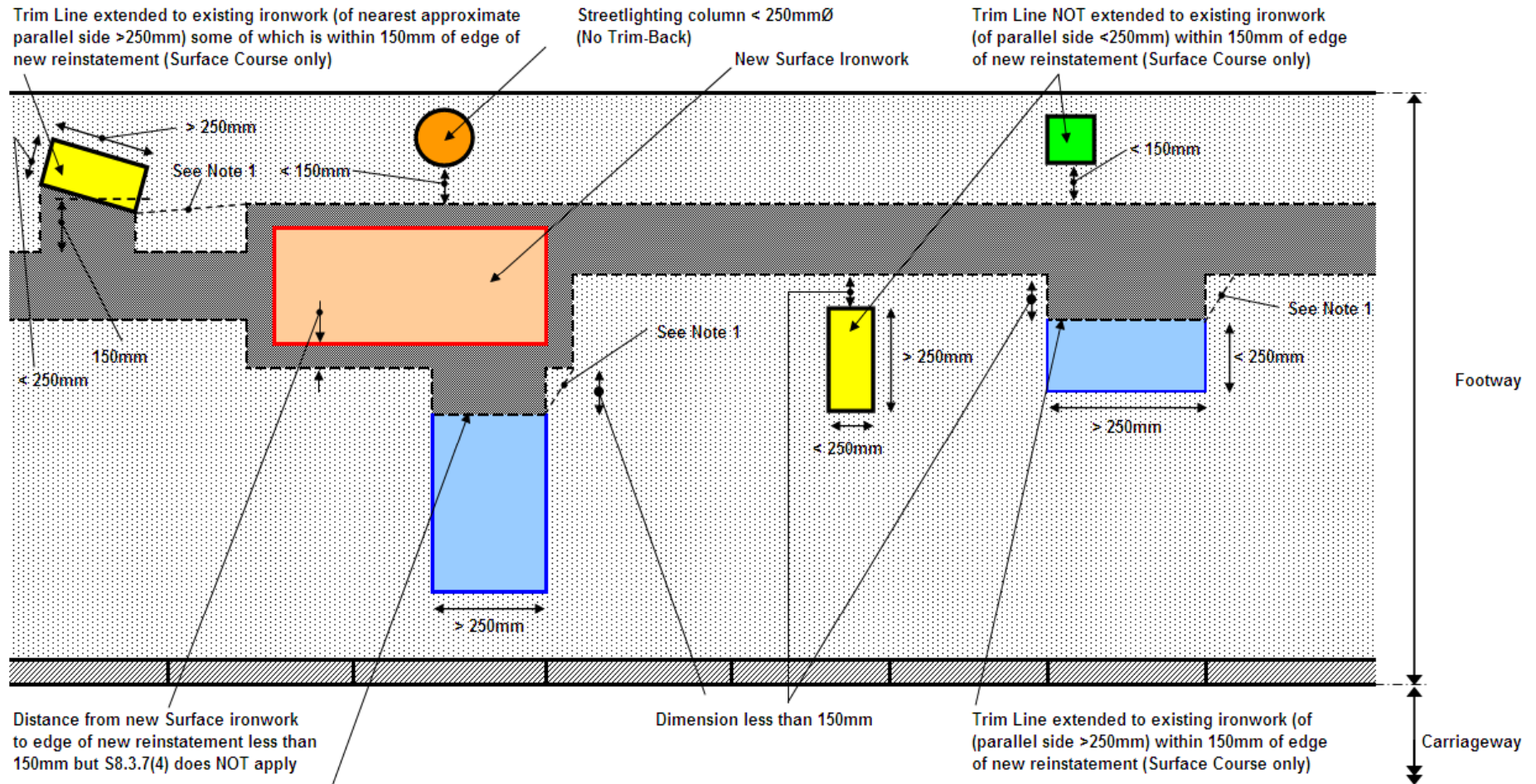
## Footways, Footpaths, Cycle Tracks



- **S8.3.4 – (SC to) Other Asphalt Areas**
  - *Where HA has maintained a policy as such:*
    - *Mastic Asphalt/Sand Carpet to have like-for-like replacement*
    - *HA to provide details of Suppliers*
    - *Notes for Guidance NG8.3.4 recommends programming of works.*
- **S8.3.6 – Modular Footways et al**
  - *Reinstatement in Natural Modules:*
    - *Clauses for re-use of fragmented natural modules; Reference to A12*
- **S8.3.7 – Edge Requirements (in Footways)**
  - *No trimming to small ironwork (new Figure S8.1)*



Figure S8.1 Edge Requirements and Trim Lines in Footways



Trim Line extended to existing ironwork (both sides >250mm) within 150mm of edge of new reinstatement (Surface Course only)

**Note 1:** Alternative trimmed edge outline avoids squared-off areas and improves ease of compaction.

# Section S10

## Compaction Requirements



- **S10.1 – Introduction** – Compaction Equipment Records
  - *Relevant (maintenance) records shall:*
    - *be provided to HA (within a reasonable period of time)*
    - *If not provided, HA may monitor more closely*
- **S10.2.3 – Bituminous Materials** – Air Void Testing
  - *Air Void Testing methods confirmed:*
    - *Maximum Density - EN 12697 – 5 Procedure A, in water*
    - *Bulk Density - EN12697 - Procedure C sealed specimen (in disputes)*
    - *Maximum and Bulk Densities used to determine Air Voids to EN12697- 8.2*



