

BRITISH STANDARD

Pavements constructed with clay, natural stone or concrete pavers –

Part 4: Code of practice for the construction of pavements of precast concrete flags or natural stone slabs

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BSi
British Standards

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This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 24, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 7533 was published by BSI and came into effect on 30 November 2006. It was prepared by Technical Committee B/507, *Paving units, kerbs, screeds and in-situ floorings*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 7533 supersedes BS 7533-4:1998, which is withdrawn.

Relationship with other publications

BS 7533 consists of the following parts:

- *Part 1: Guide for the structural design of heavy duty pavements constructed of clay pavers or precast concrete paving blocks;*
- *Part 2: Guide for the structural design of lightly trafficked pavements constructed of clay pavers or precast concrete paving blocks;*
- *Part 3: Code of practice for laying precast concrete paving blocks and clay pavers for flexible pavements;*
- *Part 4: Code of practice for the construction of pavements of precast concrete flags or natural stone slabs;*
- *Part 5: Guide for the design of pavements (other than structural aspects);*
- *Part 6: Code of practice for laying natural stone, precast concrete and clay kerb units;*
- *Part 7: Code of practice for the construction of pavements of natural stone setts and cobbles;*
- *Part 8: Guide for the structural design of lightly trafficked pavements of precast concrete flags and natural stone slabs;*
- *Part 9: Code of practice for the construction of rigid pavements of clay pavers;*
- *Part 10: Guide for the structural design of trafficked pavements constructed of natural stone setts;*
- *Part 11: Code of practice for the opening, maintenance and reinstatement of pavements of concrete, clay and natural stone;*
- *Part 12: Guide to the structural design of trafficked pavements constructed on a bound base using concrete paving flags and natural stone slabs.*

Use of this document

As a code of practice, this part of BS 7533 takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this part of BS 7533 is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word “should” is used to express recommendations of this standard. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this standard. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of BS 7533 gives recommendations for laying precast concrete flags conforming to BS EN 1339 and natural stone slabs conforming to BS EN 1341 intended for use in the construction of carriageways, footways, pedestrian areas and pavements for rigid and flexible construction for the different application as given in Table 5 and designed in accordance with BS 7533-8 and BS 7533-12.

NOTE Guidance on the reinstatement of pavements is given in BS 7533-11.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 6100-2, *Glossary of building and civil engineering terms – Part 2: Civil engineering*

BS 7533-1:2001, *Pavements constructed with clay, natural stone or concrete pavers – Part 1: Guide for the structural design of heavy duty pavements constructed of clay pavers or precast concrete paving blocks*

BS 7533-2:2001, *Pavements constructed with clay, natural stone or concrete pavers – Part 2: Guide for the structural design of lightly trafficked pavements constructed of clay pavers or precast concrete paving blocks*

BS 7533-3:2005, *Pavements constructed with clay, natural stone or concrete pavers – Part 3: Code of practice for laying precast concrete paving blocks and clay pavers for flexible pavements*

BS 7533-8, *Pavements constructed with clay, natural stone or concrete pavers – Part 8: Guide for the structural design of lightly trafficked pavements of precast concrete flags and natural stone slabs*

BS 7533-11, *Pavements constructed with clay, natural stone or concrete pavers – Part 11: Code of practice for the opening, maintenance and reinstatement of pavements of concrete, clay and natural stone*

BS 7533-12, *Pavements constructed with clay, natural stone or concrete pavers – Part 12: Guide to the structural design of trafficked pavements constructed on a bound base using concrete paving flags and natural stone slabs*

BS EN 206-1, *Concrete – Part 1: Specification, performance, production and conformity*

BS EN 998-2:2003, *Specification for mortar for masonry – Part 2: Masonry mortar*

BS EN 1338:2003, *Concrete paving blocks – Requirements and test methods*

BS EN 1339:2003, *Concrete paving flags – Requirements and test methods*

BS EN 1341:2001, *Slabs of natural stone for external paving – Requirements and test methods*

BS EN 1342:2001, *Setts of natural stone for external paving – Requirements and test methods*

BS EN 12620:2002, *Aggregates for concrete*

BS EN 13286-49, *Unbound and hydraulically bound mixtures – Part 49: Accelerated swelling test for soil treated by lime and/or hydraulic binder*

HIGHWAYS AGENCY. *Manual of Contract Documents for Highway Works, Volume 1: Specification for Highway Works*, London: The Stationery Office

3 Terms and definitions

For the purposes of this part of BS 7533, the terms and definitions given in BS 6100-2 and the following apply.

3.1 flag

precast concrete unit, used as a surfacing material, with an overall length that does not exceed 1 m and an overall length which when divided by its thickness is greater than four

[BS EN 1339:2003, definition 3.2]

3.2 slab

unit of natural stone used as a paving material, in which the working width exceeds 150 mm and also generally exceeds two times the thickness

[BS EN 1341:2001, definition 3.1]

3.3 paving unit

either a precast concrete flag or natural stone slab

3.4 concrete paving block

precast concrete unit, used as a surfacing material, in which, at a distance of 50 mm from any edge, any cross-section does not show a horizontal dimension less than 50 mm and with an overall length which when divided by its thickness is less than or equal to four

NOTE These two conditions are not applicable to complementary fittings.

