

Αναθεώρηση Ευρωκωδίκων

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Επιτροπή Αντισεισμικής Προστασίας Γεφυρών

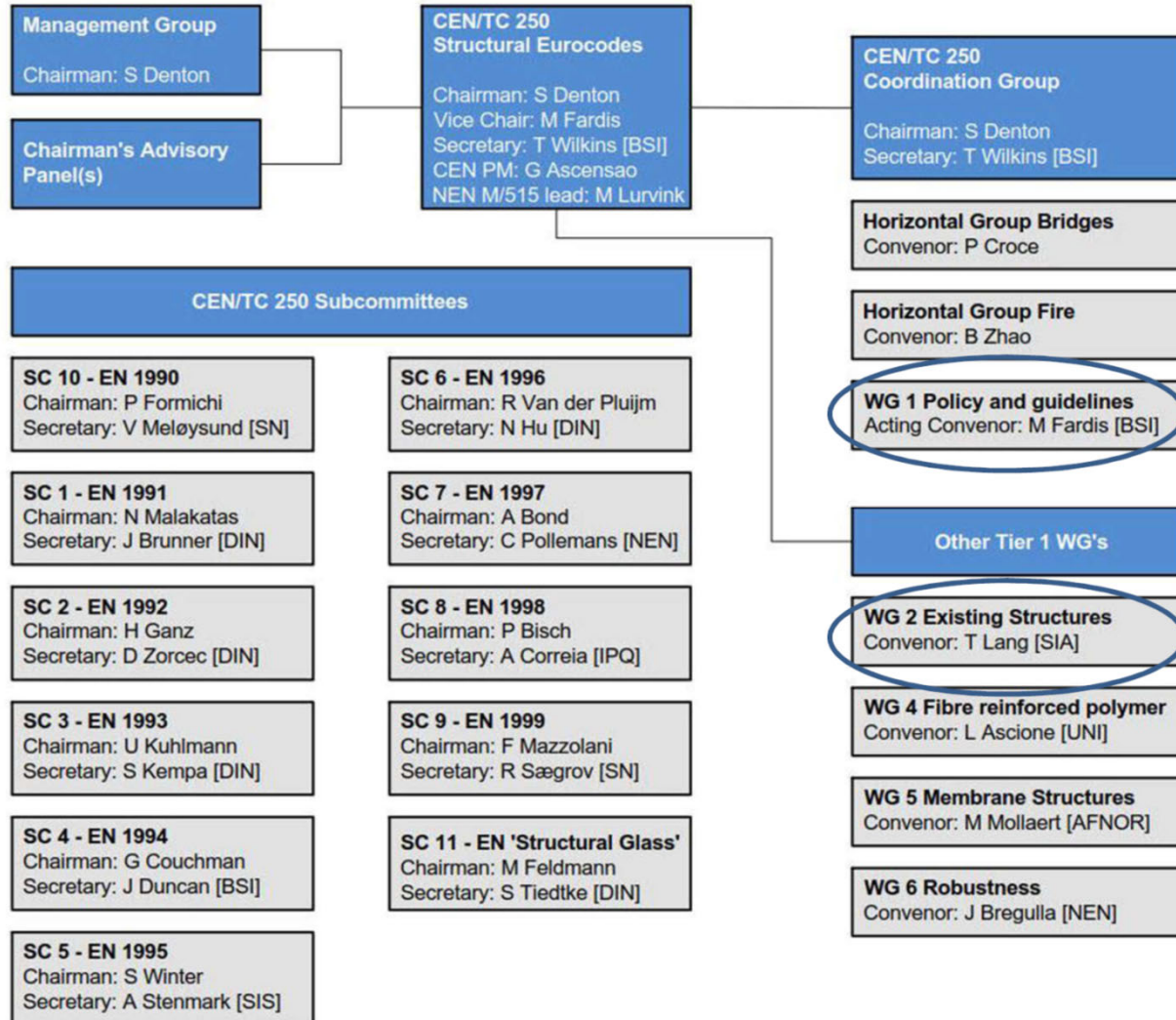
Αναθεώρηση Ευρωκωδίκων

Η πορεία προς τη δεύτερη γενιά Ευρωκωδίκων

- Το 2010 η Ευρωπαϊκή Επιτροπή έστειλε εντολή (M/466) στην CEN για να δρομολογήσει την αναθεώρηση των υφιστάμενων και δημιουργία νέων Ευρωκωδίκων.
- Το 2012 η Ευρωπαϊκή Επιτροπή έστειλε εντολή (M/515) με την οποία ζητούσε από τη CEN τη δημιουργία πλάνου για την επίτευξη του στόχου που καθοριζόταν στην M/466.
- Το 2014 η TC250 της CEN ανέλαβε την εκτέλεση του έργου σε τέσσερες φάσεις με τη συμμετοχή πάνω από 350 ειδικών από όλη την Ευρώπη.

