Berlin 2017-12-05

SC 7 / PT 4

WG 3-Meeting in Berlin

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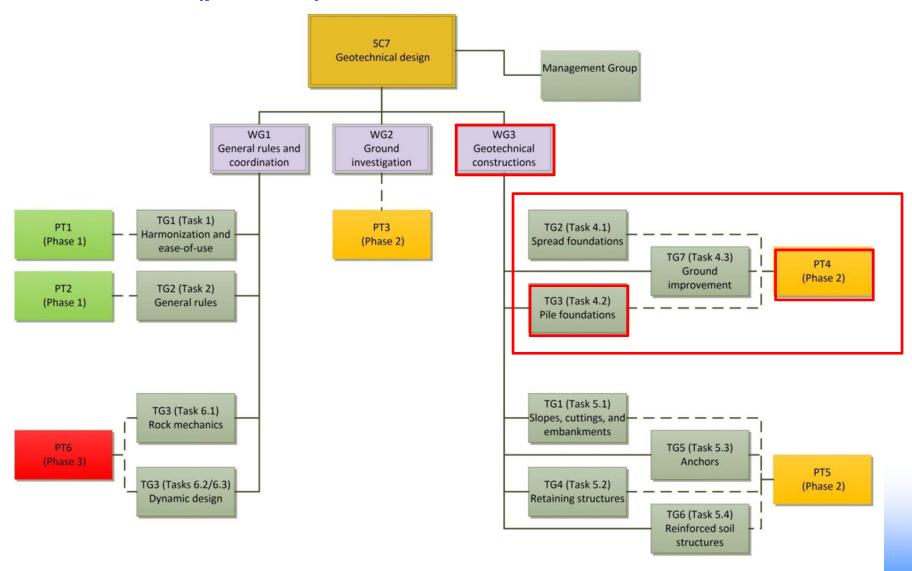
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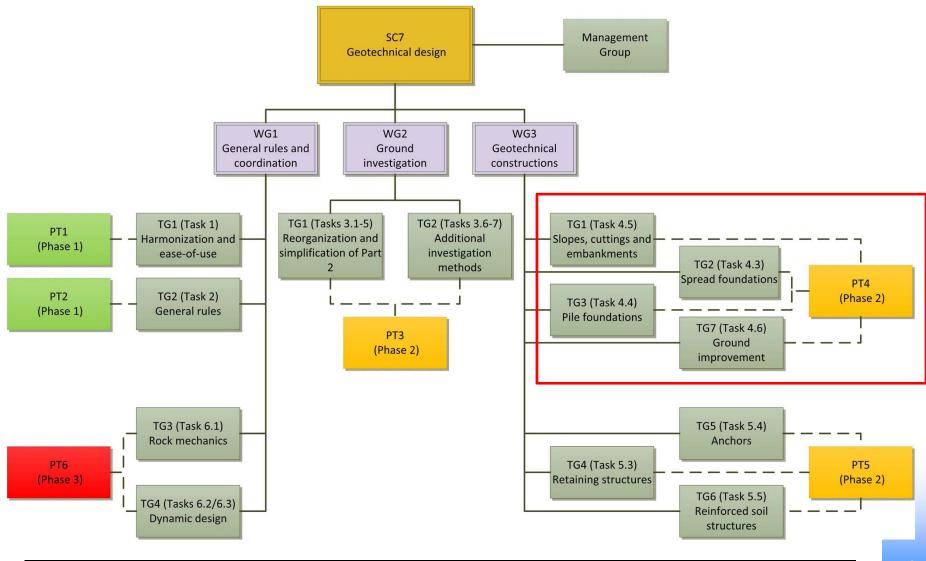
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Tasks of PT 4 (previous)