# Section S10

## Compaction Requirements



- **S10.2.3 – Bituminous Materials – Air Void Limits**
  - *Air Voids is end-Performance Test for Bound Materials*
  - *No. of Passes removed to Notes for Guidance*
  - *3 minor changes to Table 10.1 (Carriageways only):*
    - *AC 10 Close SC – increased to 11% (from 10%)*
    - *HRA SC – decreased to 7% (from 8%)*
    - *HRA BC – decreased to 9% (from 10%)*
- **S10.2.3 – Bituminous Materials – Coring Locations**
  - *Anywhere in reinstatement*
  - *No closer than 100mm from SU Apparatus*



# Section S11 – Ancillary Activities



- **S11.1 – Traffic Signs, Road Markings**
  - *Comprehensive update; reflects current materials*
  - *Small Reinstatements – cold-lay tape up to 2.5m per tape*
- **S11.4.2 – Water Egress (Reinstatements)**
  - *HA to initiate investigation to find cause/source of water egress*
  - *HA to contact SU it considers responsible; SU to cooperate*
  - *If egress due to SU operations, remedials agreed at SU's cost*
  - *NG11.4.2 provides guidance for other water egress:*
    - *at street surface*
    - *from Apparatus*



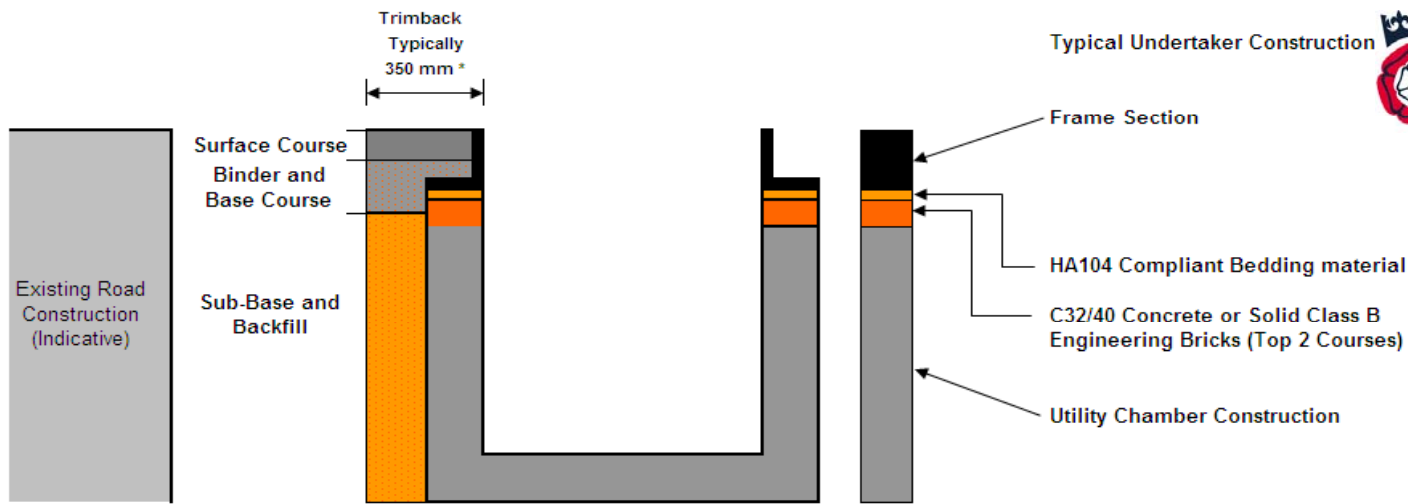
# Section S11 – Ancillary Activities



- **S11.5 – Ironwork and Apparatus – in Roads**
  - *Significant new Clauses to improve reinstatements surrounding SU Apparatus*
  - *Flowable and Asphalt Reinstatement materials considered*
  - *New Figure S11.1 provided*
  - *Provides indicative information for:*
    - *SU apparatus construction and setting of covers*
- **S11.7 – Overbanding**
  - *Current Clause broadly unchanged (HAPAS-approved products)*
  - *2 products should gain HAPAS Certification in 2010*

