BS 8006-2:2011+A1:2017

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Code of practice for strengthened/ reinforced soils

Part 2: Soil nail design

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Contents

Summary of pages
This document comprises a front cover, and inside front cover, pages i to vi, pages 1 to 99, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 8006 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 December 2011. It was prepared by Subcommittee B/526/4, *Strengthened/reinforced soils and other fills*, under the authority of Technical Committee B/526, *Geotechnics*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

Together with BS 8006-1:2010, BS 8006-2:2011 superseded BS 8006:1995, which was withdrawn.

BS 8006-2:2011+A1:2017 supersedes BS 8006-2:2011, which is withdrawn.

Relationship with other publications

This standard is published in two parts:

- *Code of practice for strengthened/reinforced soils and other fills*
- *Code of practice for strengthened/reinforced soils – Part 2: Soil nail design*

This part has been drafted following the principles of BS EN 1997-1:2004.

Information about this document

This part of BS 8006 was drafted to meet the specific needs of designers and installers of soil nails for strengthening and/or reinforcing soil slopes.

Text introduced by or altered by Amendment No. 1 is indicated in the text by tags A1 A1. Minor editorial corrections are not tagged.

Use of this document

As a code of practice, this part of BS 8006 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 8006 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.

The recommendations in this British Standard are based on typical UK practice and therefore might not be wholly valid in other territorial or regional environments. Design checks in accordance with other British or international Standards might be necessary.

This standard is likely to be used under a variety of contractual arrangements and forms of contract. In many cases multiple designers might be involved. Therefore, irrespective of the contract form it is essential that the design of the soil nailing element of a project is properly integrated into whole scheme and contractual interfaces are clearly and appropriately specified within contract documents.

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.

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.

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Section 1: General

1.1 Scope

This part of BS 8006 gives recommendations and guidance for stabilizing soil slopes and faces using soil nails. Other methods of stabilization using reinforced soil methods are given in BS 8006-1:2010 and both parts might be needed for complex structures.

Additional considerations might be required for unusually loaded or high soil nailed slopes, or where they interface with other structures.

Whilst BS EN 1997-1:2004 specifically excludes soil nailing, this standard is intended to harmonize the design approach of soil nailing with other geotechnical structures designed using BS EN 1997-1:2004.

The principal purpose of this standard is to provide design guidance, however, where knowledge of construction methodology is required for design purposes then appropriate paragraphs have been included. Construction guidance is given in execution standard BS EN 14490:2010. At the time of preparation of this standard, CEN Technical Committee TC341 is drafting a standard covering the testing of soil nails.

Structures and processes that are similar to soil nailing but not addressed in the standard are described in **2.3.6**.

1.2 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 8006-1:2010, *Code of practice for strengthened/reinforced soils and other fills*

BS 8081, *Code of practice for grouted anchors*[1)]

BS EN 196 (all parts), *Methods of testing concrete*

BS EN 197-1:2000, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

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

BS EN 1537, *Execution of special geotechnical work– Ground anchors*

BS EN 1990, *Eurocode — Basis of structural design*

BS EN 1992-1-1, *Eurocode 2 — Design of concrete structures — Part 1-1: General rules and rules for buildings*

BS EN 1997-1:2004, *Eurocode 7 — Geotechnical design — Part 1: General rules*

BS EN 1997-2, *Eurocode 7 — Geotechnical design — Part 2: Ground investigation and testing*

BS EN 10080, *Steel for the reinforcement of concrete — Weldable reinforcing steel — General*

BS EN 14487, *(both parts), Sprayed concrete*

BS EN 14490:2010, *Execution of special geotechnical works — Soil nailing*

1) A1 This standard also gives an informative reference(s) to BS 8081:2015:A1:2017. A1

BS EN ISO 14688, *(both parts), Geotechnical investigation and testing — Identification and classification of soil*

BS EN ISO 14689-1, *Geotechnical investigation and testing — Identification and classification of rock — Part 1: Identification and description*

BS EN ISO 22475-1, *Geotechnical investigation and testing — Sampling methods and groundwater measurements — Part 1: Technical principles for execution*

BS EN ISO 22476 (all parts), *Geotechnical investigation and testing — Field testing*