Αναθεώρηση Ευρωκωδίκων

Η δομή της CEN/TC250



Αναθεώρηση Ευρωκωδίκων

Στόχοι του έργου σύμφωνα με την M/515 της ΕΕ:

- Η αναθεώρηση εστιάζεται στα:
 - Ανάπτυξη νέων Προτύπων ή μερών Προτύπων
 - Εισαγωγή νέων απαιτήσεων απόδοσης ή μεθόδων σχεδιασμού
 - Εισαγωγή/Επέκταση απαιτήσεων ευρωστίας (robustness)
 - Τροποποίηση των υπάρχοντων κειμένων ώστε να γίνουν περισσότερο φιλικά στο χρήστη (enhancing ease of use)
 - Μείωση των Εθνικά Προσδιοριζόμενων Παραμέτρων (reduction of NDPs -1600)
- Με τον τομέα μελετών στην Ευρώπη να καλύπτει περίπου 75. Β€ σε μια Ευρωπαϊκή Οικοδομική Βιομηχανία αξίας 1.8 Τ€, ακόμα και μια μικρή βελτίωση του Κανονιστικού Πλαισίου θα έχει σημαντικά οφέλη τόσο στην οικονομία όσο και στην κοινωνία.

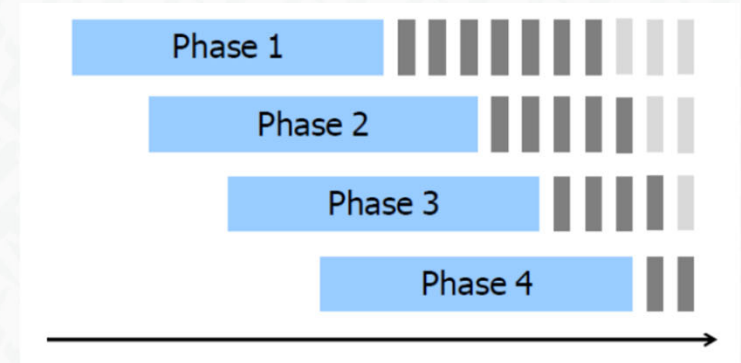
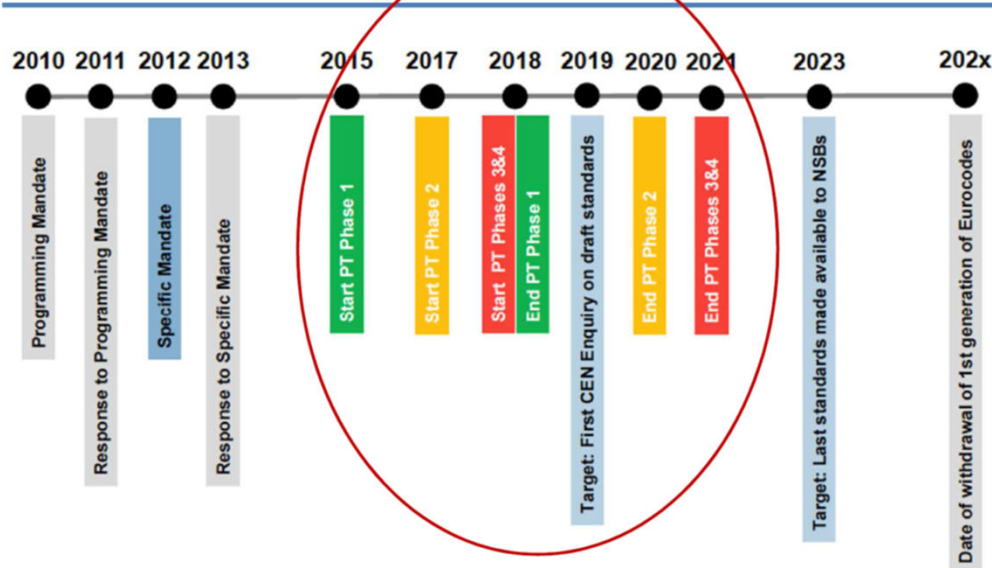
Αναθεώρηση Ευρωκωδίκων

Υλοποίηση του έργου:

