

BS 6031:2009

Incorporating Corrigendum No. 1



BSI Standards Publication

Code of practice for earthworks

bsi.

...making excellence a habit.™

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© BSI 2010

ISBN 978 0 580 72749 8

ICS 93.020

The following BSI references relate to the work on this standard:

Committee reference B/526

Draft for comment 09/30093255 DC

Publication history

First published (as CP 2003) April 1959

First revision (as BS 6031) June 1981

Second (present) revision December 2009

Amendments issued since publication

Date	Text affected
August 2010	COR1, 4.2.1 NOTE 2, 7.3.1a) and 7.4.1 (see Foreword)

Contents

Foreword *iii*

Section 1: General 1

Introduction 1

- 1 Scope 3
- 2 Normative references 3
- 3 Terms and definitions 5
- 4 The control of risk 10

Section 2: Design and management of earthworks 13

- 5 Planning of earthworks 13
- 6 Site conditions and investigations 17
- 7 Design of earthworks 27
- 8 Specification of earthworks fill materials 70
- 9 Construction of earthworks 78
- 10 Adoption 88
- 11 Earthworks asset management 91
- 12 Decommissioning and disposal of earthworks assets 99

Section 3: Temporary excavations, trenches, pits and shafts 100

- 13 Temporary excavations 100
- 14 Construction procedure 106
- 15 Trenches 107
- 16 Pits and shafts 110

Annexes

Annex A (informative) Potential modes of failure of slopes 111

Bibliography 115

List of figures

- Figure 1 – Flow diagram of lifecycle of an earthworks project 3
- Figure 2 – The iterative feedback processes of a site investigation 23
- Figure 3 – Example of possible surcharge combination on a slope 31
- Figure 4 – General procedure for determining characteristic values from measured values 33
- Figure 5 – Variations of ϕ' with displacement 35
- Figure 6 – Variation of ϕ' , ϕ'_r with l_p 36
- Figure 7 – Short and long term stability of embankment and cutting slopes 38
- Figure 8 – Design of earthworks drainage to capture significant flows 50
- Figure 9 – Determination of acceptability limits for coarse soils using relationship testing data 61
- Figure 10 – Determination of acceptability limits for fine soils using relationship testing data 61
- Figure 11 – Example of relationship testing 62

List of tables

- Table 1a) – Soil classification (after BS EN ISO 14688-1:2002) 7
- Table 1b) – Grouping of soils for testing purposes (after BS 1377-1) 7
- Table 1c) – Comparison of soil definitions in different earthworks circumstances 8
- Table 2 – Indicative earthworks tests by test type and material type 20
- Table 3 – Nominal load due to live surcharge 31
- Table 4 – Partial factors on actions or the effects of actions 41
- Table 5 – Partial factors for soil parameters 42
- Table 6 – Partial resistance factors for slopes and overall stability 42
- Table 7 – Typical characteristics of foundation and embankment fill materials 54