

Geotechnik im Bauwesen
Geotechnical Engineering
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RWTH RHEINISCH-
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Research project:

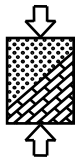
„Comparative calculations between DIN 1054 and EC7-1“

Researching institution:

Chair of Geotechnical Engineering
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1 Aim of the Research

DIN EN 1997-1:2008-10 (German version of Eurocode 7) in conjunction with the recently created German National annex DIN 1054-101 (available as draft E DIN 1054-101:2009-02) implements a new approach to determine the design values, which takes into consideration that all independent actions don't occur simultaneously with the same probability. To achieve this, the actions or their effects are reduced by multiplying them with combination factors ψ_i . However, the current version of DIN 1054:2005-01, which does not consider any combination factors, results in generally higher design values and a design that is safer than one based on the new concept.

Using the new concept, the design could result unsafe if the combination factors are unknowingly taken into account more than once while determining the design values. This may occur, for example, if for a foundation's design the loads delivered by the structural engineer already contain the combination factors, but they are subsequently considered characteristic values. Should the data containing the internal forces from the structural calculation fail to specify whether the values are characteristic or representative, the geotechnical engineer might apply the combination factors a second time.

At the Chair of Geotechnical Engineering the new concept's impact on design safety will be determined by setting up comparative calculations for select examples. The analysis will include to what extent and in which case the design based on the new concept differs from the design based on DIN 1054:2005-01.

The goal will be to determine the critical ratio of variable to permanent actions Q_{Tot}/G_{Tot} , as well as the ratio of accompanying actions to total variable actions Q_C/Q_{Tot} , with which considerable differences in the structure's design, i.e. different structural dimensions, are to be expected.