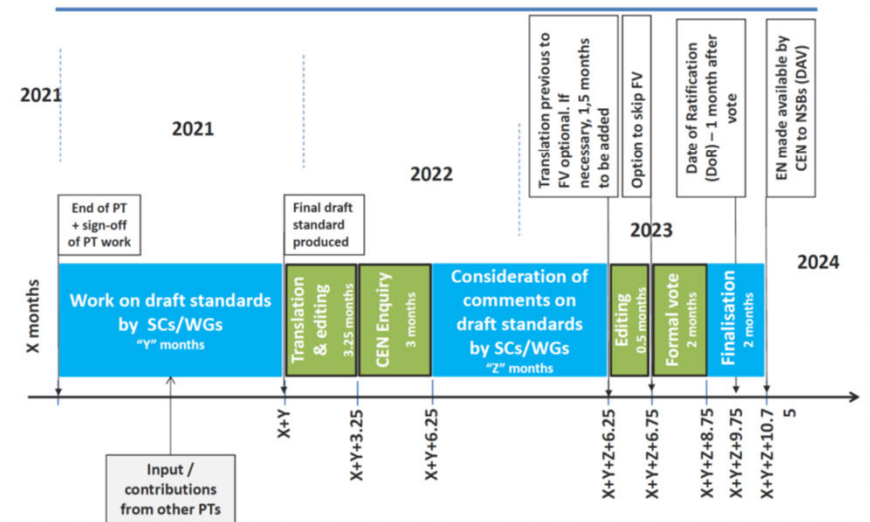
- Το πρόγραμμα αποτελείται από 79 διακριτά έργα.
- Τα έργα αυτά θα τα αναλάβουν οι υποεπιτροπές της TC250 (SCs), ομάδες εργασίας (WGs), ή οριζόντιες ομάδες (HGs).
- Τα έργα θα υποστηριχθούν από ομάδες 4-6 εμπειρογνομένων (PTs) οι οποίοι επιλέγονται κατόπιν ανοικτού διαγωνισμού και οι οποίοι θα αναλάβουν τη σύνταξη των σχεδίων των αναθεωρούμενων Προτύπων.
- Δημιουργία τριών νέων προτύπων:
 - Δομικό γυαλί (Structural Glass)
 - Ινοπλισμένα πολυμερή (FRP)
 - Δομήματα με μεμβράνες (Membrane Structures)

