

MULLATÖÖD. OSA 1: PÕHIMÕTTED JA ÜLDEESKIRI

Earthworks - Part 1: Principles and general rules

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16907-1:2018 sisaldab Euroopa standardi EN 16907-1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 16907-1:2018 consists of the English text of the European standard EN 16907-1:2018.
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English Version

Earthworks - Part 1: Principles and general rules

Terrassement - Partie 1 : Principes et règles générales

Erdarbeiten - Teil 1: Grundsätze und allgemeine Regeln

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Contents	Page
European foreword	7
1 Scope.....	8
2 Normative references.....	9
3 Terms and definitions	9
3.1 Definitions.....	9
3.2 Abbreviations and symbols.....	14
4 Principles of earthworks design and execution	17
4.1 General.....	17
4.2 Stages of earthworks projects.....	17
4.3 Instructions for the execution of works	18
4.4 Relationship between earthworks and earth-structure design	19
4.5 Sustainable development and environmental considerations for earthworks	20
4.6 Risk management	21
4.7 Types of earthwork processes	22
5 Specific site and material investigations.....	22
5.1 Information needed for earthworks design.....	22
5.2 Coordination of ground investigations	23
5.2.1 General.....	23
5.2.2 Site investigations for geotechnical design	23
5.2.3 Specific ground investigations for earthworks.....	23
5.2.4 Geotechnical reporting	24
5.3 Use of classification systems.....	24
6 Design of earthworks for fills	25
6.1 Introduction.....	25
6.2 Design procedure.....	26
6.2.1 General.....	26
6.2.2 Fill zones	27
6.3 Selection of the fill material properties and compaction process	32
6.3.1 General.....	32
6.3.2 Characterization of materials.....	33
6.3.3 Criteria for assessing the compacted fill material	34
6.3.4 Compaction behaviour of fill materials	35
6.3.5 Relationship testing to assess fill performance.....	37
6.3.6 Link between construction method and earthworks fill design.....	38
6.3.7 Use of full-scale tests to assess a compaction process for a given fill material	38
6.3.8 Design of fill cross-section.....	39
6.4 Details of specific parts, materials and earth structures	39
6.4.1 Introduction.....	39
6.4.2 Capping layers.....	39
6.4.3 Transition zones.....	40
6.4.4 Fills on slopes	42
6.4.5 Specific materials.....	42
6.4.6 High fills	43
6.4.7 Fills on soft soils or areas prone to flooding	44
6.4.8 Fills built above cavities	44

6.4.9	Surplus materials.....	45
7	Design of earthworks for cuttings.....	45
7.1	General	45
7.2	Materials involved.....	45
7.3	Geometry	46
7.4	Drainage.....	46
7.5	Overall stability.....	46
7.6	Relevant properties of the cutting base (subgrade)	46
8	Design of earthworks formed by dredging and hydraulic placement of fills	47
9	Design of earthworks for hydraulic placement of wastes	47
10	Earthworks Drainage	48
10.1	Drainage for collecting water.....	48
10.2	Protection of slopes against erosion.....	51
11	Optimization of earthworks project design.....	51
12	Technical Specifications for earthworks.....	52
12.1	General	52
12.2	End product Specification.....	54
12.3	Method Specification	54
12.4	Performance Specification	55
13	Monitoring earthworks and checking earth-structures performance.....	55
13.1	Introduction	55
13.2	Needs and techniques for monitoring and checking earthworks.....	56
13.3	Checking earth-structure performance.....	57
14	Use of national experience and non-conflicting rules.....	57
14.1	General	57
14.2	Informative examples of experience-based national practices.....	57
	Annex A (informative) Geometry definitions for earthworks and earth-structures	59
	Annex B (informative) Summary of national practice - Austria	62
B.1	Introduction	62
B.2	Soil and Rock Classification	63
B.2.1	Soil classification according to ÖNORM B 4400-1.....	63
B.2.2	Soil and rock classification according to ÖNORM B 2205	63
B.3	Execution of earthworks	63
B.3.1	General	63
B.3.2	Soil and rock excavation	64
B.3.3	Preparation of formation level of subsoil (embankment foundations)	64
B.4	Construction of embankments and fills.....	65
B.4.1	Construction materials.....	65
B.4.2	Placement and compaction	66
B.4.3	Construction of formation level of sub-base.....	68
B.4.4	Construction of embankments and cut slopes	68
B.4.5	Backfilling and filling of structures.....	69

