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Geotechnical investigation and testing - Testing of geotechnical structures - Part 5: Testing of anchorages (ISO/DIS 22477-5:2009)

Geotechnische Erkundung und Untersuchung - Prüfung von geotechnischen Bauwerken und Bauwerksteilen - Teil 5: Ankerprüfungen (ISO/DIS 22477-5:2009)

Reconnaissance et essais géotechniques - Essais des structures géotechniques - Partie 5 : Essai du tirant d'ancrage (ISO/DIS 22477-5:2009)

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NORME EUROPÉENNE
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Geotechnical investigation and testing - Testing of geotechnical structures - Part 5: Testing of anchorages (ISO/DIS 22477-5:2009)

Reconnaissance et essais géotechniques - Essais des structures géotechniques - Partie 5 : Essai du tirant d'ancrage (ISO/DIS 22477-5:2009)

Geotechnische Erkundung und Untersuchung - Prüfung von geotechnischen Bauwerken und Bauwerksteilen - Teil 5: Ankerprüfungen (ISO/DIS 22477-5:2009)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 341.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN ISO 22477-5:2009) has been prepared by Technical Committee CEN/TC 341 "Geotechnical Investigation and Testing", the secretariat of which is held by ELOT, in collaboration with Technical Committee ISO/TC 182 "Geotechnics".

This document is currently submitted to the parallel Enquiry.

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Geotechnical investigation and testing — Testing of geotechnical structures —

Part 5: Testing of anchorages

Reconnaissance et essais géotechniques — Essais de structures géotechniques —

Partie 5: Essai du tirant d'ancrage

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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the European Committee for Standardization (CEN), and processed under the **CEN-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 22477-5 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical investigation and testing*, in collaboration with Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 01, *Geotechnical testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 22477 consists of the following parts, under preparation, under the general title *Geotechnical investigation and testing — Testing of geotechnical structures*:

- Part 1: *Pile load test by static axially loaded compression*
- Part 2: *Pile load test by static axially loaded tension*
- Part 3: *Pile load test by static transversally loaded tension*
- Part 4: *Pile load test by dynamic axially loaded compression test*
- Part 5: *Testing of anchorages*
- Part 6: *Testing of nailing*
- Part 7: *Testing of reinforced fill*

Introduction

Various in-situ tests may be carried out on ground anchors (Investigation test, Suitability test, Acceptance test) and different stressing procedures may be followed (method 1: cyclic tension test with displacement measurement at peak load; method 2: cyclic tension test with loss of load measurement at peak load; method 3: step-loaded maintained tension test) up to a proof tension or up to the ultimate soil-anchor resistance.

The present document concerns method 1, method 2 and method 3.

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Geotechnical investigation and testing — Testing of geotechnical structures —

Part 5: Testing of anchorages

1 Scope

(1) This Standard establishes specifications for the execution of tension load tests where an anchor grouted in the ground, as defined in EN 1997-1, is loaded by step (method 3) or in incremental cycles (methods 1 and 2) from a datum load to a maximum test load. The displacement of the anchor head is measured over a period of time at each step (method 3) or at maximum load in each incremental cycle (method 1). The loss of load is measured over a period of time, at maximum load after lock off, in each incremental cycle (method 2).

(2) This standard provides specifications for three types of tension tests: investigation tests, suitability tests and acceptance tests. These tests are defined by EN 1997-1 as:

- tests aimed at estimating the pull-out resistance (investigation tests),

NOTE 1 From these tests, other information, such as the critical creep load, may be obtained.

- tests aimed at checking the suitability of the execution method in the actual conditions of the construction site (suitability tests),

NOTE 2 Normally this test is done on a working anchor with a proof load equal to that used for acceptance test. If higher load is applied, this test must be considered as an investigation test and the anchor cannot be used as working anchor.

- Tests aimed at checking that each anchor will resist at least the design load (acceptance tests).

(3) For the different types of tests only one method shall be used in each project. The method must be prescribed in the project specifications.

(4) The standard provides specifications for the experimental devices, the measurement apparatus, the test procedures, the definition and the presentation of the test results and the content of records.

(5) Guidance is given on the determination of the measured value of the pull out resistance R_a of an anchor on the basis of investigation tests and for checking of the displacement behaviour of an anchor on the basis of suitability tests and acceptance tests.

(6) This standard shall be used in conjunction with EN 1997-1 and EN 1537.

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 1537, *Execution of special geotechnical works – Ground anchors*

EN 1997-1, *Eurocode 7: Geotechnical design – Part 1: General rules*

EN 1993 or EN 1992, for rules for tension of pre-stress steel.