[BS EN 1338:2003, definition 3.2]

3.5 natural stone sett

small natural stone paving block with work dimensions between 50 mm and 300 mm and no plan dimension generally exceeding twice the thickness. The nominal thickness is 50 mm

[BS EN 1342:2001, definition 3.1]

3.6 surface course

layer of paving units that acts as a wearing surface and forms part of the structure of the pavement

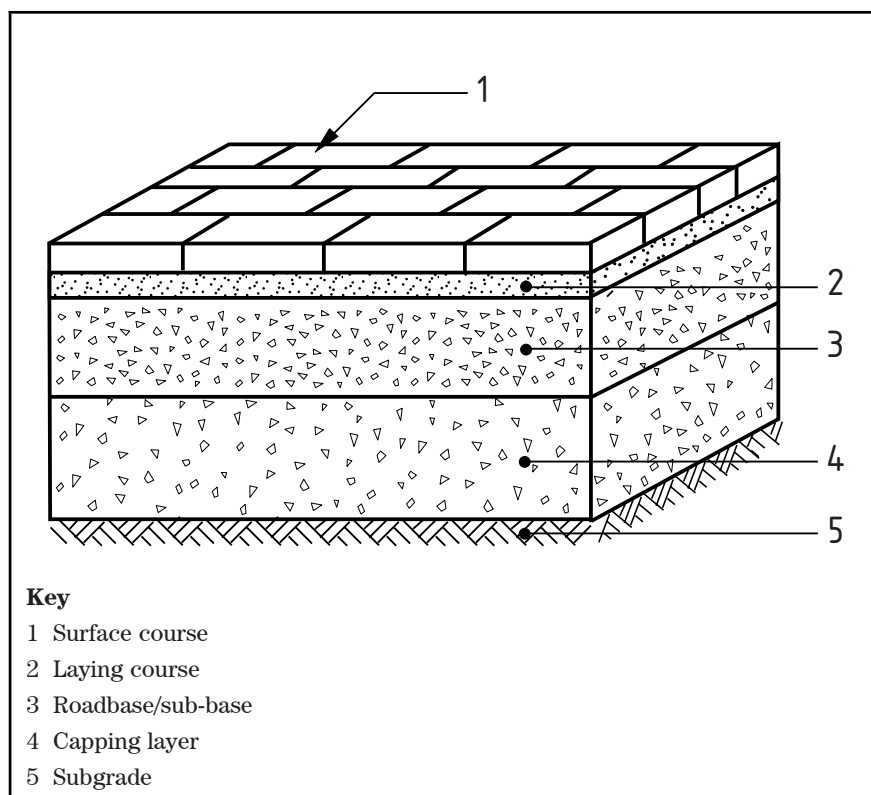
[BS 7533-3:2005, definition 3.14]

- 3.7 laying course**
layer of material on which paving units are bedded
[BS 7533-1:2001, definition **3.1**]
- 3.8 subgrade**
upper part of the soil, natural or constructed, that supports the loads transmitted by the overlaying road structure
[BS 7533-2:2001, definition **3.3**]
- 3.9 pavement**
paved area subject to pedestrian and/or vehicular traffic
[BS 7533-2:2001, definition **3.4**]
- 3.10 sub-base**
one or more layers of material placed immediately above the subgrade
[BS 7533-2:2001, definition **3.5**]
- 3.11 roadbase**
one or more layers of material placed above the sub-base that constitute the main structural elements of a pavement
[BS 7533-2:2001, definition **3.6**]
- 3.12 sub-layer**
layer below the laying course and above the subgrade which may include either or both sub-base and roadbase layers
- 3.13 restraint**
device that serves to prevent lateral movement of the paving units and to prevent loss of the laying course material
[BS 7533-3:2005, definition **3.3**]
- 3.14 edge restraint**
restraint used at the edges of an area being paved
[BS 7533-3:2005, definition **3.4**]
- 3.15 joint width**
distance between two adjacent paving units or between paving units and restraint
[BS 7533-3:2005, definition **3.18**]
- 3.16 commercial vehicles**
vehicle having an unladen weight exceeding 1.5 t
[BS 7533-1:2001, definition **3.11**]
- 3.17 standard axles**
axles carrying a load of 8 200 kg
[BS 7533-1:2001, definition **3.11**]
- 3.18 bound construction**
paving units laid on and jointed with hydraulic mortar
- 3.19 unbound construction**
paving units laid on and jointed with sand

4 Structure of pavement

A typical cross-section of a pavement is shown in Figure 1.

Figure 1 Typical cross-section of a pavement



5 Construction of pavement

NOTE The procedure for constructing a pavement is represented in a flowchart in Figure E.1. The flowchart shows a general sequence of operations that reflects the construction process.

5.1 Subgrade, sub-base and roadbase

The subgrade, sub-base and roadbase should be designed in accordance with BS 7533-8 or BS 7533-12.

Preparation of the subgrade and construction of the sub-base and roadbase should generally be in accordance with current practice as described in the Highways Agency's Specification for Highway works except for reinstatements where reference should be made to BS 7533-11.

NOTE 1 The sub-base can be used as the roadbase in an unbound pavement.