

EG3 - Model Solutions

Report to SC7/WG1 meeting

Vienna

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by

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(EG3 Convenor)

EG3 – Model Solutions

Members (11 from 9 countries)

Ioan Boti	Romania	
Alexandra Ciopec	Romania	
Agnieszka Dabska	Poland	Secretary
Jose Estaire Gepp	Spain	
Boleslaw Klosinski	Poland	
Andrew Lees	Cyprus	
Andrew McNamara	UK	
Trevor Orr	Ireland	Convenor
Francesco Petrella	Italy	
Jerome Saliba	France	
Martin Ziegler (Elias Tafur)	Germany	

Inactive member:

Mariusz Leszczynski	Poland
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Meetings in 2013

4 teleconferences

Objectives

- To prepare design examples with model solutions to Eurocode 7 for a range of design situations to demonstrate the use of the different Design Approaches and National Annexes
- To start from raw data rather than from given characteristic soil parameter values
- To identify any aspects or clauses of Eurocode 7 that caused difficulty or uncertainty when preparing the solutions to the examples and need clarification or further development

Status of Design Examples

• 3 Spread foundations	2 solutions
• 4 Pile foundations	4 solutions
• 1 Mixed foundation	
• 2 Gravity retaining wall examples	2 solutions
• 3 Embedded retaining walls	2 solutions
• 1 Propped embedded retaining wall with seismic loading	1 solutions
• 2 Propped embedded retaining wall	2 solutions
• 3 Uplift of a deep basement	3 solutions
• 3 Seepage around a retaining wall	3 solutions
• 2 Slope stability examples	1 solution
• 1 Embankment on soft ground	1 solution
• 1 Stability of a rock slope	1 published solution
26 examples	22 solutions

Current Work

- Work continuing on the preparation and harmonisation of the solutions
- Solutions are being formatted using the template developed for the JRC EC7 Workshop in Dublin
- Identifying clauses/aspects of EC7 that have caused difficulty/uncertainty when preparing the model solutions

TC250-SC7-EG3 – Design Examples
Example D3 – Verification for uplift of a building pit

Example situation and verification

The example deals with an excavation pit in sand supported by diaphragm walls. The verification for uplift is carried out according to EC7-1, the German complementary regulations DIN 1054 and the additional Recommendations on Excavations (EAB).

Geometry, boundary conditions and characteristic material properties

For the present example the groundwater table is 1.0m beneath ground level. The length l and the thickness d of the diaphragm wall are equal to 10m and 0.6m respectively. The thickness of the bottom concrete slab d_{bottom} equals to 1.0m. The excavation is also supported at the top with a strut (see Figure 1).

The unit weight of concrete $\gamma_{\text{StB,u}}$ is assumed equal to 24kN/m³. The characteristic parameters for the sand are the following:

- Unit weight γ_k : 18kN/m³
- Buoyant unit weight γ'_k : 10kN/m³
- Friction angle ϕ_k : 33°
- Cohesion c'_k : 0kN/m²

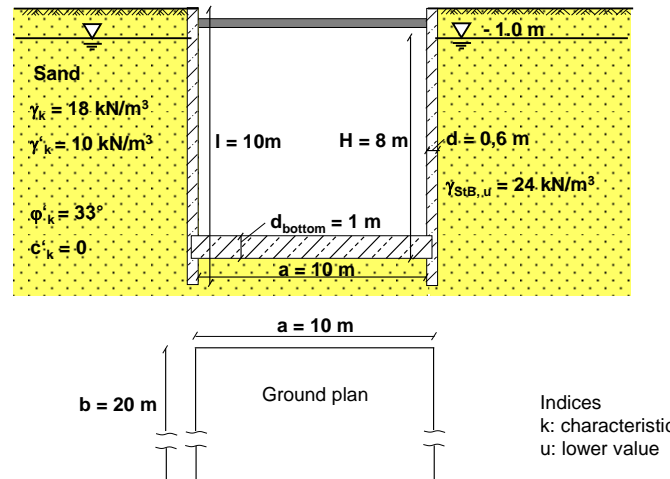


Figure 1: Geometry, boundary conditions and material parameters

Note:

In practice there is always an uncertainty of the groundwater table and its suitable choice for the design is difficult. Therefore in this example the groundwater table will be assumed static. Moreover, due to the greater importance of the groundwater table, this example does not indicate how the characteristic values of the soil parameters are determined.

Future Work and Conclusions

- More teleconferences planned
- More solutions to the examples
- Investigating how to publish/disseminate the examples
- Pleased to welcome some new members or solutions to existing examples from non-EG3 members using other DAs or NAs
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