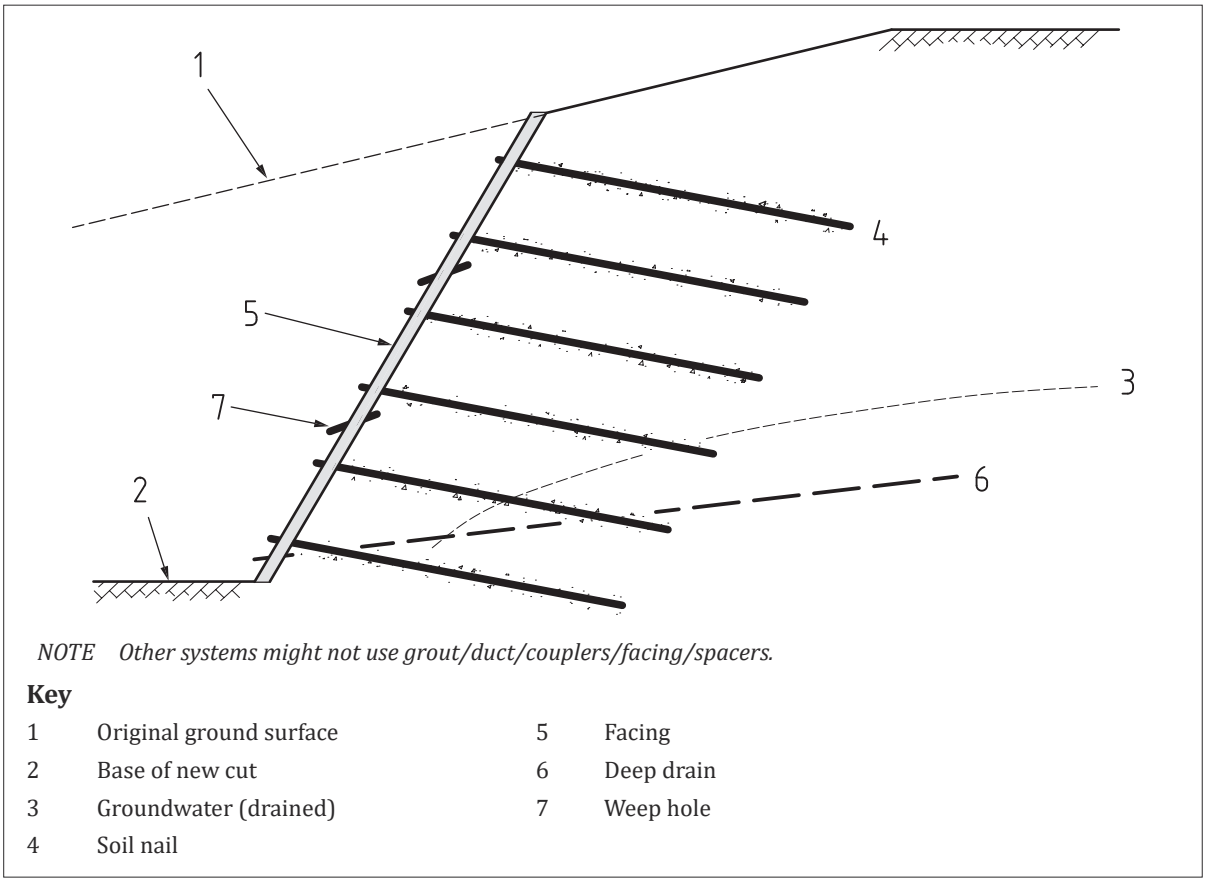
1.3 Terms, definitions and symbols

1.3.1 Terms and definitions

The following terms and definitions apply.

NOTE Some additional terms are illustrated in Figure 1.

Figure 1 — *Terms used in this standard*



NOTE Other systems might not use grout/duct/couplers/facing/spacers.

Key

1	Original ground surface	5	Facing
2	Base of new cut	6	Deep drain
3	Groundwater (drained)	7	Weep hole
4	Soil nail		

1.3.1.1 bearing plate

plate connected to the head of the soil nail to transfer a component of load from the facing or directly from the ground surface to the soil nail

[SOURCE: BS EN 14490:2010]

1.3.1.2 comparable experience

documented or other clearly established information related to the ground being considered in design, involving the same types of soil and rock and for which similar geotechnical behaviour

is expected, and involving similar structures; information gained locally is considered to be particularly relevant

[SOURCE: BS EN 1997-1:2004]

1.3.1.3 derived value

value of a geotechnical parameter obtained by theory, correlation or empiricism from test results

[SOURCE: BS EN 1997-1:2004]

1.3.1.4 design life

service life in years required by the design

[SOURCE: BS EN 14490:2010]

1.3.1.5 drainage system

series of drains, drainage layers or other means to control surface and ground water

[SOURCE: BS EN 14490:2010]

1.3.1.6 facing

covering to the exposed face of the reinforced ground that may provide a stabilizing function to retain the ground between soil nails, provide erosion protection and have an aesthetic function

NOTE *See Figure 1.*

[SOURCE: BS EN 14490:2010]

1.3.1.7 facing drainage

system of drains used to control water behind the facing

[SOURCE: BS EN 14490:2010]

1.3.1.8 facing system

assemblage of facing units used to produce a finished facing of reinforced ground

[SOURCE: BS EN 14490:2010]

1.3.1.9 facing unit

discrete element used to construct the facing

[SOURCE: BS EN 14490:2010]

1.3.1.10 flexible facing

flexible covering which assists in containing soil between the nails

[SOURCE: BS EN 14490:2010]

1.3.1.11 geotechnical action

action transmitted to the structure by the ground, fill, standing water or ground-water

[SOURCE: BS EN 1997-1:2004]

1.3.1.12 geotechnical category

category assigned to a structure in order to establish minimum requirements for the extent and content of geotechnical investigations, calculations and construction control checks of the design in relation to the associated risks

[SOURCE: BS EN 1997-1:2004]