Χρονοδιάγραμμα Αναθεώρησης

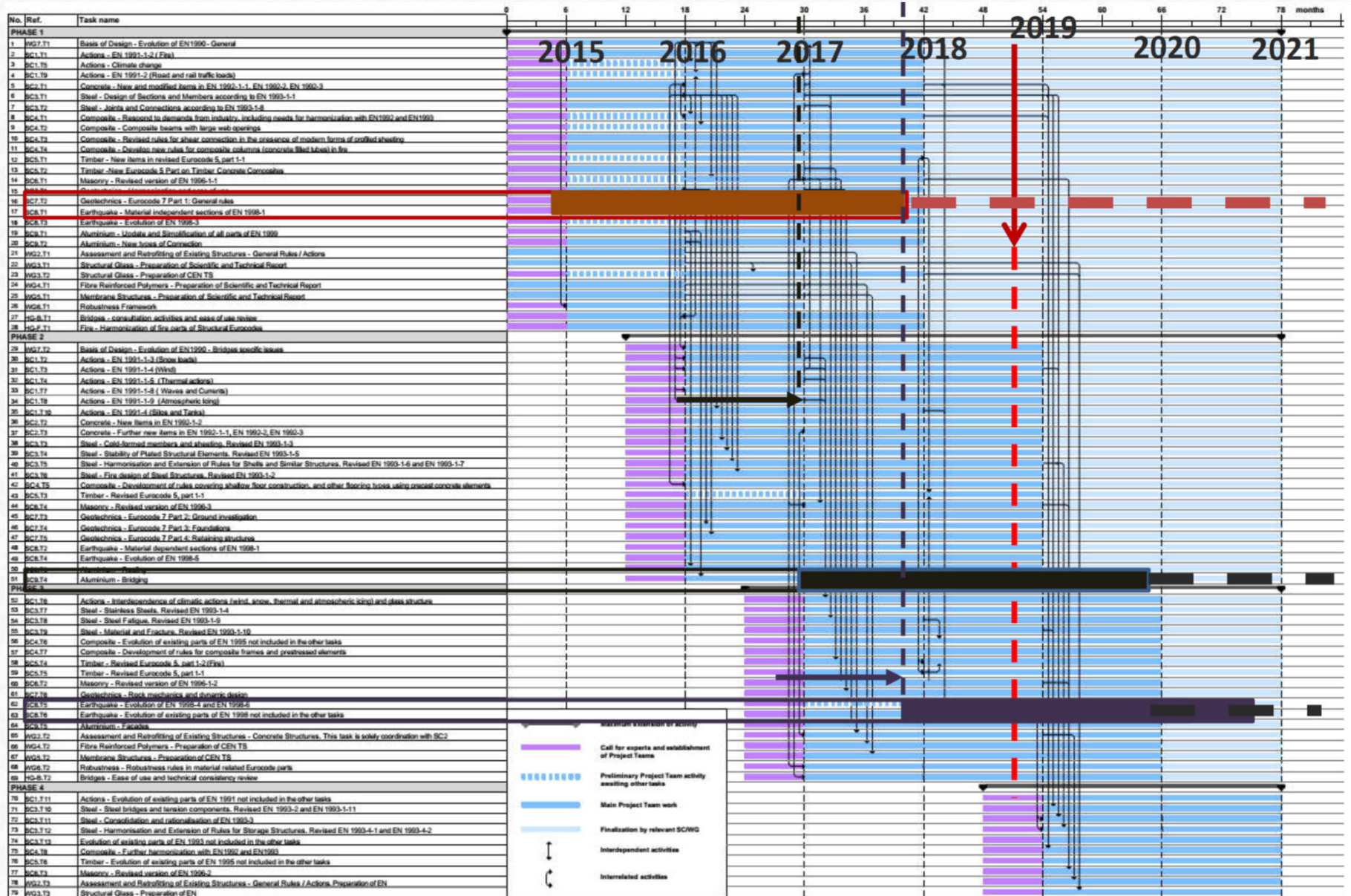
Preliminary overall schedule



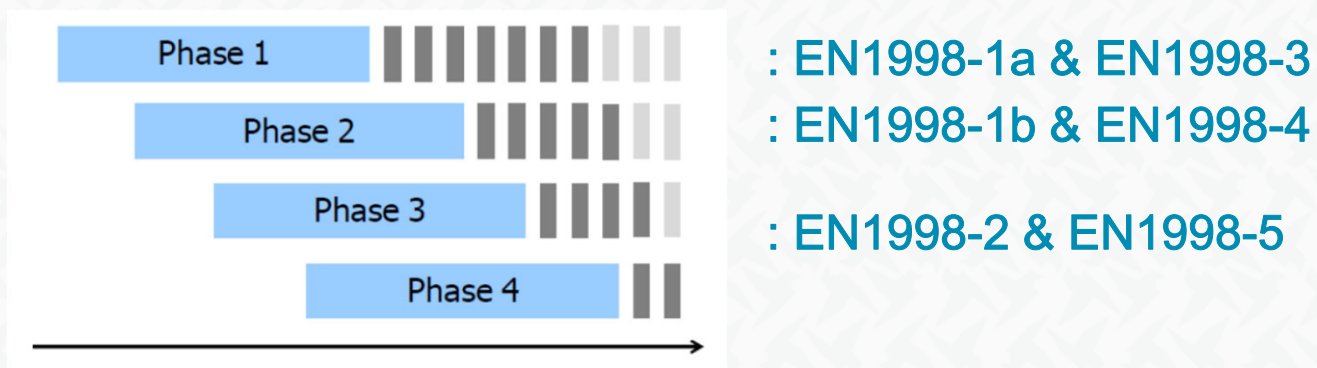
Time schedule for delivery of 2nd generation ENs



Χρονοδιάγραμμα Αναθεώρησης



Αναθεώρηση Ευρωκώδικα 8



Αναθεώρηση EN1998 – Phase 1

- SC8.T1: Material independent sections of EN 1998-1
 - Revision and update of the Material Independent Sections of EN1998-1 (Sections 1 to 4 and 10). Extend the scope of EN 1998-1 to cover “construction” as a whole, encompassing structural, non structural and equipment parts.
- SC8.T3: Evolution of EN 1998-3
 - Revision, update and extension of EN1998-3. In drafting the new work, 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 reasonably practical.

Deadline for Tender: May 25th, 2015

Αναθεώρηση EN1998 – Phase 1

Task Ref:	SC8.T1	Task Name:	Material independent sections of EN 1998-1
Outline Task Scope:	Revision and update of the Material Independent Sections of EN1998-1 (Sections 1 to 4 and 10). Extend the scope of EN 1998-1 to cover "construction" as a whole, encompassing structural, non structural and equipment parts.		
Starting documents:	EN 1998-1 and National Annexes. Information from the JRC database on the Nationally Determined Parameters. Final report of Research Project SHARE.		

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.				-	
2	Enhanced ease of use	Apply recommendations in CEN/TC 250 Position paper on enhancing ease of use of the Structural Eurocodes (N1239) provided in Annex B to Volume 3. 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. Particular topics for consideration includes: - Simpler rules for Low and/or Medium Seismicity Regions - Accidental eccentricity/Torsional provisions			CEN/TC 250 N1239 "Position paper on enhancing ease of use of the Structural Eurocodes"	-	To ensure consistency within EN 1998-1, the activity of the Project Team has to be coordinated with the activity of the future (Phase 2) Project Team SC8/PT2 in charge of the Material Dependent Sections of EN 1998-1.
3	European Seismic Zonation and definition of the Seismic Action	In the present version of EN1998 the seismic zonation and the definition of the spectral shape of the seismic action for design are Nationally Determined Parameters (NDPs) to be defined in the National Annexes to EN 1998-1. Although in EN 1998-1 corresponded to an advancement in terms of harmonization (by establishing a "standard shape" of the design spectra and by establishing the anchoring variable for the definition of the national seismic zonation maps) it is clear that there is a need to pursue further such harmonization in the future revision of EN 1998. Seismic zonation and the definition of the seismic action are key elements for all parts of EN 1998. Its updating fundamentally influences EN 1998 and so this activity should have priority with regard to other changes. The definition of the seismic action should be coordinated with the establishment of the definition of the different Performance	The main benefit of this action is to update the way in which the seismic zonation is presented, taking profit of the more recent research in this field and aligning EN1998 with the way in which seismic zonation is presented other national and international seismic codes. To this effect profit shall be taken from recent European research projects, namely the project SHARE, which provided consistent methodologies and tools to support the establishment of a European seismic zonation.	Redrafting of Section 3 (Ground conditions and Seismic action) of EN 1998-1. The redrafting shall provide the advancement towards a harmonized seismic zonation but still enabling the Member States, if required, to establish its own safety levels at different performance levels and for different types of structures (importance classes).			

