

New Edition

This edition of the Code of Practice was prepared by a working party of the Highway Authorities and Utilities Committee (HAUC), and was the subject of extensive consultation with interested organisations.

The main new features of the present edition are:

- new British Standards (in support of EN (European) standards) for asphalt materials covering composition and binder contents;
- the inclusion of an effective width on either side of a trench excavation line in which modules require to be removed and replaced;
- new procedures for chalk materials;
- a new section on the use of sustainable alternative reinstatement materials (ARMs);
- changes in road categories to include a new Type 0 (heavily-trafficked) category;
- a new section on specialist surfacing materials;
- a new performance specification for materials compaction that includes void content measurement;
- the inclusion of layer thickness tolerances and laying temperatures for asphalt materials; and a new section on road sensors and road markings.

The Regulations and Code of Practice will come into operation on 1 July 2002. As soon as possible after publication in paper form, the Code will be posted on the DfT

Amendments to the Specification

Amendments to the Specification are as follows:

S1 Operational Principles

S1.1 General

Use of new terminology in future European standards (ENs).

- Surface course replaces the previous wearing course
- Binder course replaces the previous basecourse
- Base (roadbase) replaces the previous roadbase
- Materials to BS4987 replaces the previous macadam

S1.1.4 Unmade streets

New section stating that the Specification is applicable to streets, which are maintainable or prospectively maintainable at public expense. Only S4 Surround to apparatus and S5 Backfill apply to other streets, e.g. unmade streets.

S1.2 Guarantee Period

S1.2.2 Clarification of timing of the guarantee period.

- S1.3** Road Categories
 - S1.3.1** Introduction of Road Category Type 0 for roads carrying over 30msa to 125msa. Upper limit increased from 30msa to 125msa.
 - S1.3.4** Traffic growth assessment covers commercial vehicles in excess of 1.5 unladen weights and the calculation of traffic growth rates.
 - S1.3.5** Reinstatement design references to requirements for all road and footway, footpath and cycle track categories. See Appendices A1 to A11 and sections S10 and Appendix A8.
- S1.4** Footway, Footpath and Cycle Track Categories
 - S1.4.2** Modular surfaces - definition of high amenity construction requirements.
- S1.5.1** Definition of excavation and trench categories - small, narrow, deep and other openings.
- S1.6** Alternative Options
 - S1.6.2** Use of recycled, secondary or virgin materials of any combination thereof provided they meet the performance and any compositional requirements for relevant material layers.
 - S1.6.3** Use of stabilised materials as surround to apparatus and backfill and sub-base layers provided they meet the relevant performance requirements.
- S1.9** Geosynthetic Materials
 - S1.9.2** Undertaker to inform the Authority of the existence of geosynthetic materials prior to the commencement of his works. Where they are noticed during the works, an appropriate reinstatement method can be mutually agreed. In the latter case, the Undertaker is not liable for the repair of any damaged geosynthetic material.
- S1.10** Trees
 - New advice on practice in proximity to trees as set out in NJUG 10 document.
 - S1.10.1** Definition of precautionary area in which precautions are essential.
 - S1.10.2** List of precautions to be taken during excavation.
 - S1.10.3** List of precautions to be taken during reinstatement.
- S1.11** Conciliation and Arbitration
 - S1.11.1** New clause that links with other NRSWA Codes and explains the procedures to be adopted.

- S1.11.2** If no agreement reached, then the provisions set out in the Code of Practice for Co-ordination of Street Works and Works for Road Purposes and Related Matters should be followed.

- S2** Performance Requirements
 - S2.1** General
 - S2.1.1** New clause covering obligations for street types concerning performance requirements.

 - S2.1.4** New clause clarifying the effective width of the reinstatement of modular surface layers for modules $\leq 300\text{mm}$ and modules $>300\text{mm}$ (see Appendix A12).

 - S2.1.5** Changes to surface deformation resulting from vehicles over-running reinstatements within paved footways, footpaths and cycle tracks and the responsibility for restoration of the reinstatement to the as-laid profile.
 - S2.2** Surface Profile
 - S2.2.1** As-laid Profile
Clarification of surface profile requirements and construction tolerances.

 - S2.2.3** Surface Depression - Intervention
Extension to intervention limits to cover combines defect intervention limits (mm) (see Table S2.1).

 - S2.2.4** Surface crowning - Intervention
Extension to intervention limits to cover combines defect intervention limits (mm) (see Table S2.2).