Tasks of PT 4

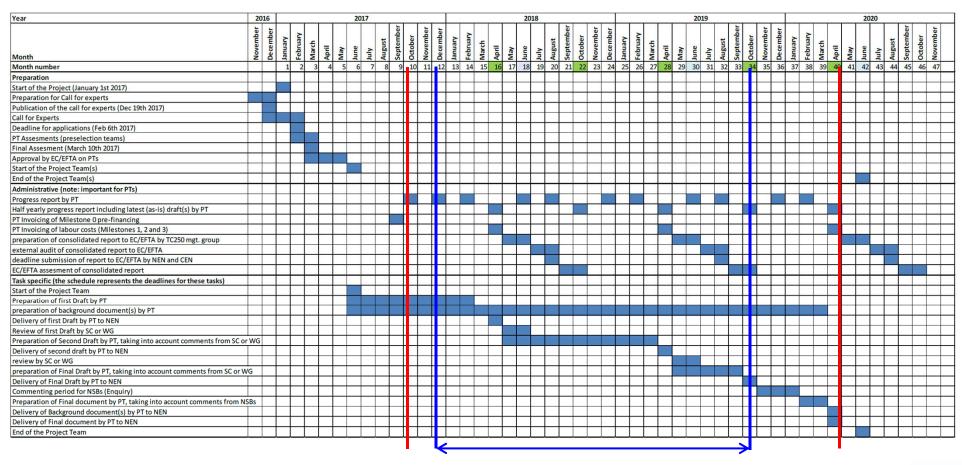


Assignment of responsibilities to individual Project Team members

		'editor'	'dialog partner' / reviewer
0	Coordination, reporting, interdependencies, harmonization etc.	Christian Moormann	Ken Gavin
1	Slopes, cuttings and embankments	Gary Axelsson	Ken Gavin
2	Spread foundations	Trevor Orr	Christian Moormann
3	Pile foundations	Ken Gavin	Gary Axelsson Christian Moormann
4	Ground improvement	Bob Essler	Trevor Orr Christian Moormann

2 Formal Requirements

Timetable for the delivery of tasks



- Kick-off Meeting on PT4 October 2nd/3rd, 2017
- Formal contractual start backdated to January 1st, 2017
- Editing of draft of EC 7-3 to be completed by October 2019 → 22 months left

2 Formal Requirements

Detailed Workplan of PT4 – Deliveries

- 04/2018 **Delivery of 1st draft by PT 4 to NEN**
- 04/2019 **Delivery of 2nd draft by PT 4 to NEN**
- 10/2019 Delivery of final draft by PT 4 to NEN
 - review and discussion of comments
 - Finalizing all documents
- 04/2020 Mandate of PT 4 formaly ends

2 Formal Requirements

Timetable for the delivery of tasks

Date	Task prepared
02./03.10.2017 Brussels	 Kick-off meeting Introduction by Chairman Draft of detailed working plan for PT4 Assignment of responsibilities to individual Project Team members Identification of Tasks Draft of detailed timetable Discussion about general aims for editing EC 7-3 by PT (ease of use etc.)
04./05.12.2017 Berlin	 confirmation of assignment drafted in Brussels check of starting documents detailed working plan for sub-tasks Identification and coordination of interdependencies and elaboration of a concerted work plan for PT4 First proposals / concepts for elaboration/revision of EC 7-3 Preparation of joined meeting with WG 3 on 2017-12-05 Draft of EC 7-1 (10/2017): review and comments/requests by PT4 Draft of EC 2 (10/2017): review of contents as far as affecting structural design of piles
01/2018 Telemeeting	Preparation of 1st draft by PT 4
02/2018 Stuttgart	■ Preparation of 1st draft by PT 4
03/2018	■ Delivery of 1st draft by PT 4 to TGs for review
04/2018	■ Delivery of 1st draft by PT 4 to NEN

Aims for PT4

Main goals for PT 4:

- > To enhance ease of use
- > To harmonize practice across Europe
 - → minimize the use of NDPs

Aims for PT4

To enhance 'Ease of use'

→ What is your / our common understanding?

- focus on basic rules relevant for safety and ULS/SLS proof
- > only rules which are well-proven by engineering practice
- > Simplify where possible
 - clarity of the text
 - avoiding textbook-like explanation
 - avoiding doublings
- > cover issues so far no guideline provided
- Include calculation methods also?

Aims for PT4

To harmonize practice across Europe (minimize the use of NDPs)

→ What is your / our common understanding?

