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Execution of special geotechnical works – Vertical drainage
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National foreword

This standard has been prepared by Working group 11 of CEN/TC 288 “Execution of special geotechnical works” (Secretariat: AFNOR, France) without the participation of German experts.

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English Version

Execution of special geotechnical works - Vertical drainage

Exécution des travaux géotechniques spéciaux - Drains verticaux

Ausführung von besonderen geotechnischen Arbeiten (Spezialtiefbau) - Vertikaldräns

This European Standard was approved by CEN on 7 January 2007.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 15237:2007) has been prepared by Technical Committee CEN/TC 288 “Execution of special geotechnical works”, 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of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

The document has been prepared to stand alongside EN 1997–1, *Eurocode 7: Geotechnical design — Part 1: General rules*, and EN 1997–2 *Eurocode 7: Geotechnical design — Part 2: Ground investigation and testing*. This standard expands on design only where necessary, but provides full coverage of the construction and supervision requirements.

This document was drafted by a working group comprising delegates from 10 European countries. Experts from Japan have taken part in the meetings of the working group and contributed to the formulation of the final draft. The working group commenced work in March 2002.

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

1 Scope

This European Standard establishes general principles for the execution, testing, supervision and monitoring of vertical drain projects.

This European Standard includes the application of prefabricated vertical drains and sand drains and deals with requirements to be placed on design, drain material and installation methods. This European Standard applies to the improvement of low-permeability, highly compressible soils by vertical drainage and preloading. Information regarding loading (embankment, vacuum or ground water lowering) and preloading is given in informative Annexes A and B.

Vertical drainage is used both in on land and in marine constructions for the following purposes:

— (pre-)consolidation and reduction of post-construction settlements;

— speeding up the consolidation process by decreasing the path lengths for pore water dissipation;

— increase of stability (by increasing effective stresses in the soil);

— groundwater lowering;

— mitigation of liquefaction effects.

In each case there is an overall treatment of the soil (the volume of the drains is small in relation to the soil volume treated).

This European Standard does not include soil improvement by means of wells, gravel and stone columns, large-diameter geotextile enclosed columns or reinforcing elements.

Vertical drainage can also be combined with other foundation or ground improvement methods, e.g. electro-osmosis, piles and compacted sand piles, dynamic compaction and deep mixing.

Guidance on practical aspects of vertical drainage, such as investigation of drain properties, execution procedures and equipment, is given in Annex A. Investigation of soil characteristics and assessment of design parameters, which are affected by drain properties and execution, are presented in Annex B.

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.

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 13252:2000, *Geotextiles and geotextile-related products — Characteristics required for use in drainage systems*

EN ISO 9862, *Geosynthetics — Sampling and preparation of test specimens (ISO 9862:2005)*

EN ISO 10319, *Geotextiles — Wide-width tensile test (ISO 10319:1993)*

EN ISO 10320, *Geotextiles and geotextile-related products — Identification on site (ISO 10320:1999)*