 - S2.2.6** Condition at End of Guarantee Period
Re-definition and clarification of condition at end of guarantee period.
 - S2.3** Fixed Features
 - S2.3.1** As-laid Profile
Clarification of as-laid profile for fixed features in respect of level criteria for construction and drainage features.
 - S2.4** Surface Regularity
 - S2.4.1** Requirements
Expansion of the requirements for surface regularity to include irregularities not less than 10mm and the applicability of the guarantee period.

- S2.4.2** Measurement
Clearer definition of the instances when the rolling straightedge cannot be used to determine surface regularity.
- S2.5** Structural Integrity
- S2.5.1** Cumulative Settlement
Addition of requirements for settlement in bad ground conditions where very deep excavations are carried out.
- S2.6** Skid Resistance
- S2.6.2** Texture Depth
Revised categories in Table S2.5 to include SMA, surface treatments and thin surface course treatments.
- S2.6.3** Polished Stone Value (PSV)
Potentially high risk sites (Site A) and average or low risk sites (Site B) re-defined to be consistent with the Highways Agency Specification (SHW) for determination of Polished Stone Value (PSV). Site C - low risk sites included in new definition of Site B.
- Revised PSV values for road and risk categories and the inclusion of Type 0 roads. Clarification of the requirements for a high friction coating and where a permanent surface course contains more than one type of aggregate.
- S2.6.4** Aggregate Abrasion Value (AAV)
New section on Aggregate Abrasion Value (AAV) for all bituminous surface course materials permitted in the specification, the AAV of precoated chippings and the coarse aggregate in all mixes used without precoated chippings at the running surface.
- S2.7** Sampling and Testing
All sampling and testing to be carried out by a UKAS accredited laboratory unless agreed otherwise.
- S3** Excavation
- S3.1.1** Breaking the Surface
Preferred methods of cutting surface layers specified.
- S3.6.1** New section covering shallow or aborted excavations.
- S3.7** Trenchless Pipe laying
New section on trenchless pipe laying including mole ploughing, soil displacement moling and investigatory works procedures (described in the HAUC Code of Practice for Inspections) to be used when there is reasonable cause to believe that damage may have been caused to the structure of the street.

- S4** Surround to Apparatus
 - S4.1** General
 - S4.1.3** Inclusion of an Alternative Reinstatement Material (ARM) for the entire surround to apparatus or any part thereof.
- S5** Backfill
 - S5.2.1** Wider range of backfill material allowed.
 - S5.3.1** Frost Heave Susceptibility
Use of 300mm wholly bituminous material to replace frost susceptible materials to provide adequate insulation. All frost susceptibility testing to be carried out by a UKAS accredited laboratory unless otherwise agreed.
 - S5.3.3** Surround to Apparatus as Backfill
New section for situations where the excavation depth does not allow the use of a separate backfill layer.
 - S5.3.5** Chalk
New section covering the handling for re-use, moisture content, compaction and protection in wet weather for chalk materials used as backfill. Chalk density, physical assessment and backfill suitability is given in a new table (S5.1). Compaction requirements to be in accordance with Appendix A8.2 of the specification.
- S6** Flexible and Composite Roads
 - S6.1** Reinstatement Methods
 - S6.1.1** General
Authority to notify the Undertaker of sites where it is known that high sulphate levels exist in advance of works so that appropriate measures may be taken.
 - S6.2** Sub-base Reinstatement
 - S6.2.1** General
Authority should advise Undertakers in advance of works where areas with drainage problems exist. Care must be taken to ensure natural drainage is not adversely affected.
 - S6.3** Base (Roadbase) Reinstatement
 - S6.3.2** CBM3 in Flexible and Composite Roads
Inclusion of requirements to allow CBM3 to cure before trafficking in Type 0, 1, 2, 3 and 4 roads. Time period is variable depending on the category of road.

S6.3.4 Modular Materials Within the Excavation

Inclusion of requirements for cobbles and setts etc or the preferred alternative of CBM3 at the discretion of the undertaker. When cobbles, setts etc are of historical interest the authority should be informed and be given the opportunity to inspect the materials prior to it being covered.

S6.3.5 Alternative Reinstatement Materials

ARMs may be laid at base (roadbase) level in accordance with Appendix A9 regardless of whether the existing base (roadbase) is a bound material.

S6.4 Surface Reinstatement

S6.4.1 Hot Rolled Asphalt (HRA) surface

Type 0, 1 and 2 roads can be reinstated with HRA surface course regardless of whether the surface has a surface dressing or other surface treatment. For Type 3 and 4 roads where the surface course is HRA with no surface dressing or other surface treatment should be reinstated with HRA surface course.

S6.4.2 Stone Mastic Asphalt (SMA) and Thin Surface Course System

New section on the use of SMA and Thin Surface Course Systems and the edge and base preparation necessary.