Αναθεώρηση EN1998 – Phase 1

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
		requirements in EN 1998-1, valid across the various parts of EN 1998. Besides the current Performance requirements included in the various parts of EN 1998, consideration should be given to add an "Operational" Performance level. Based on the set of Performance requirements defined in EN 1998-1, each Part of EN 1998 may establish what is applicable therein. It is envisaged to create a Working Group to provide SC8 with technical proposals related to seismic zonation for design purposes and the definition of the design seismic action. If approved by SC8, these technical proposals shall be passed on to the Project Team for incorporation in the revision of Sections 2 and 3 of EN 1998-1. This may include matters related to the soil classification.					
4	Displacement based design	<p>"Displacement based" methods of seismic design are gaining increasing acceptance as an alternative to the "force based" methods which form the current basis for most international seismic codes for new construction, including EN1998. Over the past 15 years, displacement based methods have been developed in many parts of the world, and a US code provides detailed procedures for using them to assess existing buildings. The current provisions of EN1998-1 in principle allow new buildings to be designed by displacement based methods and Annex B gives already some advice on analytical procedures to be used to tackle the "demand side" of the problem.</p> <p>However this is not complete and information on the deformation capability of members ("supply side") is completely lacking in EN1998-1. Some of this information is currently provided in Annexes to EN1998-3 for existing buildings, but these data have not been fully validated. EN1998-2 currently gives more complete information for the displacement based design of new bridges, but again this needs development. Displacement based methods are widely considered to result in structures which provide seismic resistance more economically and reliably than force based methods, particularly with respect to limiting economic losses in an earthquake. Hence EN1998-1 needs to include fully implementable provisions for their use in building design if it is to remain an internationally leading seismic code. In view of the wide implications of this change, the extension of Annex B of EN 1998-1, to make displacement based design usable in practice, should be developed in Phase 1.</p> <p>This sub-task should be coordinated with Sub Task 3 with regard to the Performance requirements. It should also include provisions to account for torsional behaviour (coordinated with whatever Sub Task 2 establishes in this respect).</p>	The main benefit of this action is to advance towards the codification of displacement based design for new structures. It is recognized that this corresponds to a major change in the way seismic design is approached and so a step by step evolution is envisaged. Hence, the reference force-based methods shall be kept but the current Annex related to the non-linear static analysis shall be updated to make it fully usable in practical terms. For such update of Annex B of EN 1998-1, the relevant information on deformation capability of structural elements already included in EN 1998-3 for Assessment and Retrofitting of existing buildings shall be duly considered and incorporated.	The aim of the project is to develop and codify the displacement-based design method for new buildings. Annex B of EN 1998-1 shall be fully revised and extended to cover both the "demand" and the "supply" sides of the safety verifications. Profit shall be taken from the information available in EN 1998-3, namely, providing verification criteria for the yielding and ultimate deformation capacity of structural members and of the whole structure.			
5	Base isolation, additional damping and new technologies	The design of Buildings with base isolation is covered by Section 10 of EN 1998-1. However, this section "does not cover passive energy dissipation systems that are not arranged on a single interface, but are distributed over several storeys or	The main benefit is to eliminate the present restrictions of scope in Section 10 that is detrimental for the practical use of EN1998-1 in view of the recent advancements in the	Redrafting of Section 10 (Base Isolation) of EN 1998-1. The redrafting shall widen the scope of this section to encompass		This sub task shall require interaction with CEN/TC340 that is in charge of the development of product	

Αναθεώρηση EN1998 – Phase 1

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
		<p>levels of the Structure” and “only full isolation is considered”. Hence this action aims at the development of design rules to remove these restrictions in scope and to open the way for the design of buildings with the more recent technologies in passive control. This shall also be an opportunity to improve the interface between the design standard (EN 1998) and the relevant product standard (EN 15129) since in the current versions of the two standards a consistent interface has not been fully achieved.</p>	<p>field of base isolation and distributed damping. Another key benefit shall be the improvement of the interface between the products standard and the structural design standard. At present, the technical specification of the antiseismic devices by the structural designer is not straightforward.</p>	<p>spatial isolation and distributed damping.</p>		<p>standards for antiseismic devices.</p>	

Αναθεώρηση EN1998 – Phase 1

Task Ref:	SC8.T3	Task Name:	Evolution of EN 1998-3
Outline Task Scope:	Revision, update and extension of EN1998-3. In drafting the new work, 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 reasonably practical.		
Starting documents:	EN 1998-1, EN 1998-2, EN 1998-3 and respective National Annexes. Information from the JRC database on the Nationally Determined Parameters		