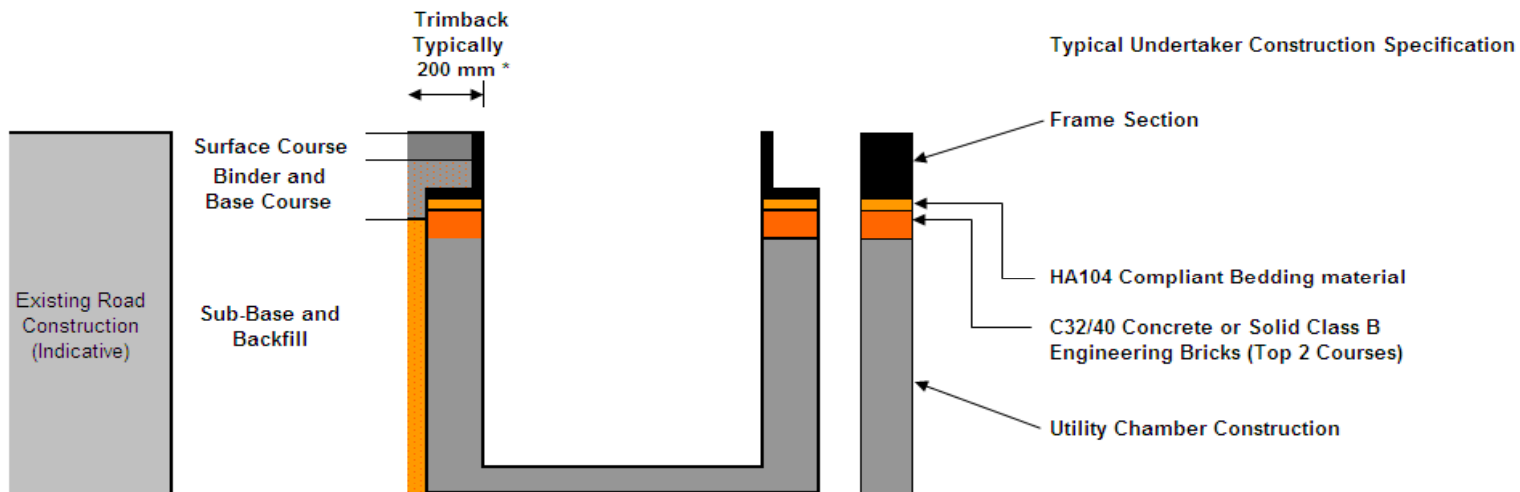


Figure 11.1 Reinstatement adjacent to larger Undertaker's Apparatus in the Carriageway



Example 1 - Asphalt Reinstatement Materials

\* Trimback Typically assumes 150 mm Frame + 50 mm Adjustment + 150 mm Compaction Sole Plate



Example 2 - Flowable Reinstatement Materials

\* Trimback Typically assumes 150 mm Frame + 50 mm Adjustment



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# Section S12 – Remedial Works



- **S12.3 – Repair of Cracking – Interface Cracking**
  - *Interface Cracking (Cracks > 2.5mm width)*
  - *All carriageway trenches reduced max. crack length of 500mm*

**Table S12.1 – Interface Cracking**

Reinstatement	Surface	Maximum Crack Length	
Small Excavations to S1.5.1	All Surfaces	500 mm total cumulative length	
Narrow Trenches to S1.5.2 and All Other Openings to S1.5.4	Footway	1000mm maximum Crack Length, Or 10% of Reinstatement Perimeter )	Whichever is greater
	All Carriageway Types	500mm maximum Crack Length, Or 10% of Reinstatement Perimeter )	Whichever is greater

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# Appendix A2 – Key to Materials



- **Appendices A2.0 to A2.4 incl.**
  - *Substantial re-write primarily introducing BS EN 13108*
  - *Builds on HAUC (UK) Advice Note No. 2008/03 - **Guidance Note on the European Asphalt Standards***
  - *Updated preferred and permissible materials*
  - *New A2.0 – reinforces hand-lay reinstatements*
  - *Revised A2.4 – Cold-lay Surfacing Materials*
    - *Includes old A10 – PCSMs (still HAPAS approved) **[SU discretion]***
    - *PCSMs used in substitution for any equivalent hot-lay material*
    - *e.g. SMA PCSM replaces hot-lay SMA*
    - *Re-amplifies DSMs only as Interim material*



# Appendix A2 – Key to Materials



- **Appendix A2.5 – Structural Layer Thickness Tolerances**

- *New sub-Clause to deter excessive over-thickness*
  - *Requisite lift thicknesses to be met*
  - *Binder and Base Course thicknesses still required*
  - *Surface Course performance to S2 re-amplified*

