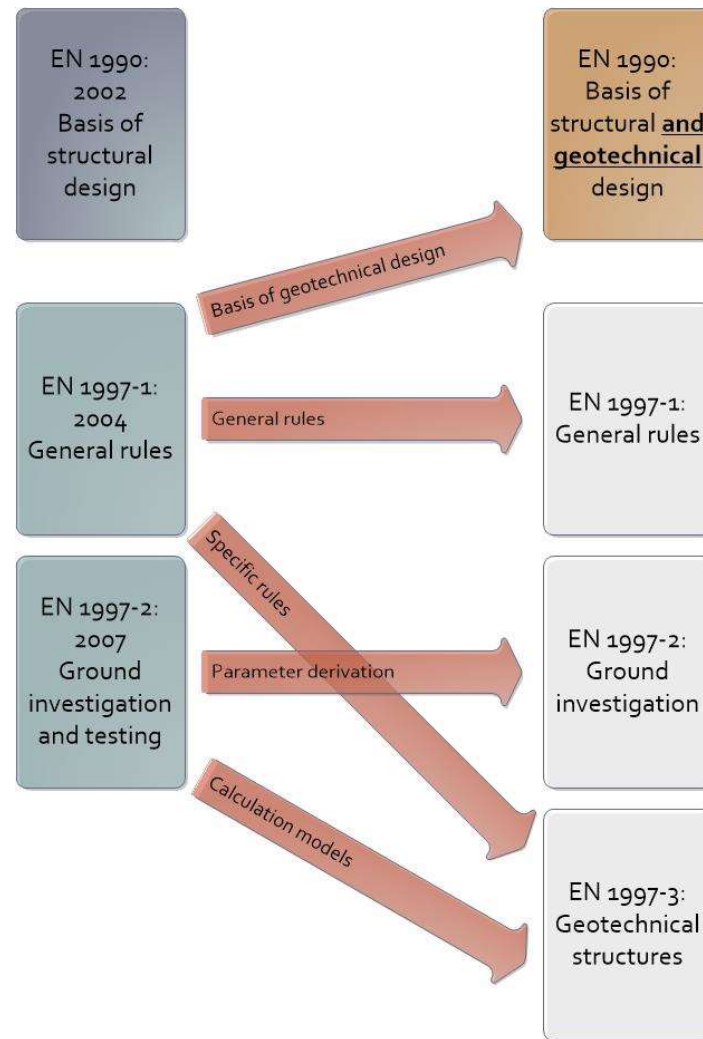


Progress on 2nd generation of Eurocode 7



Andrew Bond (Chairman SC7)

Key changes from 1st generation of Eurocode 7



prEN 1990 and 1997-1:2018

Final PT drafts, April 2018

EN 1990:202x, 136 pp

Basis of structural and geotechnical design

1. Scope
2. Normative references
3. Terms and definitions
4. Symbols and abbreviations
5. **Requirements**
6. **Principles of limit state design**
7. **Basic variables**
8. **Structural analysis and design assisted by testing**
9. **Verification by the partial factor method**