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.					
2	Enhanced ease of use	Apply recommendations in CEN/TC 250 Position paper on enhancing ease of use of the Structural Eurocodes (N1239) provided in Annex B to Volume 3. 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. Particular consideration should be given to the potential to simplify annexes related to materials.			CEN/TC 250 N1239 "Position paper on enhancing ease of use of the Structural Eurocodes"		
3	Buildings	The growing importance of the sustainable use of construction materials, combined with the need to provide adequate seismic protection to the population, leads to the increasing relevance of the assessment and seismic retrofitting of the very large building stock existing in the most seismically active areas in Europe. This was at the core of the previous decision to develop this Part of EN1998 8 within the first batch of Eurocode parts. However, the field of assessment and retrofitting of structures is relatively new and has evolved rapidly in recent years. Hence some basic concepts and design rules presently included in EN 1998-3 require updating to keep it in pace with developments at world level.	Enhancing the possibility of using nonlinear analysis methods for the assessment and retrofitting of existing buildings is very important. In those cases the design options are much more constrained simply because the building does exist. Hence a more realistic and accurate understanding of the structural response is fundamental to underscore the optimal choices (simultaneously with regard to safety, economy and environmental impact) for the retrofit of the structure.	Thorough updating of EN 1998-3 for assessment and retrofitting of buildings. Improvement of the normative part of the document, making it more user-friendly to the ordinary designer.		In view of the intention to develop displacement based design rules for new buildings (sub task 4 of Task SC8.T1) that shall profit of the already existing rules in EN 1998-3, the development of this Task should be given priority and proceed simultaneously with Task SC8.T1.	

Αναθεώρηση EN1998 – Phase 1

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
		<p>Aspects to be added or updated are:</p> <ul style="list-style-type: none"> a) Use of confidence factors and knowledge levels and also the consideration of other uncertainties as well as risk-based decision criteria in the design procedures for assessment and retrofitting of buildings; b) Use of the concept of Performance levels (in a way coherent with the concept of Limit States generally used in the Eurocodes) should be reviewed to adapt to the specificities of existing structures; c) Extension of clauses related to nonlinear analysis, in order to provide a better guidance for its practical application by ordinary designers. It should be noticed that for existing buildings, the nonlinear analysis is much more important and useful than in the case of new buildings. d) Updating of the current rules of EN 1998-3 related to shear resistance. It should be stressed that the behaviour of elements under large alternate cyclic shear is in many cases the "weak link" in the structures of existing buildings (namely in concrete and masonry) and correspondingly a critical aspect in the retrofitting operation. e) More detailed rules for the design of shear walls and horizontal diaphragms. 					
4	Bridges	<p>Many bridges in roads and railway networks in Europe were built long before the present knowledge on the seismic performance of bridges were available, not mentioning its incorporation in design codes. Thus the seismic vulnerability of those bridges may be quite high, hindering its safety and the reliability of the transportation network, in the event of a severe earthquake. Interventions to evaluate and to reduce such vulnerability are most appropriate and, to some extent, are already being undertaken at national level by some National Authorities. Hence it is proposed to extend the scope of EN 1998-3 (currently dealing only with existing buildings) to cover also the seismic assessment and retrofitting of existing bridges.</p>	<p>The main benefit of this action is to enlarge the scope of EN 1998-3 to specifically cover also the seismic retrofitting of bridges. This creates the conditions for a more systematic reduction of the seismic risk associated with bridges at European level, with impact in individual bridges and also in the transportation networks reliability. The use of base isolation and energy dissipation devices in bridge retrofitting operations shall increase the opportunities of using this type of devices with important impact in the industry.</p>	<p>Extension of the scope of EN 1998-3 to cover the assessment and retrofitting of bridges. Accordingly, this Part of EN 1998 should be given a more encompassing title: "Seismic retrofitting of structures". The provisions shall be mostly applicable to concrete and steel/composite bridges. They shall also cover the retrofitting of foundations and bearings. Introduction of base isolation and/or dissipation devices as part of the retrofitting solution for bridges shall also be addressed.</p>			

Working Drafts of Phase 1



CEN/TC 250/SC 8 N 740

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

Email of secretary: sc8@lnec.pt
Secretariat: IPQ (Portugal)

EN1998-1 SC8-Evolution of PT1 document

Document type: Working draft

Date of document: 2018-09-10

Expected action: INFO

No. of pages: 131

Background: Evolution of the final document produced by PT1, with modifications proposed by the SC8 Chairman and by the Technical Reviewer, for discussion during the 35th SC8 meeting



CEN/TC 250/SC 8 N 741

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

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Secretariat: IPQ (Portugal)

EN1998-3 SC8-Evolution of PT3 document

Document type: Working draft

Date of document: 2018-09-20

Expected action: INFO

No. of pages: 209

Background: Evolution of the final document produced by PT3, with modifications proposed by the SC8 Chairman and by the Technical Reviewer, for discussion during the 35th SC8 meeting



CEN/TC 250/SC 8 N 771

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

Email of secretary: sc8@lnec.pt
Secretariat: IPQ (Portugal)