- **A2.7 - Bituminous Laying Temperatures**

- *Temperatures updated to current standards – few changes*

- **A2.10 Key to Reinstatement Methods**

- *New Table A2.6 – tabulating all Reinstatement Methods*

- **A2.11 - Hot Lay Materials Selection Process**

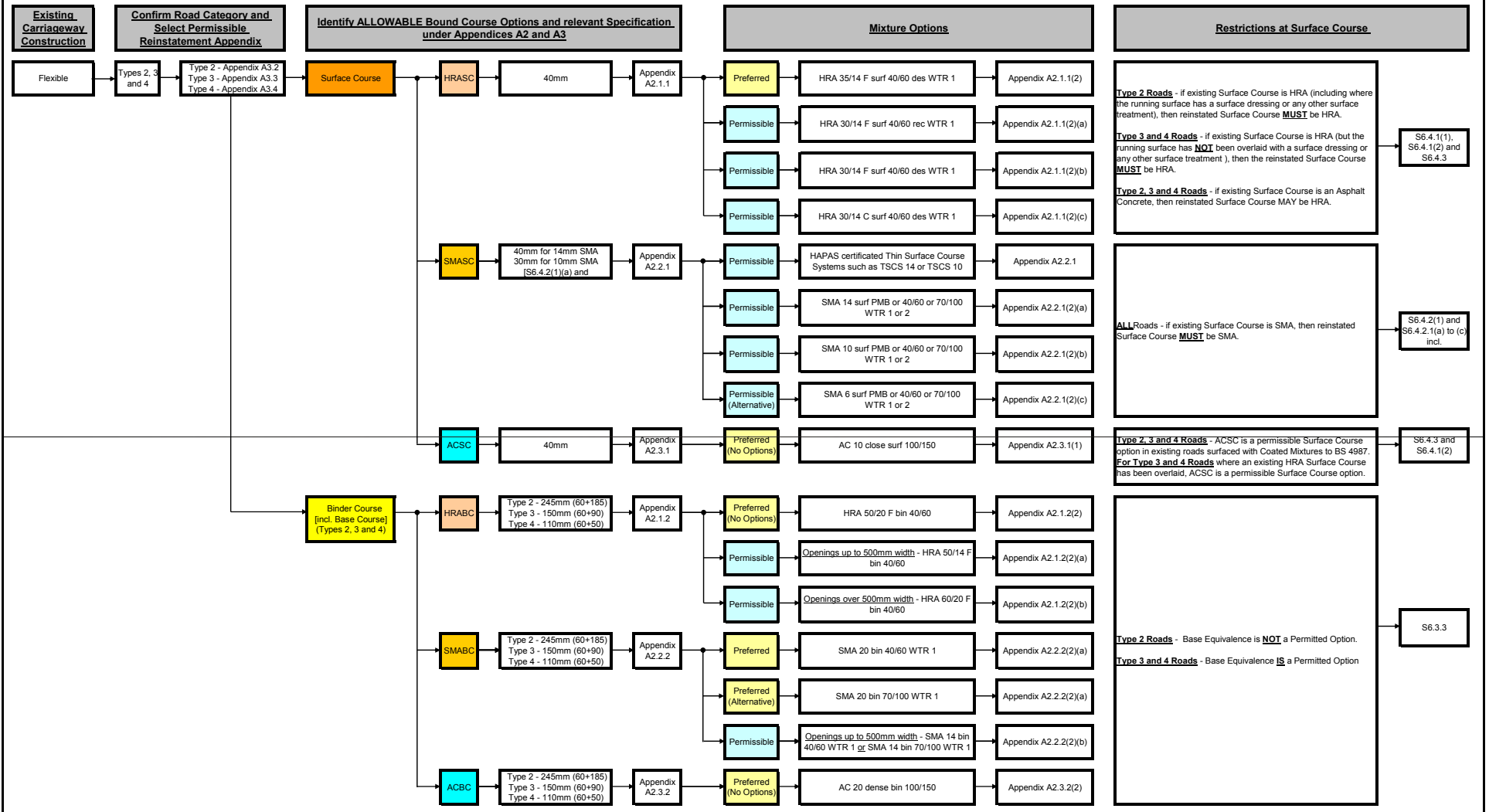
- *3 new flowcharts support correct material selection*



Table A2.6 Key to Reinstatement Methods

Reinstatement Method (At First visit)	Flexible & Composite Roads Section S6		Rigid & Modular Roads Section S7				Footways, Footpaths & Cycle Tracks Section S8		
	Flexible (Appendix A3.0-A3.4 incl.)	Composite (Appendix A4.0-A4.3 incl.)	Rigid (Appendix A5.0-A5.2 incl.)	Modular			Flexible (Appendix A7.1)	Rigid (Appendix A7.2)	Modular (Appendix A7.3)
				Bituminous Base (Roadbase) (Appendix A6.1)	Composite Base (Roadbase) (Appendix A6.2)	Granular Base (Roadbase) (Appendix A6.3)			
All Permanent	Method A (Types 0-4 incl.)	Method A (Types 0-4 incl.)	Method A (Types 0-4 incl.)	Method A (Types 3, 4 only)	Method A (Types 3, 4 only)	Method A (Types 3, 4 only)	Method A	Method A	Method A
Interim with Permanent Binder Course	Method B (Types 0-4 incl.)	Method B (Types 0-4 incl.)	N/A	N/A	N/A	N/A	Method B	N/A	N/A
Interim with Permanent Base (Roadbase)	Method C (Types 3, 4 only)	Method C (Types 0-4 incl.)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Interim with Permanent Sub-base	Method D (Types 0-4 incl.)	Method D (Types 0-4 incl.)	Method D (Types 0-4 incl.)	Method D (Types 3, 4 only)	Method D (Types 3, 4 only)	Method D (Types 3, 4 only)	Method D	Method D	Method D
Permanent incorporating Interim Surface Overlay	N/A	N/A	Method E (Types 0-4 incl.)	N/A	N/A	N/A	N/A	N/A	N/A

Figure A2.4 Permanent Reinstatement Options for Hot Lay Flexible Materials (Road Types 2, 3 and 4)



# *Appendices A3.0 to A7.3 incl.*



- General Drawing updates, including:
  - *EN 13108 terminology*
  - *Thicknesses checked to conform HD26 Standard*
  - *Minor thickness changes – A3.0 and A3.1 only*
  - *Correction and Standardisation of Reinstatement Methods*
  - *Reinstatement Methods A-D shown in all cases*
  - *Reinstatement Method E introduced for Rigid Roads A5.0-A5.2*
  - *SMF Materials in Sub-base Drawings*