- ➤ Use of NDPs → also related of proposals of PT1 and PT2
- Compilation of NDPs nationally used available for all items?
- > Is there reliable/scientific basis for revising new set of
 - partial safety factors
 - correlation factors
 - model factors?

Aims for PT4

Items which request evolution of existing sections

- > spread foundations
- > pile foundations
- Slopes, cutting and embankments

New work item: ground improvement

- > can be relevant for nearly all application like foundations, slopes, excavations
 - → many interdependencies
- concept discussed by evolution group to be further developed

Detailed Task Description

A.8.2 Task SC7.T4: Foundations, slopes and ground improvement

Task Ref:	SC7.T4	Task Name:	Foundations, slopes, and ground improvement
Outline Task Scope:		A STATE OF THE STA	we dealculation models for geotechnical design based on existing national practice and recent research. Add calculation models for widely used foundations types and techniques, thereby reducing barriers to trade. wwork, care will be taken to be as clear as possible, to use simple routes throughout the document, and to avoid additional and/or empirical rules for particular structure or structural-element types, all to the extent that is cal.
Starting documents:		New Eurocode 7	Part 3 (from Task 1) plus new/revised paragraphs from Task 6.

Sub-task Ref.	Sub-task name	Brief description, background and reasons for the work	Key benefits	Output (e.g. new Eurocode part; new or modified clauses in existing Eurocode part)	Further details on reference documents	Interdependencies	Related CEN/TC 250 subordinate groups
1	Reduction in number of National Choices (NDPs)	Review the contents of all Countries' National Annexes and key supporting documents provided to the Project Team. Following guidance provided by CEN/TC 250, agree NDPs to consider for detailed review with the relevant SC/WG/HG. Develop proposals to reduce the number of NDPs and/or enable better consensus on values adopted by Countries to be achieved. Incorporate those proposals agreed with the relevant SC/WG/HG into task deliverables.			CEN/TC 250 "Position paper on on reducing the number of Nationally Determined Parameters (NDPs) in the Structural Eurocodes"		
2	Enhanced ease of use	Apply recommendations in CEN/TC 250 Position paper on enhancing ease of use of the Structural Eurocodes (N1239). Enhance ease of use by improving clarity, simplifying routes through the Eurocode, avoiding or removing rules of little practical use in design and avoiding additional and/or empirical rules for particular structure or structural-element types, all to the extent that it can be technically justified whilst safeguarding the core of essential technical requirements.			CEN/TC 250 N1239 "Position paper on enhancing ease of use of the Structural Eurocodes"		
3	Spread foundations	Add (normative and informative) models for shallow foundations that have been demonstrated to yield good designs. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 10 for 'Calculation models'. Formal surveys of practising engineers have revealed demand for widely-accepted calculation models for spread foundations to be added to Eurocode 7. Engineers need guidance on the best models available for different design situations, without having to resort to non-normative (typically national, not international) documents.	Increased harmonization of design practice across Europe Improved use of Eurocode 7 in day-to-day design practice Reduced conservatism in design	Section 2 of new standard EN 1997-3 New annexes in EN 1997-3		SC7.T1	SC7/WG3 "Geotechnical constructions"
4	Pile foundations	Document the most commonly used calculation methods and formulas to determine pile resistance or behaviour for inclusion in (informative) annexes of EN 1997-1. Provide recommended values of any model factors that are needed to ensure consistent levels of reliability. Add to the standard new or more precise rules for common aspects of pile design, such as negative skin friction, lateral loads, pile groups, buckling, dynamic and cyclic loading, etc. These additional rules have to be elaborated. For seismic design of pile foundations a strong relation to EC 8 is planned. This work would make use of the background research being undertaken by Tc250/SC75 Evolution Group 7 for 'Pile Design'. Formal surveys of practising engineers have revealed demand for widely-accepted calculation models for pile foundations to be added to Eurocode 7. Engineers need guidance on the best models available for different design situations, without having to	Increased harmonization of design practice across Europe Improved use of Eurocode 7 in day-to-day design practice Reduced conservatism in design	Section 3 of new standard EN 1997-3 New annexes in EN 1997-3		SC7.T1	SC7/WG3 "Geotechnical constructions"

