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Geotechnical investigation and testing — Field testing —

Part 1: Electrical cone and piezocone penetration test

Reconnaissance et essais géotechniques — Essais en place —

Partie 1: Essais de pénétration au cône électrique et au piézocône

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 182, *Geotechnics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical Investigation and Testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 22476-1:2012), which has been technically revised. It also incorporates the Technical Corrigendum ISO 22476-1:2012/Cor 1:2013.

The main changes are as follows:

— dimensional tolerances of cone penetrometer have been updated;

— application class scheme has been replaced by cone penetrometer class and test category classification scheme;

— introduction of temperature influence on measurements monitoring and requirements of internal temperature sensor for cone penetrometer class 0;

— requirements for the calibration of cone penetrometers have been added;

— minor updates to figures and text have been made.

A list of all parts in the ISO 22476 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document establishes general principles equipment requirements, the execution of and reporting on cone and piezocone penetration tests.

The cone penetration test (CPT) consists of pushing a cone penetrometer using a series of pushrods into the soil at a constant rate of penetration. During penetration, measurements of cone resistance and sleeve friction are recorded. The piezocone penetration test (CPTU) also includes the measurement of pore pressures around the cone. Two International Standards define cone penetration tests: this document defines CPT and CPTU practice using electronic transducers; ISO 22476-12 defines CPT practice using mechanical measuring systems.

“Cone resistance” is the term used in practice and also in this document, although “cone penetration resistance” is a more correct description of the process.

The test results of this document are especially suited for the qualitative and/or quantitative determination of a soil profile together with other investigations (e.g. sampling according to ISO 22475-1 and identification ISO 14688-1) or as a relative comparison with in situ tests.

The results from a cone penetration test are typically used to evaluate:

— stratification;

— soil behaviour type;

— geotechnical parameters such as:

  — soil density;

  — shear strength parameters;

  — deformation and consolidation characteristics;

  — hydraulic conductivity and ground water pressure.

The results from a cone penetration test may also be used directly in geotechnical design calculations.