Annexes A-E

EN 1997-1:202x, 108 pp

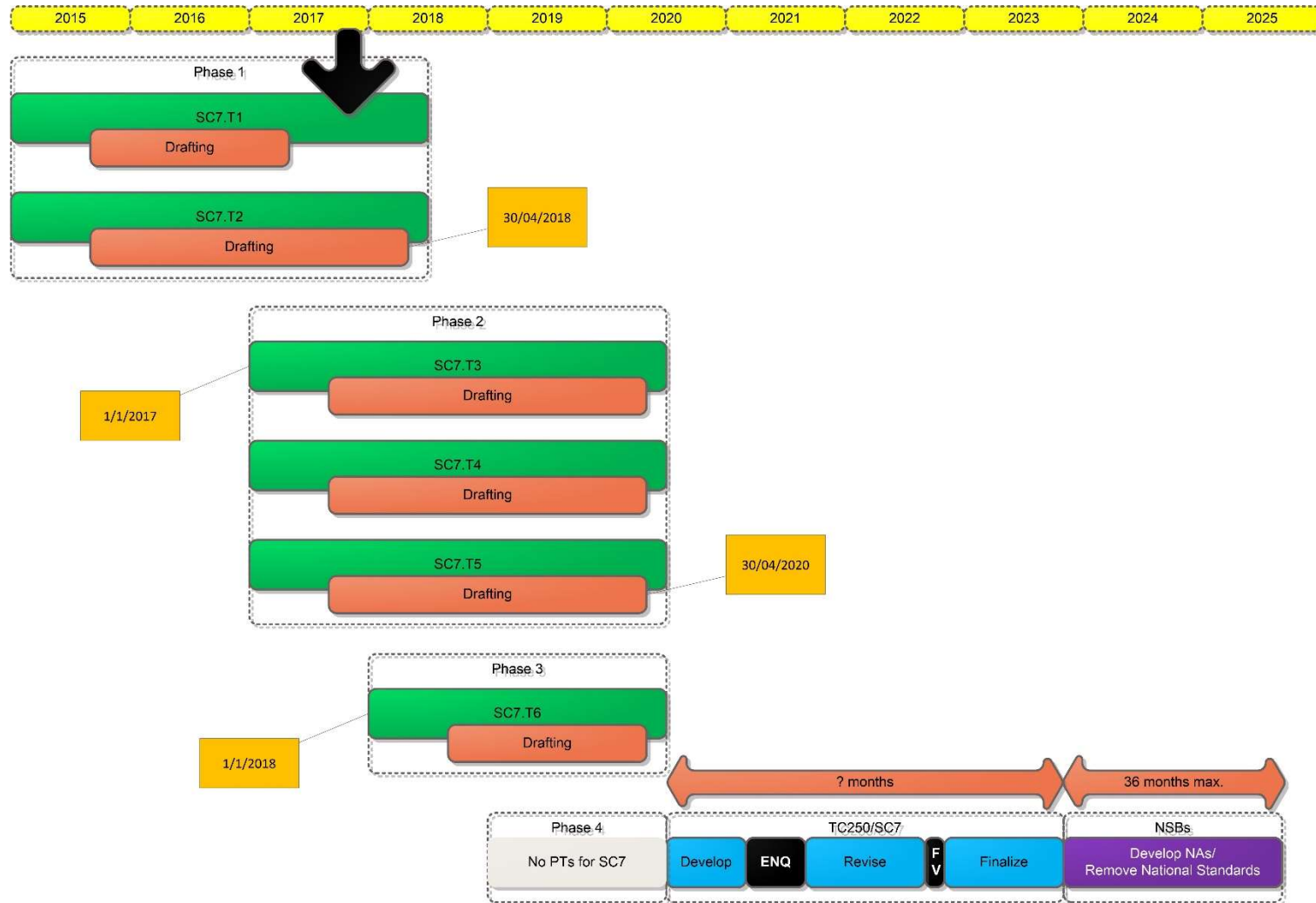
Geotechnical design – General rules

1. Scope
2. Normative references
3. Terms, definitions and symbols
4. **Basic of design**
5. **Materials**
6. **Groundwater**
7. **Geotechnical analysis**
8. **Ultimate limit states**
9. **Serviceability limit states**
10. **Execution**
11. **Testing**
12. **Reporting**

Annexes A-G

TC250/SC7

Expected timeline for EN 1997:202x



prEN 1997-2 and pr1997-3:202x

2nd draft, under development

EN 1997-2:202x

Geotechnical design - Ground investigation

1. Scope
2. Normative references
3. Terms, definitions and symbols
4. **Ground modelling**
5. **Planning ground investigation**
6. **Methods of ground investigation**
7. **Physical and chemical properties**
8. **Strength properties**
9. **Stiffness properties**
10. **Mechanical properties under dynamic load**
11. **Hydraulic conductivity and groundwater pressures**
12. **Thermal properties**
13. **Ground Investigation Report**