	duction in number of National	Review the contents of all Countries' National Annexes and key
	oices (NDPs)	supporting documents provided to the Project Team. Following guidance provided by CEN/TC 250, agree NDPs to consider for detailed review with the relevant SC/WG/HG. Develop proposals to reduce the number of NDPs and/or enable better consensus on values adopted by Countries to be achieved. Incorporate those proposals agreed with the relevant SC/WG/HG into task deliverables.
2 Enh	hanced ease of use	Apply recommendations in CEN/TC 250 Position paper on enhancing ease of use of the Structural Eurocodes (N1239). Enhance ease of use by improving clarity, simplifying routes through the Eurocode, avoiding or removing rules of little practical use in design and avoiding additional and/or empirical rules for particular structure or structural-element types, all to the extent that it can be technically justified whilst safeguarding the core of essential technical requirements.

3	Spread foundations	Add (normative and informative) models for shallow foundations	ī
] 3	Spread foundations	that have been demonstrated to yield good designs.	"
		This work would make use of the background research being	а
			П
		undertaken by TC250/SC7's Evolution Group 10 for 'Calculation	С
		models'.	F
		Formal surveys of practising engineers have revealed demand for	
		widely-accepted calculation models for spread foundations to be	
		added to Eurocode 7. Engineers need guidance on the best	
		models available for different design situations, without having to	
		resort to non-normative (typically national, not international)	
		documents.	L
4	Pile foundations	Document the most commonly used calculation methods and	1
		formulas to determine pile resistance or behaviour for inclusion	а
		in (informative) annexes of EN 1997-1. Provide recommended	h
		values of any model factors that are needed to ensure consistent	c
		levels of reliability.	~
		Add to the standard new or more precise rules for common	F
		aspects of pile design, such as negative skin friction, lateral loads,	
		pile groups, buckling, dynamic and cyclic loading, etc. These	
		additional rules have to be elaborated. For seismic design of pile	
		foundations a strong relation to EC 8 is planned.	
		This work would make use of the background research being	
		undertaken by TC250/SC7's Evolution Group 7 for 'Pile Design'.	
		Formal surveys of practising engineers have revealed demand for	
		widely-accepted calculation models for pile foundations to be	
		added to Eurocode 7. Engineers need guidance on the best	
		models available for different design situations, without having to	_
		resort to non-normative (typically national, not international)	Γ
		documents.	
-			-

		resort to non-normative (typically national, not international)				
5	Cuttings and embankments	documents. Add (normative and informative) models for cuttings and embankments that have been demonstrated to yield good designs. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 10 for 'Calculation models'. Formal surveys of practising engineers have revealed demand for widely-accepted calculation models to be added to Eurocode 7. Engineers need guidance on the best models available for cuttings and embankments for different design situations, without having to resort to non-normative (typically national, not international) documents.	Increased harmonization of design practice across Europe Improved use of Eurocode 7 in day-to-day design practice Reduced conservatism in design	Section 4 of new standard EN 1997-3 New annexes in EN 1997-3	SC7.T1	SC7/WG3 "Geotechnical constructions"
6	Ground improvement	Review existing ground improvement techniques and their design to find common principles and rules features for inclusion on Eurocode 7. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 14 for 'Ground improvement'. Techniques for improving in situ ground by deep compaction, soil mixing, and stone or concrete columns are widely used but not covered by the existing version of Eurocode 7. These techniques can offer considerable savings in the total costs of construction.	Provision of rules for design of ground improvement techniques Improved economy in design	Additions to the text of EN 1997-1 Section 5 of new standard EN 1997-3	SC7.T1	SC7/WG3 "Geotechnical constructions"
7	Harmonization of NDPs for pile design	Review the contents of all countries' National Annexes plus available JRC data; collate values for NDPs where they differ from recommended values. Consult with different countries to understand rationale behind NDPs where they are significantly different from recommended values. Perform calculations to demonstrate significance of these variations in NDPs. Reduce the number of NDPs to an acceptable minimum. This work would make use of the background research being undertaken by TC250/5C7's Evolution Group 8 for 'Harmonization' and would be performed in conjunction with task SC7.A Pile design varies significantly across Europe and could be made more consistent and economical by the establishment of common rules.	Increased harmonization of design practice across Europe	New annexes in EN 1997-3	SC7.T1	SC7/WG3 "Geotechnical constructions"
8	Alignment with ENs 1992-6 (structural design of foundations)	Review existing rules given in ENs 1992, 1993, 1995 and 1996 regarding structural design of concrete, steel, timber and masonry foundations. Propose improvements to ensure better alignment with EN 1997 and to reduce unintended conservatism. Foundation construction can be made more economic by establishing better rules for structural design of foundations	Alignment with ENs 1992, 1993, 1995 and 1996 Reduced conservatism in design	Changes to ENs 1992, 1993, 1995 and 1996	SC7.T1 Tasks belonging to SC2, SC3, SC4, SC5, SC6	SC7/WG3 "Geotechnical constructions"
9	Practical design examples	Provide example calculations to Eurocode 7 for common foundation types. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 3 for 'Model solutions'.	Provision of best-practice guidance	Scientific and Policy Report		SC7/WG3 "Geotechnical constructions"