EN1998-1-2 SC8 31-12-2018

Document type: Working draft

Date of document: 2019-01-10

Expected action: INFO

No. of pages: 70

Background: Part 1-2 of EN1998 for new buildings as resulting from splitting the previous Part 1 dated of 18/12/2018 (Doc. N769). It contains the previous chapters 7, 8, 9 and the relevant annexes



CEN/TC 250/SC 8 N 770

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

Email of secretary: sc8@lnec.pt
Secretariat: IPQ (Portugal)

EN1998-1-1 SC8 31-12-2018

Document type: Working draft

Date of document: 2019-01-10

Expected action: INFO

No. of pages: 67

Background: Part 1-1 of EN1998 with general rules as resulting from splitting the previous Part 1 dated of 18/12/2018 (Doc. N769). It contains the previous chapters 4, 5, 6 and the relevant annexes



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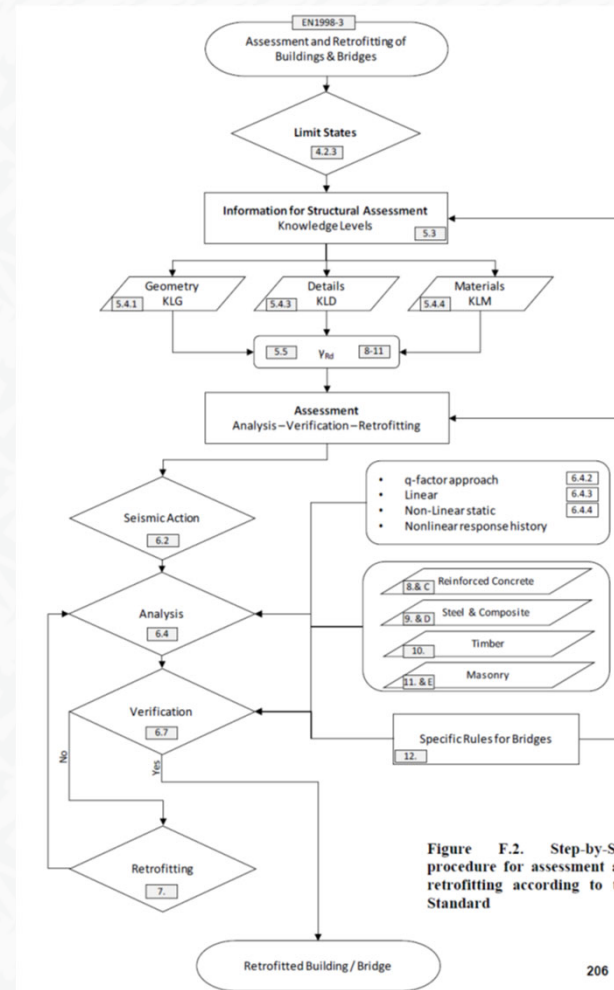
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Αναθεώρηση EN1998 – Phase 2

- SC8.T2: Material independent sections of EN 1998-1
 - Revision and update of the Material Dependent Sections of EN1998-1 (Sections 5 to 9). In drafting the new work, 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 reasonably practical..
- SC8.T4: Evolution of EN 1998-5
 - Revision and update of EN1998-5. In drafting the new work, 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 reasonably practical.

Deadline for Tender: February 6th, 2017

Αναθεώρηση EN1998 – Phase 2

Task Ref:	SC8.T2	Task Name:	Material dependent sections of EN 1998-1
Outline Task Scope:	Revision and update of the Material Dependent Sections of EN1998-1 (Sections 5 to 9). In drafting the new work, 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 reasonably practical.		
Starting documents:	EN 1998-1 and National Annexes. Information from the JRC database on the Nationally Determined Parameters. ECCS report "Assessment of EC8 Provisions for Seismic Design of Steel Structures"		