Annexes A-G ... (parallel to Clauses 5-10)

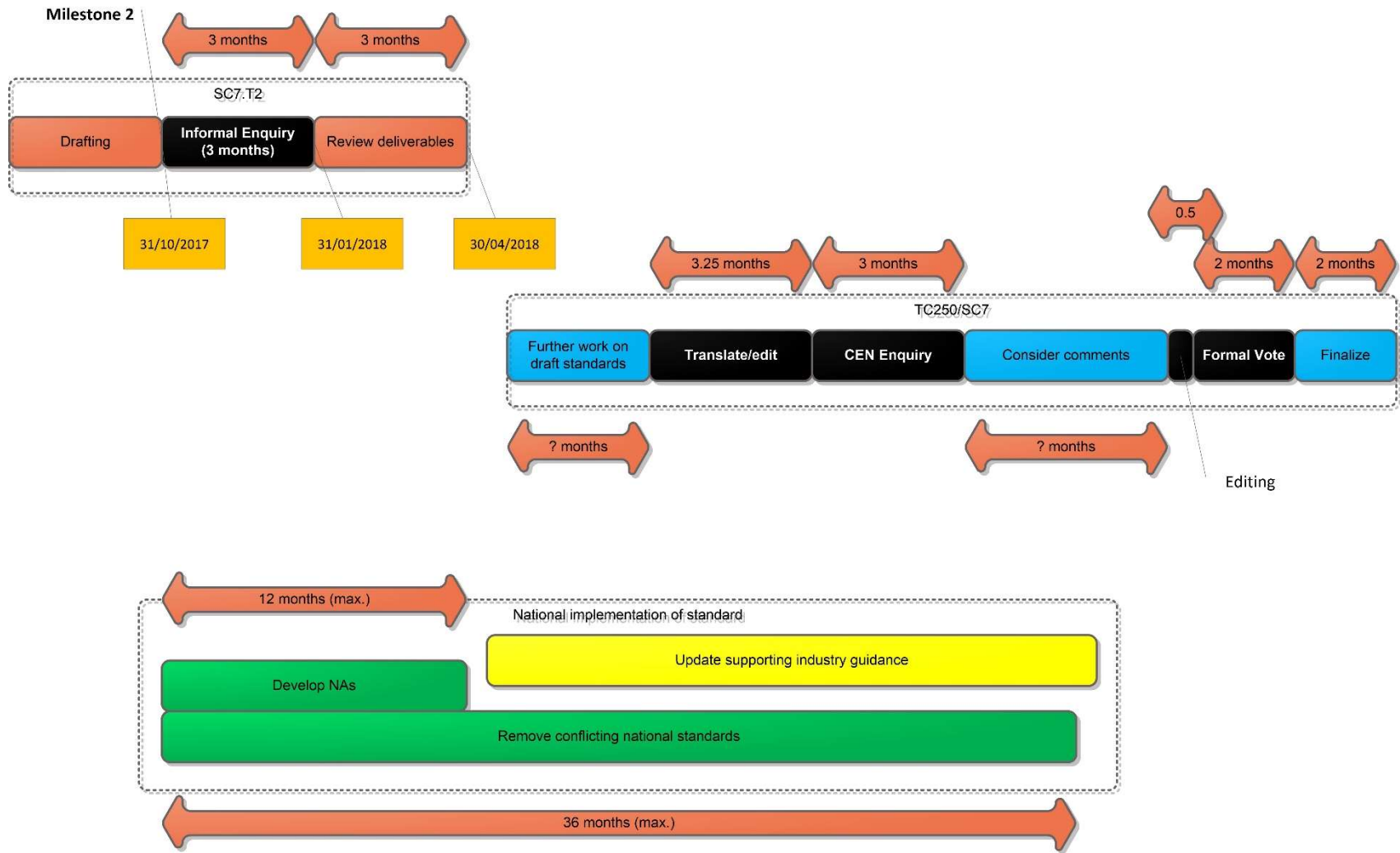
EN 1997-3:202x

Geotechnical design - Geotechnical structures

1. Scope
2. Normative references
3. Terms, definitions and symbols
4. **Slopes, cuttings, and embankments**
5. **Spread foundations**
6. **Pile foundations**
7. **Retaining structures**
8. **Anchors**
9. **Reinforced soil structures**
10. **Ground improvement**