B.4.6	Filling of line trenches and covering of lines (pipes, cables)	73
B.4.7	Measures aimed at improving subsoil and fills	74
B.5	Quality Control (Tests)	76
B.5.1	General	76
B.5.2	Test types	76
B.5.3	Test procedures	77
B.6	Literature	80
Annex C (informative)	Summary of national practice - France	83
C.1	Introduction	83
C.2	Classification of materials	83
C.3	Design of Earthworks	87
C.3.1	Introduction	87
C.3.2	Specification of the mechanical properties to be obtained	87
C.3.3	Classification of hydric state of materials and weather conditions	89
C.3.4	Fill material	90
C.3.5	Capping layer	92
C.3.6	Compaction of fill	95
C.3.7	Extraction and transportation of soil and rocks	98
C.3.8	Compaction of materials	98
C.4	Control of earthworks	99
C.4.1	Introduction	99
C.4.2	Technical processes and control methods	99
C.5	References	102
Annex D (informative)	Summary of national practice - Germany	104
D.1	Introduction	104
D.2	Classification of materials	105
D.2.1	Classification according to DIN 18196	105
D.2.2	Classification according to DIN 18300	110
D.2.3	Classification of frost susceptibility of soil groups according to ZTV E-StB	111
D.3	Execution of earthworks	112
D.3.1	General	112
D.3.2	Loosening, loading and conveying	112
D.3.3	Placing and compacting	112
D.3.4	Special construction methods in earthworks according to ZTV E-StB	115
D.4	Control of Earthworks	116
D.4.1	Types of testing	116
D.4.2	Testing methods	117

D.5	References.....	118
Annex E (informative)	Summary of national practice - Norway.....	121
E.1	Introduction	121
E.2	Classification of materials	121
E.3	Design of earthworks	122
E.3.1	Dredging.....	122
E.3.2	Underwater blasting.....	122
E.3.3	Transportation at sea.....	123
E.3.4	Spreading and compaction of fills	123
E.3.5	Filling under water	133
E.3.6	Replacement / displacement of soft soil.....	135
E.3.7	Influence of weather conditions.....	136
E.4	Quality control of earthworks.....	136
E.5	References.....	137
Annex F (informative)	Summary of national practice - Spain	138
F.1	Introduction	138
F.2	Classification of materials	138
F.2.1	General	138
F.2.2	Soil classes.....	138
F.2.3	Fill classes built with rocky materials.....	141
F.3	Possible use of marginal materials	141
F.3.1	General	141
F.3.2	Some marginal soils.....	141
F.3.3	Some marginal rocks.....	142
F.4	Preliminary design of earth-structure cross section.....	143
F.5	Types of earth-structures to be built.....	145
F.6	Basic construction rules.....	145
F.6.1	Preparation of the ground area to build the earth or rockfill.....	145
F.6.2	Earthfills.....	145
F.6.3	Rock and random fills	147
F.7	Control of earthworks.....	148
F.7.1	General	148
F.7.2	Earthfills.....	148
F.7.3	Rock and Random fills	149
F.8	Reference.....	150
Annex G (informative)	Summary of national practice – Sweden.....	151
G.1	Introduction	151

G.2	Classification of materials	151
G.2.1	Introduction.....	151
G.2.2	Soil classification.....	151
G.2.3	Rock classification	153
G.3	Design of earthworks	153
G.4	Control of earthworks	153
Annex H (informative)	Summary of national practice - United Kingdom	155
H.1	Introduction.....	155
H.2	Classification of materials	155
H.3	Design of earthworks	159
H.3.1	General.....	159
H.3.2	BS 6031:2009, Clause 8.2: Specification of earthworks by SHW approach	159
H.3.3	SHW required documentation within project earthworks specification	160
H.3.4	Compaction requirements (classification, design and construction aspects).....	160
H.3.5	Alternative specifications	160
H.3.6	Additional requirements for deep fill areas/buildings and structures	161
H.3.7	Selection of fill material properties (earthworks fill design).....	161
H.3.8	Extracts from core tables of UK Specification for Highway Works (SHW).....	163
H.4	Control of earthworks during construction	168
H.5	References.....	168
Bibliography		170

