

TC250/SC7/EG 7: Pile Design

Progress Report No 2 for the period April-Dec 2012

AGREED SCOPE OF WORK

The scope of work of EG7 was discussed and confirmed during the Brussels meeting as follows:

- a) Editing, changing and improving text of EC 7, section 7 (mainly editorial task, e.g. cancel doublings, resetting mistakes). Aim should be to make document much clearer
- b) Review of combined values for correlation factors, partial factors, model factors and action factors in each country as this is considered to be of major interest.
- c) Harmonizing of different design approaches
- d) It was agreed that aspects which are presently not covered appropriate should be included in future version of EC 7. The most relevant aspects were identified as follows:
 - how to consider downdrag / negative skin friction
 - ground heave
 - design of pile groups
 - design of piled rafts
 - dynamic / cyclic loads
 - seismic design of pile foundations (strong relation to EC 8 is requested)
 - transversally loaded piles, especially by horizontally moving ground
 - serviceability of pile foundations
- e) A comparison of calculation methods used for pile foundations (e.g. effective stress method etc.) was proposed.

KEY ISSUES UNDER DISCUSSION

Guidelines for the evolution of chapter 7 'Pile Foundations' of EC7-1

As a result of the discussions at the Brussels meeting it was concluded that the future evolution of chapter 7 'Pile Foundations' of EC7-1 should follow the following principles:

1. The standard should be left more general and 'descriptive', i.e. the standard has to provide the basics of the safety concept and general requirements but not details of design.
2. It is a clear aim of EG 7 to harmonize the design approaches used for pile design in Europe.
The attempt should be made to agree e.g. on one design approach for proofing ultimate limit state of axially loaded piles (e.g. DA2/DA2*).
3. It is essential that the same level of safety (reliability) is reached throughout Europe even if different calculation methods, design approaches, partial and model factors were used.
4. It is a further aim of EG 7 to harmonize the partial and model factors used for pile design in Europe as far as possible.
5. The most commonly used calculation methods and formulas to determine the pile resistance or to design the pile behaviour should be documented in (informative) annexes of EC7-1 offering the possibility for a practical engineer to design pile foundations by using the EC7-1-document. For the calculation methods the recommended model factors should be documented also (in a typical range).
6. A future chapter 7 should provide additional regulations and recommendations for special aspects of pile design like negative skin friction, lateral loads, pile groups, dynamic/cycling loading etc. These additional rules have still to be elaborated.
7. The present text of chapter 7 'Pile foundation' has to be checked and edited to make it clearer and more user-friendly where necessary (editorial task, e.g. cancel dublettes, resetting mistakes, reduce to the principles).

Mandate Proposed Program for chapter 'Pile Foundations' of EC7-1

Based on the guidelines agreed on during Brussels meeting and confirmed by the 6th meeting of SC 7 / EG 7 on 2012-11-07 a concept for the specific mandate response was elaborated and handed forward to the chairman of TC 250 / SC 7 by 2012-11-14 finally. It was decided to include the 'pile design' as a standalone task with the four sub-tasks:

1. Guidelines for common aspects of pile design
2. Calculation methods for pile design
3. Harmonization of NDPs for pile design
4. Practical pile design examples

Present status of work

Beside the definition of the guidelines for the future evolution of chapter 7 'Pile Foundations' of EC7-1 the focus of EG 7-work was set on the discussion of the following aspects - most of them are aspects which are presently not covered appropriate by EC 7 but should be included in a future version of EC 7.

- design approaches for axially loaded piles due to EC 7 and NAs
- calculation of downdrag / negative skin friction,
- design approaches for pile groups,

The design of axially and laterally pile groups was main subject of the 6th meeting on 2012-11-07. National practice in France, Germany, Poland and UK was presented and discussed in detailed. As a conclusion more precise recommendations for pile group design should be elaborated for next generation of EC 7, chapter 7.

Outlook

The next online meeting will focus on the evaluation of the serviceability limit state of axially and laterally loaded (single standing) piles.

Additionally a small group of delegates is simultaneously elaborating a summary of the work done by EG 7 so far as basis for the envisaged evolution work for pile design.

DECISIONS/OUTCOMES

- see above (integrated in section 'Key Issues under discussion')

MEETINGS HELD/PLANNED

Tele-meeting no.	Date held/scheduled	Available from webpage?
1 st meeting ('kick-off' meeting)	2011-11-09	
2 nd meeting (regular meeting)	2012-02-02	

3 rd meeting (regular meeting)	2012-04-27	
4 th meeting (regular meeting)	2012-06-28	
5 th meeting (Brussels meeting)	2012-09-05	
6 th meeting (regular meeting)	2012-11-07	

ACTIVE MEMBERSHIP

Name	Position*	Country	Listed on webpage?
Gary Axelsson		Sweden	
Sébastien Burlon		France	
Roger Frank		France	
Josif Josioivski		Republic of Mazedonia	
Boleslaw Klosinski		Poland	
Jan Kos		Czech Republic	
Alessandro Mandolini		Italy	
Christian Moormann	Convenor	Germany	
Chris Raison	Secretary	UK	
Arne Schram Simonsen		Norway	
Carsten S. Sorensen		Denmark	
Frits van Tol		Netherlands	

*please indicate Convenor/Secretary

Guests

Erwin Dupont · Belgium
Christos Vrettos · Germany
Jakub Saloni · Poland

Mehmet Ufuk Ergun · Turkey
Krzysztof Sahajda · Poland
Prof. Manoliu · Romania

Monika de Voos · Belgium, Carsten S. Sorensen · Denmark, Frits van Tol · Netherlands and Josif Josioivski · Republic of Mazedonia were nominated as new delegates and invited to the Brussels meeting of 2012-09-05 for the first time.

Kazmierz Gwizdala · Poland, Vassilios Papadopoulos · Greece and Leoncio Prieto · Spain are no longer delegates as they did not participate at any meeting and did not even sent a response.

REPORT PREPARED BY:

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