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Part 7: Reinforcement

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Partie 7: Renforcement

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Design objectives **2**
4.1 General 2
4.2 Design life 3
4.3 Soil interaction 3
4.4 Tensile capacity 4
4.5 Reduction factors and design strength 4
5 Local design considerations **4**
5.1 General 4
5.2 Scandinavia 4
5.3 Germany 5
5.4 France 5
5.5 United Kingdom 5
5.6 United States of America 6
Bibliography **7**

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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.

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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 221, *Geosynthetics*.

A list of all parts in the ISO/TR 18228 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.

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Introduction

The ISO/TR 18228 series provides guidance for designs using geosynthetics for soils and below ground structures in contact with natural soils, fills and asphalt. The series contains parts which cover designs using geosynthetics, including guidance for characterization of the materials to be used and other factors affecting the design and performance of the systems which are particular to each part, with ISO/TR 18228-1 providing general guidance relevant to the subsequent parts of the series.

The series is generally written in a limit state format and guidelines are provided in terms of partial material factors and load factors for various applications and design lives, where appropriate.

This document includes information relating to the reinforcement function. Reinforcement is based on the application of a tensile element and the interaction between the tensile elements and the soil mass to enhance the properties of fill soils either imported or in situ. Details of design methodology adopted in a number of regions are provided.

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Design using geosynthetics —

Part 7:
Reinforcement

1 Scope

This document provides general considerations to support the design guidance to geotechnical and civil engineers involved in the design of structures in which a geotextile is used as reinforcement. The key potential failure mechanisms are described, and guidance is proposed to select engineering properties.

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.

ISO 10318-1, *Geosynthetics — Part 1: Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10318-1 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
reinforced soil
material in which tensile elements act through interface friction, bearing or other means to improve stability for in situ soil or other fills.

3.2
reinforced fill structure
soil structure which would be unstable without the inclusion of tensile reinforcement elements

EXAMPLE Reinforced soil walls, bridge abutments and steep slopes.

3.3
basal reinforcement
reinforcement element placed at the base of embankments or below foundations of buildings to provide additional resistance to avoid foundation failure, control of settlements, to increase the amount of load transfer onto rigid inclusions or spanning over voided zones.

3.4
veneer reinforcement
reinforcement of a relative thin layer of soil placed as surface layer on slopes, with the reinforcement placed parallel to the slope.

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