5	Cuttings and embankments	Add (normative and informative) models for cuttings and embankments that have been demonstrated to yield good designs. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 10 for 'Calculation models'. Formal surveys of practising engineers have revealed demand for widely-accepted calculation models to be added to Eurocode 7. Engineers need guidance on the best models available for cuttings and embankments for different design situations, without having to resort to non-normative (typically national, not
6	Ground improvement	international) documents. Review existing ground improvement techniques and their design to find common principles and rules features for inclusion on Eurocode 7. This work would make use of the background research being undertaken by TC250/SC7's Evolution Group 14 for 'Ground improvement'. Techniques for improving in situ ground by deep compaction, soil mixing, and stone or concrete columns are widely used but not covered by the existing version of Eurocode 7. These techniques can offer considerable savings in the total costs of construction.

	1	can oner considerable savings in the total costs of construction.
7	Harmonization of NDPs for pile	Review the contents of all countries' National Annexes plus
	design	available JRC data; collate values for NDPs where they differ from
		recommended values.
		Consult with different countries to understand rationale behind
		NDPs where they are significantly different from recommended
		values. Perform calculations to demonstrate significance of these
		variations in NDPs. Reduce the number of NDPs to an acceptable
		minimum.
		This work would make use of the background research being
		undertaken by TC250/SC7's Evolution Group 8 for
		'Harmonization' and would be performed in conjunction with
		task SC7.A
		Pile design varies significantly across Europe and could be made
		more consistent and economical by the establishment of
		common rules.
8	Alignment with ENs 1992-6	Review existing rules given in ENs 1992, 1993, 1995 and 1996
	(structural design of foundations)	regarding structural design of concrete, steel, timber and
	,	masonry foundations. Propose improvements to ensure better
		alignment with EN 1997 and to reduce unintended conservatism.
		Foundation construction can be made more economic by
		establishing better rules for structural design of foundations

L				_
Т	9	Practical design examples	Provide example calculations to Eurocode 7 for common	F
1			foundation types.	
1			This work would make use of the background research being	
1			undertaken by TC250/SC7's Evolution Group 3 for 'Model	
L			solutions'.	

Starting documents

- Systematic Review of existing EC 7-1 commented by TG's
- Draft of EC 7-3 from Task 1 (PT 1 and PT 2)
- Final report (hand-over document) provided by TGs: for pile foundations and spread foundations, but so far not for ground improvement and slopes

⇒ Request to Task Groups (convenors):
 Please send us a list of all relevant documents to be considered
 by PT 4 and forward these documents directly to us

Starting documents

New Eurocode 7 Part 3 (from Task 1)

CEN/TC 250 Date: 202x-10 prEN 1997-3:202x CEN/TC 250 Secretariat: NEN Eurocode 7: Geotechnical design — Part 3: Geotechnical constructions Eurocode 7 - Entwurf, Berechnung und Bemessung in der Geotechnik — Teil 3: Geotechnische Bauten Eurocode 7 - Calcul géotechnique — Partie 3: Constructions géotechniques ICS: Descriptors:

