



# BSI Standards Publication

## Earthworks

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### Part 5: Quality control

## National foreword

This British Standard is the UK implementation of [EN 16907-5:2018](#).

The UK participation in its preparation was entrusted to Technical Committee B/526/-/1, Earthworks.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

## Earthworks - Part 5: Quality control

Terrassement - Partie 5: Contrôle  
qualité et surveillanceErdarbeiten - Teil 5: Qualitätskontrolle  
und Überwachung

This European Standard was approved by CEN on 14 May 2018.

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## European foreword

This document ([EN 16907-5:2018](#)) has been prepared by Technical Committee CEN/TC 396 “Earthworks”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document is one of the European Standards within the framework series of [EN 16907](#) on *Earthworks*, as follows:

- *Part 1: Principles and general rules;*
- *Part 2: Classification of materials;*
- *Part 3: Construction procedures;*
- *Part 4: Soil treatment with lime and/or hydraulic binders;*
- *Part 5: Quality control (this document);*
- *Part 6: Land reclamation earthworks using dredged hydraulic fill;*
- *Part 7: Hydraulic placement of extractive waste.*

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard provides recommendations and guidance on the quality assurance and quality control of earthworks construction forming part of general civil engineering and building works. It provides guidance on the techniques to be used to give clients, contractors and designers confidence that the earthworks have been constructed in accordance with their requirements.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

[EN 1997-1:2004](#), *Eurocode 7: Geotechnical design — Part 1: General rules*

[EN 16907-1](#), *Earthworks — Part 1: Principles and general rules*

[EN 16907-2](#), *Earthworks — Part 2: Classification of materials*

[EN 16907-3](#), *Earthworks — Part 3: Construction procedures*

[EN 16907-4](#), *Earthworks — Part 4: Soil treatment with lime and/or hydraulic binders*

[EN 16907-6](#), *Earthworks — Part 6: Land reclamation earthworks using dredged hydraulic fill*

[CEN/TS 17006](#), *Earthworks — Continuous Compaction Control (CCC)*

EN ISO 18674 (all parts), *Geotechnical investigation and testing — Geotechnical monitoring by field instrumentation*

EN ISO 22476-1, *Geotechnical investigation and testing — Field testing — Part 1: Electrical cone and piezocone penetration test (ISO 22476-1)*

EN ISO 22476-2, *Geotechnical investigation and testing — Field testing — Part 2: Dynamic probing (ISO 22476-2)*

## 3 Terms and definitions

For the purposes of this document the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

NOTE See also Clause 3 in [EN 16907-1:2018](#) for general terms and definitions for use in earthworks.

### 3.1 quality assurance

all those planned and systematic actions necessary to provide confidence that the earth-structure will perform satisfactorily in service i.e. that it has been constructed to the specified requirements

### 3.2 quality control

system used to monitor, assess and adjust construction/execution processes to ensure that the final product will meet the specified level of quality

## 4 Quality Assurance Programme

Quality Assurance [QA] refers to the overall system for assuring project quality with Quality Control [QC] being one element of a comprehensive Quality Assurance programme.

A comprehensive construction QA programme consists of the following core elements:

- i) Quality Control: See Definition in [3.2](#);
- ii) acceptance: All factors [i.e. sampling, testing and inspection] to evaluate the degree of compliance with contract requirements;
- iii) resolution of non-conformances: A process for resolution of non-conformances should be unbiased and timely. To address disputes related to testing, use of retained samples used in the acceptance decision, alternate or third party laboratories, and a well-defined decision process to determine the outcome of the dispute are advisable.

NOTE An independent quality assurance may be required – i.e. an unbiased and independent evaluation of all the sampling and testing procedures used in the acceptance programme.

## 5 Quality Control Plan

A Quality Control Plan for earthworks shall as a minimum include:

- 1) sampling and test procedures, including:
  - test locations;
  - frequency of testing;
  - test methods and standards to be adopted;
  - extent of data to be collected and storage requirements thereafter;
  - methods and criteria for acceptance;
- 2) an organization chart identifying all relevant personnel and key tasks; in particular who is responsible for quality overall and for individual elements such as testing;
- 3) procedures for reviewing samples, certificates etc.;
- 4) visual observations and inspections;
- 5) document control procedures;
- 6) procedures for recording non-conformance and what corrective actions are to be undertaken.

A plan should take cognisance of the risk of non-compliance and the potential effects of any consequential structural failure if such non-compliance is either not identified or not corrected having been identified.

Information should be collected for each non-conformance and prompt action taken to identify the reasons behind such an event and to identify appropriate corrective action(s) to prevent a recurrence.

All works specified for the project should be checked, tested and monitored as appropriate with records being fully documented and maintained throughout the construction period and afterwards if required.

## 6 Material checking

Prior to any bulk earthworks being undertaken, materials characterization should be carried out in accordance with [EN 16907-2](#) to ensure that the design assumptions are still valid and the excavation, transportation and compaction requirements in the contract documents/specification are up to date.