Not to Scale

**METHODS**

**A**

**B**

**C**

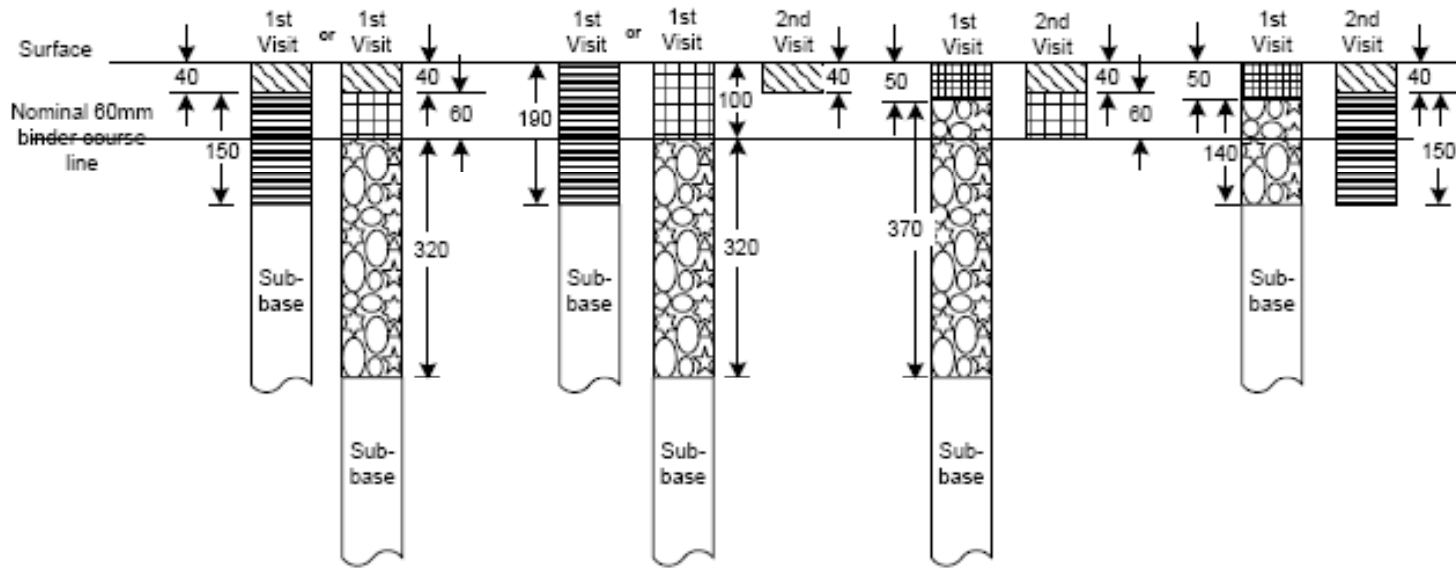
**D**

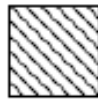




ALL  
PERMANENT

PERMANENT  
BINDER COURSE

PERMANENT  
BASE

PERMANENT  
SUB-BASE



-  HRASC  
ACCSC  
SMASC  
PCSC
-  HRABC  
ACBC  
SMABC
-  HRABC  
ACBC  
SMABC  
PCBC
-  DSM  
PCSM
-  GSB 1

**NOTES:**

- 1). Sub-base in accordance with Appendix A3.5
- 2). For alternative reinstatement materials refer to Appendix A9
- 3). Where 10mm SMASC is used the thickness is reduced to 30mm and the binder course adjusted accordingly
- 4). Where a road has been constructed, by the Authority, to HD 26 design standards, and informs the Undertaker accordingly, the total asphalt thickness shall be increased to 250mm (assuming 100/150 pen) by the use of additional binder course material. In these circumstances the specified asphalt thickness may not be reduced by the additional sub base in accordance with s6.3

**Appendix A3.3**

**Flexible Roads Type - '3'**



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# Appendix A8.0

## Compaction Requirements



- **A8.3 - Bituminous Mixtures**
  - *Bituminous Mixtures in A2 to be compacted to air voids in S10.2.3*
    - *Effectively SROH has moved to a end-performance for hot-lay*
    - *Choice of Compaction Equipment rests with the Utility, from those permitted under S10.*
    - *Compaction guidance (No. of Passes) now in NfG A8*
  - *Compacted materials to capable of being wet flush cored:*
    - *hot materials - upon reaching ambient temperature*
    - *PCSMs – at 6 months from the date of the permanent reinstatement*



# Appendix A9.0

## Alternative Reinstatement Materials

- Wholly re-written
- Extends on HAUC(UK) Advice Note No. 2009/01 - The Use of ARMs
- Extends use of Hydraulically Bound Materials (HBMs)
  - *HBMs referenced back to SHW*
  - *Where conformance to SHW shown - deemed accepted*
  - *No 2-year trial required (similar to FCRs principle)*
- Simplified Trial Methodology outlined in A9.5
- Factory Prod'n Control/Quality System amplified post-Consultation
- Extension of Approved ARMs to other HAs - A9.5.2.1(9):
  - “After the successful completion of an Approval Trial permission further use of the ARM shall not be unreasonably withheld by any other Authority and shall only be denied for engineering reasons.”

