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Geotechnical investigation and testing — Geohydraulic testing —

Part 1: General rules

Reconnaissance et essais géotechniques — Essais géohydrauliques — Partie 1: Règles générales

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Foreword

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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.

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ISO 22282 consists of the following parts, under the general title *Geotechnical investigation and testing — Geohydraulic testing*:

— *Part 1: General rules*

— *Part 2: Water permeability tests in a borehole using open systems*

— *Part 3: Water pressure tests in rock*

— *Part 4: Pumping tests*

— *Part 5: Infiltrometer tests*

— *Part 6: Water permeability tests in a borehole using closed systems*

Introduction

The EU water directive requires the member states to increase activities that protect groundwater and fresh surface water both quantitatively and qualitatively[11]. At the same time, society requires more water and thus more construction projects below groundwater level in even deeper waters. In addition, the sea level may rise as a result of climate change. This contradiction requires engineers working on construction projects below groundwater level to make more reliable predictions on the effects of such structures on the groundwater conditions. This can partly be achieved by better assessment of the permeability of the ground by *in situ* tests as required in EN 1997-1:2004, 3.3.9.1. EN 1997-2:2007 contains the following stipulations, requirements and recommendations:

“2.1.4 Groundwater –

(1) Groundwater investigations shall provide all relevant information on groundwater needed for geotechnical design and construction.

(2) Groundwater investigations should provide, when appropriate, information on:

— the depth, thickness, extent and permeability of water-bearing strata in the ground, and joint systems in rock;

— the elevation of the groundwater surface or piezometric surface of aquifers and their variation over time and actual groundwater levels including possible extreme levels and their periods of recurrence;

— the pore water pressure distribution;

— the chemical composition and temperature of groundwater.

(3) The information obtained should be sufficient to assess the following aspects, where relevant:

— the scope for and nature of groundwater lowering work;

— possible harmful effects of the groundwater on excavations or on slopes (e.g. risk of hydraulic failure, excessive seepage pressure or erosion);

— any measures necessary to protect the structure (e.g. water proofing, drainage and measures against aggressive water);

— effects of groundwater lowering, desiccation, impounding, etc. on the surroundings;

— the capacity of the ground to absorb water injected during construction work;

— whether it is possible to use local groundwater, given its chemical constitution, for construction purposes.”