Starting documents

New Eurocode 7 Part 3 (from Task 1) \rightarrow new structure for SC7-3

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Starting documents

New Eurocode 7 Part 3 (from Task 1) \rightarrow new structure for SC7-3

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New Eurocode 7 Part 3 (from Task 1) \rightarrow new structure for SC7-3

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New Eurocode 7 Part 3 (from Task 1) \rightarrow new structure for SC7-3

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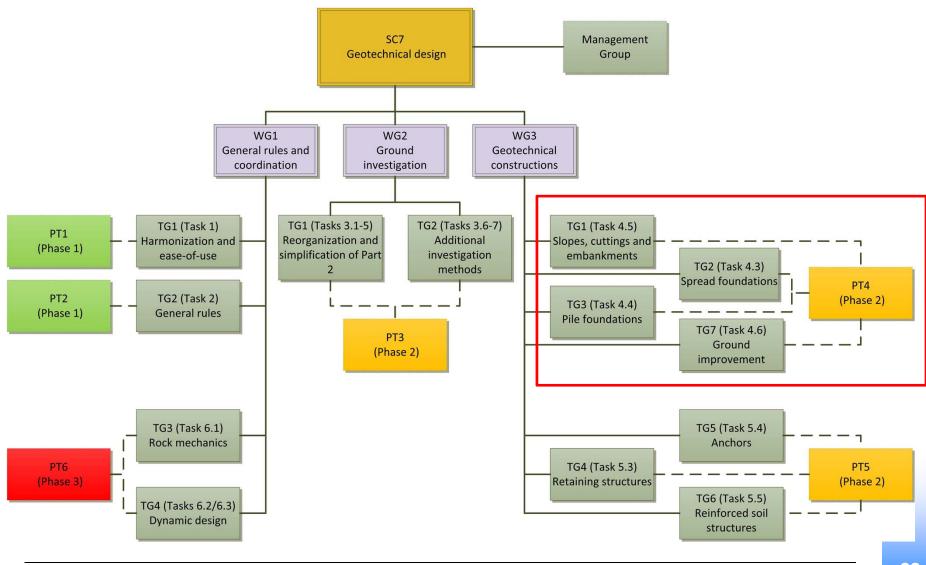
Starting documents

New Eurocode 7 Part 3 (from Task 1) \rightarrow new structure for SC7-3

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Organisational chart



Review and interaction with Task Groups

slopes, cuttings and embankments \rightarrow to be shadowed by WG3/TG1 spread foundations \rightarrow to be shadowed by WG3/TG2 pile foundations \rightarrow to be shadowed by WG3/TG3 ground improvement \rightarrow to be shadowed by WG3/TG7

		'editor'	'dialog partner' / reviewer
1	Slopes, cuttings and embankments	Gary Axelsson	Ken Gavin
2	Spread foundations	Trevor Orr	Christian Moormann
3	Pile foundations	Ken Gavin	Gary Axelsson Christian Moormann
4	Ground improvement	Bob Essler	Trevor Orr Christian Moormann

Interaction of PT 4 with Task Groups

Our basic idea

- to work independently
- to deliver our task in time
- to create a modern and forward-looking version of EC 7-3

but also

- to consider preliminary work done by EGs and TGs
- to consider proposals for improvement
- to consider best engineering practice across Europe
- to consider European diversity in geotechnical design
- to finally create documents which have potential to find acceptance by most European countries
- ⇒ to listen to TGs and to ask for TGs support

Review and interaction with Task Groups

Our proposal / expectation towards Task Groups

We need a good liaison and TGs support

review function: - review and comment of documents drafted by PT4

> - PT4 intends to send draft of documents to TGs one month before formal delivery to NEN and to ask for comments

- consulting function: supporting with national documents
 - support for evaluation of NDPs
 - support for identifying 'widely accepted calculation models'
 - discussion of new proposals

proposal for improved communication:

- PT 4 leader and responsible 'editor' willing to join TGs meetings on invitation by TG's convenor