# Appendix A11

## Bitumen Binder Equivalence



- Limited to Binder Course Table A11.1 updated

Material	Bitumen Pen Grade	Combined Base/Binder Course (mm)					Binder Course Only (mm)	
		Road Type					Road Type	
		0	1	2	3	4	3	4
SMA BC	40/60	305	260	200	120	100	60	60
	70/100	NP	285 H	225	135	105	60	60
	100/150	NP	NP	245	150	110	60	60
20 mm ACBC	40/60	305	260	200	120	100	60	60
	70/100	340 H	285 H	225	135	105	60	60
	100/150	375 H	310 H	245	150	110	60	60
	160/220	NP	NP	NP	NP	155 H	NP	85 H
50/20 or 60/20 HRABC	40/60	350	295	230	150	110	60	60
	70/100	340 H	285 H	255	185	135	75	75
	100/150	NP	NP	275 H	215 H	155 H	85 H	85 H

**Notes to Table A11.1:**

- 1) NP = Not Permitted
- 2) H = Hand-lay only - not recommended for hot weather & not permitted for machine-lay
- 3) Shaded Cells denote the thicknesses for the preferred binder grades noted in Appendix A2 against the binder courses for SMA, AC and HRA.
- 4) Thicknesses for combined binder and base course for Flexible Roads noted in Appendix A3 generally reflect ACBC material, being the more commonly used material.

Table A11.1 - Permitted Base/Binder Course Binder Grades and Layer Thickness



# Appendix A12

## Reinstatement of Modular Surfaces



- **A12.2 – Permanent Reinstatement** - Substantial re-draft
  - *New sub-clauses on re-use of damaged natural modules*
  - *Improved guidance on permissible gaps (infills) between modules:*
    - *Infill widths should be minimised, 50mm where possible*
    - *Infills should also match existing work by HAs*
    - *Limiting exceptions where infills exceed 50mm*
    - *Introduce concept of Acceptable Localised Loss of Pattern*
  - *New Guidance Notes (NGA12) support principles*



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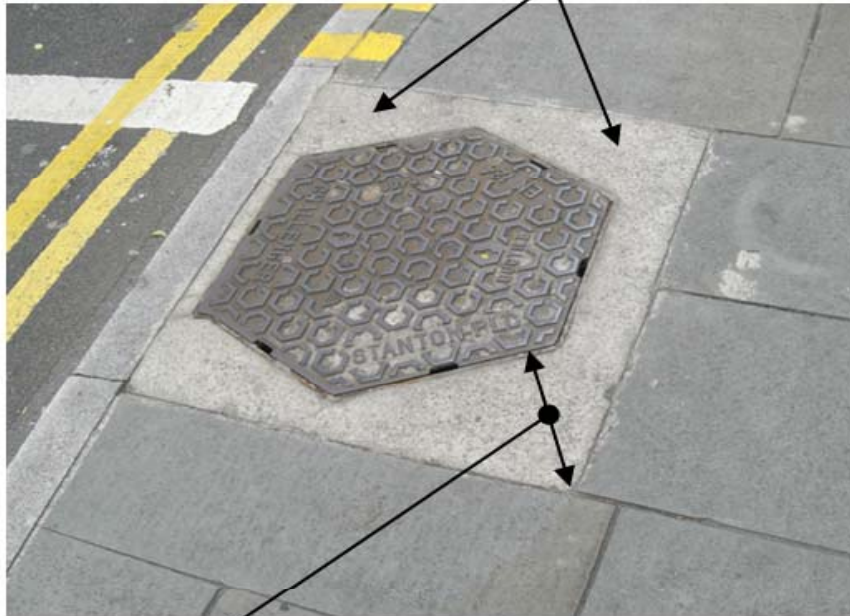


# NGA12

## Reinstatement of Modular Surfaces

Figure NGA12.1 Extension of Infill Concrete - Modules greater than 300mm [Picture 1]

Infill concrete extended to nearest module to accommodate irregular shape of ironwork and avoid 'cutting' or 'trimming' of modules [modules of side greater than 300mm in this example].



Maximum width of infill measured orthogonally from ironwork face increased to 200mm (maximum) to accommodate irregular shape.

Figure NGA12.3 Extension of Infill Concrete - Modules up to 300mm

Use of varying width concrete to form an 'external' regular boundary shape (rectangular) with existing modules avoids 'cutting' or 'trimming' of existing surround modules



Infill concrete extended to nearest appropriate (full) module to accommodate orientation of ironwork and avoid 'cutting' or 'trimming' of modules to undesirably small sizes [modules of side up to 300mm in this example].

Maximum width of infill measured at right angles to ironwork face up to module width + 25mm

# NGA12

## Reinstatement of Modular Surfaces

Figure NGA12.5 Acceptable Loss of Module Pattern - Modules up to 300mm [Picture 2]