Where SMA is not required to be replaced, the authority will contact the undertaker and identify an appropriate suitable like or equivalent material.

S6.4.3 Surface Course Material to BS4987

Preferred material to be 10mm Close Graded Surface Course (CGSC) laid 40mm thick subject to exceptions given in S6.4.1.1, S6.4.1.2, S6.4.2 and S6.4.5.

S6.4.5 Other Bituminous Materials

Where materials not included in Appendix A2, e.g. high friction surfacings, porous asphalt, coloured surfacings are used, they should be in accordance with S6.4.5.2, S6.4.5.3 and S6.4.5.4 respectively.

An authority is to identify an appropriate source of suitable like or alternative materials or accept a suitable material based on best reasonable endeavours.

Appropriate reinstatement requirements will be agreed between the undertaker and authority where local custom and practice has not been to complete all previous resurfacing with like materials.

S6.4.5.2 High Friction Surfacings

Permanent reinstatement to be effected within 15 working days following the date of completion of the reinstatement unless prevailing weather conditions or other site circumstances mitigate against the successful application.

- S6.4.5.3 Porous Asphalt**
New section for the permanent reinstatement of porous asphalt. Porous asphalt surface courses should match the thickness of the existing layer, binder course should be an asphalt material and edge and base preparation should be in accordance with S6.5.1.
- S6.4.5.4 Coloured Surfacing**
Re-written.
- S6.4.5.5 Other Specialist Surfacing Materials**
Re-written.
- S6.4.6 Surface Treatments**
Re-written.
- S6.4.7 Coated Chippings**
New section.
- S6.4.8 Composite Roads**
New section.
- S6.4.9 Single Course Construction**
Re-written.
- S6.4.10 Small Excavations and Narrow Trenches**
Re-written.
- S6.5 Base and Edge Preparation**
 - S6.5.1 Base Preparation**
Re-written. Time scales for use of a tack coat provided with increase in rate of application per square metre.
 - S6.5.2.2 Overbanding**
Expanded section to cover HAPAS Approval Certificate.
- S6.6 Tolerances**
Re-written.
- S7 Rigid and Modular Roads**
 - S7.7.1 General**
New section where Type 0, 1 and 2 modular roads are to be reinstated in accordance with BS7533: Part 3, BS6717: Part 1 and BS6667: Part 1.
 - S7.7.3 Method B - Permanent Sub-base Reinstatement**
 - S7.7.4 Sub-base Reinstatement**
 - S7.7.5 Base (Roadbase) Reinstatement**

- S7.7.6** Surface Reinstatement
Sections re-written to include permitted options and reference to Sections S6.1.5, S6.2, S6.3 and Appendices A6 to A12.
- S7.8** Tolerances
New section including reference to Section S2 and Appendix A2.
- S8** Footways, Footpaths and Cycle Tracks
- S8.1.1** General
New section setting out the requirements for cycle tracks as part of the carriageway and the requirements for PSV at the time of reinstatement subject to the requirements of S2.6.1.
- S8.2.3** Alternative Reinstatement Materials
Use of ARMs may be laid at sub-base level in accordance with Appendix A9.
- S8.3.7** Edge Requirements
Trim line clearance changed from 250mm to 100mm.
- S8.3.8** Special Materials
New section covering surfacing materials reinstated to S6.4.5.5.
- S8.4** Vehicular Trafficking
- S8.4.3** Other Trafficking
Use of thicker layers, higher quality materials or other strengthening measures where footways, footpaths or cycle tracks, including specified pedestrian areas or precincts, are subjected to regular over running or parking.
- S9** Verges and Unmade Ground
- S9.2** Adjacent road structure
Item 2) is a new requirement for road structures where there is no edge support within adjacent verges or unmade ground such that any reinstatement within 600mm of the edge of a road shall include sub-base materials at backfill level up to a 45° fall line extending downwards from the road surface at the nearest point to the reinstatement. Diagram included.
- S9.3** Cultivated Areas
New information about special features in verges.
- S9.4** Grassed Areas
New information about stones greater than 20mm migrating to the surface of a verge over a period of time.
- S10** Compaction Requirements

- S10.2.3** Bituminous Materials
New requirement for in-situ air void content for all bituminous materials.
Permitted values are given in Table S10.1.
- S10.3.1** Hand Rammers
- S10.3.2** Percussive Rammers
- S10.3.3** Vibro Tampers
- S10.3.4** Vibrating Rollers
- S10.3.5** Vibrating Plate Compactors
Compaction requirements expanded to cover use of plant and any restrictions in choice of plant by weight category.
- S11** Ancillary Activities
 - S11.1** Traffic Signs, Road markings, Studs and Verge markers
Expanded section to match requirements in SHW specification.
 - S11.1.2** Road Markings
New section on road markings covering reinstatement, properties and type.
 - S11.5** Test Holes
Clarification of test hole requirements.
- S12** Remedial Works
No change.