European foreword

This document (EN 16907-1:2018) 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*. The set of standards prepared by CEN/TC 396 is divided into several parts, which correspond to different steps of the planning, execution and control of earthworks and should be considered collectively as a group of standards for executing earthworks. The full set of Parts is as follows:

- EN 16907-1 *Earthworks - Part 1: Principles and general rules* (this document);
- 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 16907-5 *Earthworks - Part 5: Quality control*;
- EN 16907-6 *Earthworks - Part 6: Land reclamation earthworks using dredged hydraulic fill*;
- EN 16907-7 *Earthworks - Part 7: Hydraulic placement of extractive waste*.

Within this standard, references to specific parts of the standard are written by reference the full reference (e.g. “EN 16907-2”).

These “Earthworks standards” do not apply to the environmental planning and geotechnical design that determines the required form and properties of the earth-structure that is to be constructed. They apply to the design of the earthworks materials, execution, monitoring and checking of earthworks construction processes to ensure that the completed earth-structure satisfies the geotechnical design.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement 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 (Part 1) gives definitions, principles and general rules for the planning, design and specification of earthworks. It introduces the other parts of the standard, which will be used together with Part 1.

Earthworks are a civil engineering process aimed at creating earth-structures by changing the geometry of the earth surface for construction or other activities. Application fields of earthworks are associated with:

- transport infrastructures (road and motorways, railways, waterways, airports);
- platforms for industrial, commercial and residential buildings;
- water engineering, flood defence and coastal protection works;
- harbours and airport areas, including the construction of embankments in water;
- river dykes and marine embankments for land reclamation;
- earth and rock fill dams;
- onshore embankments made of hydraulically placed fill;
- noise barriers, visual barrier, and other non-load bearing earthworks;
- landscaping embankments;
- backfilling of open mines and quarries;
- tailings dams;

They are characterized by the need to use available natural or recycled materials and to handle them in a way appropriate to yield prescribed properties.

This standard is applicable to all types of earth-structures, except the cases listed below:

- some specific types of works such as the execution of trenches and small earthworks may be organized using simplified or specific rules;
- some structures, such as dykes and dams, need earthworks which have specific design and construction requirements: these may extend beyond the rules of this standard.

This standard does not cover ground improvement beneath an earth-structure by techniques such as piling, jet grouting, deep soil mixing, vertical drains or stone columns.

Due to the variable subsoil and climate conditions within Europe and to the different national contract conditions, national sets of rules have been established in several European countries which could not be harmonized within a short period by a European Standard. This European Standard gives therefore basic rules to reach the aims described above. Informative Annexes B to H of this document give examples of national practices following these rules.

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, *Eurocode 7: Geotechnical design - Part 1: General rules*

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

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 16907-5, *Earthworks - Part 5: Quality control*

EN 16907-6, *Earthworks - Part 6: Land reclamation earthworks using dredged hydraulic fill*

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 The geometry of earth-structures and parts of them (layers, surfaces, etc.) are not always described in the same way in different languages and countries. Drawings explaining the meaning of these geometric terms are given in informative Annex A.

3.1 Definitions

3.1.1

air void content

ratio of the volume of air to the total volume of the soil

3.1.2

binder

product or combination of products which, when mixed with a material, provides either a short-term or a long term enhancement of the properties of the material

3.1.3

bulking

volume change of a soil mass due to handling (normally a positive volume change upon excavation)

3.1.4

capping layer

specific transition layer, part of the upper zone of the fill, placed below the superstructure. The capping layer is part of the earth structure

3.1.5

classification

definition of classes and assigning of materials to classes with similar properties for earthworks