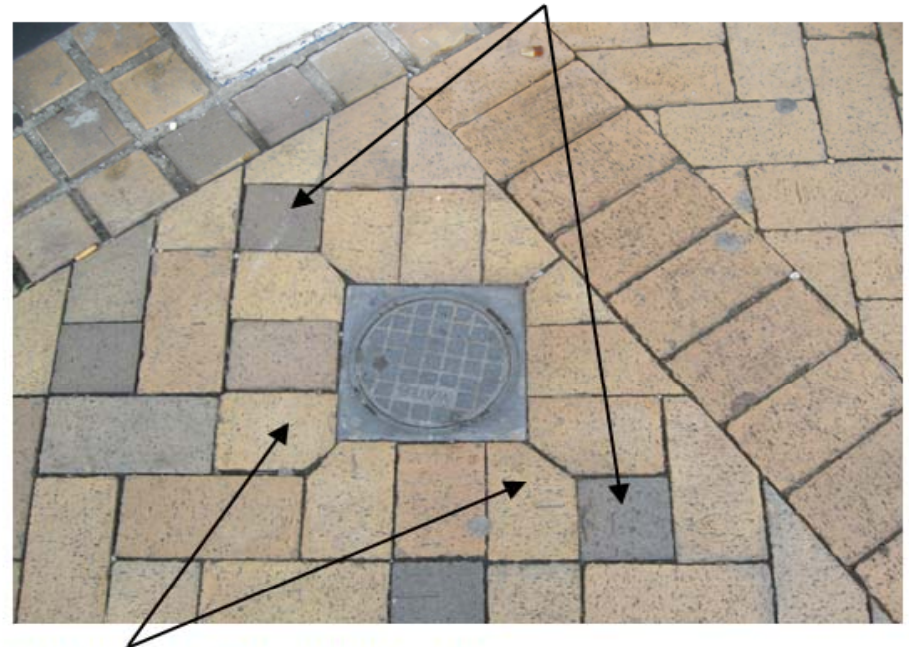
Use of grouped larger cut/shaped blocks leads to acceptable loss of local pattern (herringbone in this example). This is preferred to small and/or angular cut blocks otherwise necessary to maintain regularity of existing block paver pattern



Use of larger cut and/or shaped blocks leads to preferable arrangement of block pavers at corner to stringer course.

Figure NGA12.6 Acceptable Loss of Module Pattern - Modules up to 300mm [Picture 3]

Use of cut 'half blocks (100mm x 100mm) minimises apparent loss of local pattern (herringbone in this example)



Use of larger cut and/or shaped blocks leads to preferable arrangement of block pavers as surround to small Stop-Cock type apparatus.

# NG3 - Excavation



- **NG3.1 – Breaking the Surface**
  - *In High Amenity and Natural Materials (Modular) Surfaces*
    - *SU shall lift the existing modules carefully and store for re-use.*
    - *Recent modular construction tolerances make it unlikely that first module in an individual excavation can be lifted without the module itself being damaged*
    - *Damage may be inevitable – expectation that damage limited to 1 module*
  - *Aesthetics*
    - *Shape/Line of larger trench reinstatements should have regard wherever possible to the aesthetic appearance impact on the street scene.*



- **NG6.4.5.2 – High Friction Surfacing (HFSs)**
  - *HFSs usually laid for safety - reinstate as soon as is practicable*
  - *Performance on concrete may not be as good - check HAPAS Certificate*
  - *HFSs suppliers may have specific surface laying requirements*
  - *Recommended that HFSs are applied to a surface course that has been trafficked for some weeks - **helps prevent cracking extending into surface course, induced by application of a newly laid HFS***

# NG6 – Flexible and Composite Roads

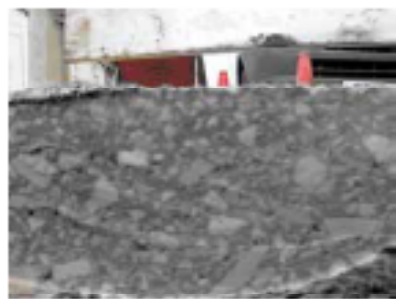


- **NG6.5.2 – Edge Preparation**

- *New additional sub-clauses reinforce good edge sealant practices*
- *In wet weather, adherence to manufacturer's instructions is essential:*
  - *Brushed sealant drying times may vary between 5 minutes and 2 hours*
  - *Spray sealant drying times may vary between 1 and 15 minutes*
- *All excess water/loose material should be removed from the cut faces*
- *Bound vertical edges must be clean and free from slurry and dust - stone in existing layers clearly visible.*
- *3 Case Study examples (SWHAUC) for different edge conditions:*
  - *Example 1 - dry and clean*
  - *Example 2 - wet*
  - *Example 3 - dirty and damp*



## Example 1



A

**EXAMPLE 1**  
**DRY/CLEAN EDGE**  
**CONDITIONS**  
**GOOD BONDING**  
 [Weather: dry, warm, overcast]



B

**Photo A**  
 Clean and dry saw-cut edge.

**Photo B:**  
 First application of sealant.



C

**Photo C:**  
 Second application of sealant to top of reinstatement edge following compaction of first reinstatement lift.

**Photo D – Core Comments:**

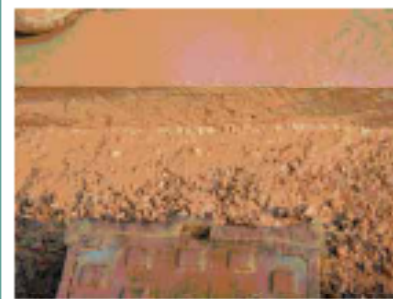
- Core taken through joint shows that sealant has adhered to vertical edge,
- A good bond observed between reinstatement and adjacent surfacing.