Appendices

- A1** Backfill Materials
No change.
- A2** Key to Materials
Re-written to reflect revised British Standards 594 and 4987 and new material types.
- A2.5** Structural Layer Thickness Tolerances
Clarification of layer thickness tolerances for individual lifts of material in order to reinstate a structural layer.
- A2.6** Compacted lift thickness
 - A2.6.1** Bituminous Materials
New Table A2.2 to include compacted lift thickness (mm) and minimum and maximum thickness at any point in the lift.
 - A2.6.2** Non-Bituminous Materials

New Table A2.3 to include compacted lift thickness (mm) and minimum and maximum thickness at any point in the lift.

A2.7 Laying Temperatures

New Table A2.4 for laying temperatures for bituminous mixtures.

A2.8 Identification of Structural Layers

A2.8.1 Road Structures

New figure A2.1 showing typical reinstatement structures within recognised road designs for flexible/composite, rigid and modular road reinstatements.

A2.8.2 Footway, Footpath and Cycle Track Structures

New figure A2.2 showing typical reinstatement structures within recognised footway designs.

A2.9 Key to Materials

Terms and abbreviations changed to reflect the new materials given in the revised British Standards 594 and 4987.

A3.0 to A3.2

Increased construction thickness to Types 0, 1 and 2 flexible roads.

A3.3 to A3.4

Where a construction is designed to HD 24/96 design standards, the thickness of Types 3 and 4 flexible roads shall match, as a minimum, the existing road construction thickness.

A4.0 to A4.4

Where 10mm SMA surface course material is used for Types 0, 1, 2, 3 and 4 composite roads, the thickness is reduced to 30mm and the binder course is adjusted accordingly.

A5.0 to A5.2

Includes use of CBM3 if the existing material for Rigid Types 0, 1, 2, 3 and 4 roads is the same. Permanent Cold-lay Binder Course (PCBC) is not permitted in Types 2,3 and 4 rigid roads.

A8.1 Cohesive and Granular Materials

Revision to Table A8.1 compaction requirements for granular and cohesive materials. Single drum < 1000kg/m vibrating rollers removed from the table because of the difficulty in meeting the air void contents given in the specification, S10.2.3.

A8.2 Chalk Materials

New section on the properties and compaction of chalk materials used as backfill and sub-base materials.

- A8.3** Bituminous Materials
Revision to Table A8.3 compaction requirements for bituminous materials. 1000kg/m vibrating rollers removed from the table because of the difficulty in meeting the air void contents given in the specification, S10.2.3.
- A9** Alternative Reinstatement Materials (ARMs)
New section on the use of Alternative Reinstatement Materials (ARMs). The generic group of Structural Materials for Reinstatements (SMRs) includes proprietary or alternative bound reinstatement materials that include cementitious, chemical or hydraulic binder or are inherently self-cementing materials. SMRs are categorised as:
- Foamed Concretes for Reinstatements (FCRs)
 - Flowable SMRs (FSMRs)
 - Non-flowable SMRs (NFSMRs)
- The generic group of Stabilised Materials for Fills (SMFs) includes materials derived from excavated spoil, virgin, secondary recycled or waste materials or any combination thereof that have been improved by re-processing, re-grading and/or inclusion of a cementitious, chemical or hydraulic binder. These materials are generally non-flowable.
- Permitted usage, testing and production of SMRs, FCRs and SMFs is covered. An outline Scheme for Approval Trials is provided which includes general requirements, special considerations and duties of parties to the Approval Trials. Suggested information for inclusion in an Approval Trial agreement is given.
- A10** Permanent Cold-lay Surfacing Materials (PCSMs)
Re-written to cover the approval procedures under the BBA/HAPAS approval and certification of PCSMs. The procedures include testing of potential PCSMs within the public highway and formal approval procedures for their use in England and Wales.
- A11** Bitumen Binder Equivalence
Tables A11.1 and A11.2 revised to incorporate the new binder grades and Type 0 roads.
- A12** Reinstatement of Modular Surface Layer
New section.
- A12.1** Interim Reinstatement
Covers re-use of existing modules and when a bituminous material may be reinstatement subject to the performance requirements of S2 are met and the compaction of such materials does not result in further damage to adjacent roads.
- A12.3** Provision of Replacement Modules
Authority may provide modules free of charge.

A12.4 Pre-existing Surface Damage Outside Limits of Undertaker's Works
Obligations on the authority and undertaker for pre-existing damage and defects.