Annexes A-G Calculation models for ...
(parallel to Clauses 5-10)

TC 250 Publication Plan



Final PT draft of issue of Eurocode 2 Part 1

Progress on 2nd generation of Eurocode 7

4.3.1.3 Partial factors for materials

(1) Partial factors for materials, γ_C and γ_S shall be used.

e.g. $\gamma_C = 1.5$ (1.2 for accidental) and $\gamma_S = 1.15$

(2) Lower values of γ_C and γ_S may be used if justified by measures reducing the uncertainty in the calculated resistance, as specified in Annex A.

(3) To allow for increased uncertainty and variability the partial factor γ_C should be multiplied with a factor $k_f = 1,1$ for the calculation of design resistance of **cast-in-place piles without permanent casing**.

4.2.2 Geometric data

(I) Geometric tolerances ...

Note: Allowances to be made in design where different tolerances are applicable to certain members can be provided in the National Annex. Examples of such members could **include cast-in-place bored piles where the steel casing is pulled, or concrete piles driven through rock**. This standard offers no guidance on what allowance is adequate, but engineering practice in the various countries could. Allowance can be made either by a reduced cross-section, an assumed deformation or a reduced resistance.

Clause 14 Plain and lightly reinforced concrete structures

(1) 14 provides additional rules for plain concrete structures or where the reinforcement provided is less than the minimum ... required for reinforced concrete. It should be ensured that brittle failure of these members does not lead to collapse of the structure.

(2) 14 applies to members, for which the effect of dynamic actions may be ignored. Examples of such members include:

...

- strip and pad footings for foundations;
- gravity retaining walls;
- **piles whose diameter is ≥ 600 mm and where $N_{Ed} / A_c \leq 0,30 f_{ck}$**

Annex A (normative): Modification of partial factors for materials

A.1 General

(1) The partial factors for materials given in Table 4.1N correspond to geometrical deviations of Tolerance Class 1 and Execution Class 2 in EN 13670.

A.2.1 Reduction based on quality control and reduced deviations

(1) If execution is subjected to a quality control system, which ensures that geometrical deviations of Tolerance Class 2 (according to EN 13670) are fulfilled, **the partial safety factor for reinforcement may be reduced** to $\gamma_{S,red}$ and, provided that the coefficient of variation of the concrete strength is shown not to exceed 10%, **the partial safety factor for concrete may be reduced** to $\gamma_{C,red}$.

Table A.1N Values for reduced material factors

Condition for reduced material factor, in-situ and precast	$\gamma_{C,red}$	$\gamma_{S,red}$
Reduction based on quality control and reduced deviations	1.4	1.1
Reduction based on using reduced or measured geometrical data in design	1.45	1.1
Reduction based on assessment of concrete strength in finished structure	$0.85 \gamma_C$	

Summary

Progress on 2nd generation of Eurocode 7

Progress on 2nd generation of Eurocode 7

- ▶ **'Final' PT drafts of prENs 1990 and 1997-1 issued**
 - ▶ Basis of geotechnical design is now in EN 1990
 - ▶ General rules for geotechnical design remain in EN 1997-1
 - ▶ Specific rules for design of geotechnical structures are being moved to EN 1997-3
- ▶ **SC7/PTs 3-5 preparing 2nd drafts of prENs 1997-2 and -3**
 - ▶ EN 1997-2 *Ground investigation* will focus on parameters for design
 - ▶ EN 1997-2 *Geotechnical structures* will give specific rules for design of pile foundations
 - ▶ Interim drafts of these standards to be discussed at SC7/WGs meeting in Naples (end November 2018)