D

**Overall Comments:**  
 Reinstatement edge was clean, free of dust or 'caked' saw coolant.

## Example 2



A

**EXAMPLE 2**  
**WET EDGE**  
**CONDITIONS**  
**POOR BONDING**  
 [Weather: dry, hot sunny]



B

**Photo A**  
 Coating of wet slurry on saw-cut edge.

**Photo B:**  
 First application of sealant. [Only 5 minutes of drying time allowed before reinstatement commenced].

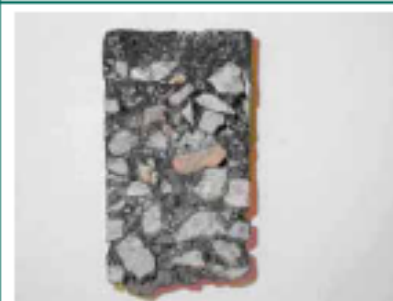


C

**Photo C:**  
 Second application of sealant to top of reinstatement edge following compaction of first reinstatement lift. [Only 2 minutes of drying time allowed before reinstatement commenced].

**Photo D – Core Comments:**

- Core taken through joint shows that sealant has not adhered to vertical edge,
- No bond observed between reinstatement and adjacent surfacing.



D

**Overall Comments:**

- Reinstatement edge should have been washed and substantially dried before application of spray sealant.
- Allowed drying time does not conform with Manufacturer's Instructions.
- Incorrect application of edge sealant could permit water penetration into joint, potentially leading to early life edge deterioration, settlement of trench and future (avoidable) defects.

# NG10 – Compaction Requirements



- **NG10.2.3 – Bituminous Mixtures – Air Void Testing**

- *Asphalt maximum density [ $\rho_{max}$ ] values used in air voids testing:*
  - *Are specific to asphalt mixtures/constituents from specific sources*
  - *Change in mix proportions/constituents requires  $\rho_{max}$  re-calculation*
  - *Consistent asphalt supply **may** allow an established  $\rho_{max}$  for a particular mixture/source to be used in routine testing*
  - *In disputes,  $\rho_{max}$  to be determined for mixture actually used.*
  - *$\rho_{max}$  may be determined from bulk samples, if available, or from material obtained from additional core samples.*



# NG11 – Ancillary Activities



- **NG11.4.2 – Water Egress** – Street Surface or Apparatus
  - *HA initiates investigatory works to determine cause/source*
  - *Prior to commencement HA to contact SU it believes responsible*
  - *SU to co-operate with HA, including:*
    - *take trial holes*
    - *check apparatus for water leakage or surcharge*
  - ***If** water egress caused by/associated with SU's apparatus, then:*
    - *remedial measures to be agreed between HA and SU at SU's cost*
    - *If no agreement, assess liability for (any) damage via S82 of the Act*



# Overview



- Working Party Brief from HAUC (UK)
- Pre-Revision Industry Consultation
- Key Areas reviewed:
  - *Specification 'S' Sections*
  - *Appendices*
  - *Notes for Guidance*
- **Consultation**
- **Post-Consultation**
- **Future Work and Issues**



# Consultation



- 3-month Consultation – August-November 2009
- DfT driven format, including:
  - *Questions tailored around changes – principles/cost-affecting*
  - *Compliance Testing*
  - *Extension of Guarantee Period*
  - *Free-text Section for general comments*



# *Post-Consultation [1]*



- Consultation responses provided to WP eff. January 2010
- c.126 Responses, including:
  - *85 Highway Authorities*
  - *20 Undertakers*
  - *15 Representative Bodies (JAGs/JUGs in main)*
- Estimated 4000 lines of data
- Significant points per line
- Substantial repetition (both sides)



## *Post-Consultation [2]*



- WP met over 3 days, recommend 3 month review period
- DfT unwilling to move on April 2010 launch
  - *Timeframe set in Minister's Industry Summit Response*
  - *PQs answered in House*
- Joint-Chairs obligated to undertake review outside WP
- Concern over compressed timeframe – error creep
- Final Proof reviewed 29<sup>th</sup> March 2010
- Minister signed off 01<sup>st</sup> April publication
- 01<sup>st</sup> October 2010 coming-into-effect date



## Post-Consultation [3]



### Extension of Guarantee Period – not accepted

- Clear division in responses
- SUs unanimous over current Guarantee periods
- HAs were mixed:
  - *Substantial majority of HAs not satisfied with current arrangements*
  - *Significant minority of authorities find 2-3 years acceptable*
  - *Some HAs cited Notts. V BT as an acceptable remedy*
  - *Other HAs preferred levy through S78 (Long Term Damage)*
  - *4 HAs provided additional data supporting extension*
- Working Group in Wales to be set up



## Compliance Testing – generally accepted in principle

- Stems from CSS Compliance Testing Report c.2005
- HAUC (UK) asked WP to review and prepare Scheme
- WP originally sought to include in published SROH
- DfT advised S71 did not support inclusion in SROH
- Proposal to implement via HAUC Advice Note process
- Proposed Scheme:
  - *Scheme substantially agreed by WP*
  - *Scheme to go to NJUG Board, then HAUC (UK)*

# *Future Work and Issues*



- Training and Education
- Completion of Compliance Testing
- Review of Handbook
- Manage HAUC FAQs process
- WP member constitution
- Support implementation in Wales, Scotland and NI