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 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	Concrete buildings: Ductility Classes and flat slab systems	At present, Section 5 of EN 1998-1 states that the use of "ductility class L (low), is recommended only in low seismicity cases". The "strength" of this recommendation is a bit ambiguous and it has been interpreted in some countries as a prohibition. This entails economic consequences and it is felt that, with some simple additional design rules to enhance the ductility of DCL structures it would be possible to extend its field of applicability to moderate seismicity situations, simplifying the design but still ensuring appropriate seismic reliability. Buildings with flat slabs are currently used in many European countries but EN 1998-1 in its Section 5 states that "Concrete buildings with flat slab frames used as primary seismic elements in accordance with 4.2.2 are not fully covered by this section". At present, in accordance with EN 1998-1, these buildings may only be designed for DCL (Ductility Class Low) or the slabs and the supporting columns may be considered as "secondary" seismic elements. Hence this action aims at the development of design rules for this type of structural systems, namely developing dimensioning and detailing rules for cyclic bending and punching.	The main benefit is to improve the rules for the design of structures of different Ductility Classes enabling the extension of applicability of simpler DCL design rules to moderate seismicity cases but still ensuring appropriate seismic reliability. An additional benefit shall be the elimination of the present situation regarding flat slab systems that is detrimental for the practical use of EN1998-1. The present situation corresponds to a void in the scope of Section 5 that creates ambiguity in its application to a widely used typology of reinforced concrete buildings.	Updating of Section 5 (Specific Rules for Concrete Buildings) revising the design rules for the three current Ductility Classes, in view of simplifying the design process throughout a wide seismicity range. Updating of this Section shall also incorporate new rules for buildings with flat slab systems, removing the present limitation in its scope. Inclusion of analysis, dimensioning and detailing rules for the design of column-slab connections.		PT1 output	SC8/WG5 "Concrete"
4	Steel buildings and composite steel-concrete buildings	The European Convention for Constructional Steel Works (ECCS) has prepared a document entitled "Assessment of EC8 Provisions for Seismic Design of Steel Structures" in which it lists a number of issues regarding Section 6 of EN 1998-1 that, in their view, require clarification or further development. ECCS has also expressed its availability to cooperate with CEN/TC250/SC8 in the activity leading to the revision of Section 6 and also Section 7 of EN 1998-1. The intention of this activity is to evaluate the proposals made by ECCS for such revision and whenever agreed by SC8, to improve and update this Section of EN 1998-1.	The main benefit is to bring Sections 6 and 7 up to date with the more recent advances in seismic design of steel buildings, discussing and incorporating the proposals of the leading European Association in the field of steel structures. Improvement of the consistency between the Steel and Composite sections of EN 1998-1 and EN 1993-1-1 and EN 1994-1-1 shall also be achieved	Updating of Section 6 (Specific Rules for Steel Buildings) and Section 7 (Specific Rules for Composite Steel-Concrete Buildings) to incorporate the proposals from ECCS.		PT1 output	SC8/WG2 "Steel and composite structures"

Αναθεώρηση EN1998 – Phase 2

5	Timber buildings	<p>Section 8 of EN1998-1 on timber buildings suffered very little change in the conversion process from the ENV stage. Hence, its contents are outdated and needs updating.Aspects to be added or updated are:a) General re-evaluation of the building typologies and the values of the behaviour factors;b) Provisions for Capacity Design, including overstrength factors of ductile connections;c) Definition of interstorey drift limits for performance-based design;d) Provisions for wood-based materials such as cross-laminated panels (xlam) and oriented strand boards (OSB), and some fasteners;e) Inclusion of rules for the design of buildings with composite lateral load resisting systems (for instance timber wall panels with concrete cores or steel bracings);f) More detailed rules for the design of shear walls and horizontal diaphragms.</p>	<p>The main benefit is to bring Section 8 up to date with the state of the art for the seismic design of timber buildings, incorporating the results of recent research programs.This shall improve the conditions for the use and exploration of the intrinsic favourable characteristics of timber with regard to seismic actions. Improvement of the consistency between the Timber section of EN 1998-1 and EN 1995-1-1 shall also be achieved.</p>	<p>Thorough updating of Section 8 (Specific Rules for Timber Buildings) of EN 1998-1 to incorporate the more recent advances in seismic design of timber buildings.Extension of the building typologies and the wood-based materials covered by this Section. Revision of the values of the behavior factors.</p>		PT1 output	SC8/WG3 "Timber"
6	Masonry buildings	<p>Masonry buildings represent a very large proportion of low rise construction in Europe but the provisions of EN 1998-1 did not achieve an in depth harmonization of design provisions as achieved for other materials.</p> <p>This is evident from the very large number of Nationally Determined Parameters (NDPs) provided for masonry buildings, including the values of the Behaviour Factor (to the contrary of the provisions to other materials).</p> <p>Furthermore there have been some claims that the present rules for "simple buildings" (mostly presented as NDPs) are disputable and inconsistent with post earthquake field surveys and consequently should be revised.</p> <p>Specifically, the project aims at the extension of the overstrength ratio concept to masonry (as foreseen for other materials, depending on the system redundancy), the improvement of the provisions for the prevention of out of plane collapse of masonry walls and the in depth revision of the rules for "simple buildings".</p>	<p>The main benefit of this action is to update and improve the rules for the design of masonry buildings and to reduce the number of Nationally Determined Parameters of Section 9. Furthermore the provisions for "simple buildings" shall be improved.</p>	<p>Improvement of Section 9 (Specific Rules for Masonry buildings) of EN 1998-1 for better consistency with the Sections on other materials and reduction of NDPs (as much as possible accounting for the large variability of masonry units and construction practices prevailing across Europe).</p>		PT1 output	SC8/WG1 "Masonry"
7	Infilled frames and claddings	<p>Framed buildings with masonry infills are very common in southern Europe countries. Section 5 of EN 1998-1 already includes design provisions to account for the presence of infills but they are mainly devoted to avoid possible detrimental effects that the infills may cause to the main structure.</p> <p>To the contrary, the beneficial effects (namely being the source of overstrength and energy dissipation) are not yet accounted for.</p> <p>Improvement of the provisions of EN 1998-1 regarding infills could be sought but the implications of fully exploiting masonry infills in the design of new buildings should be carefully evaluated since it entails higher complexity of design and stricter quality assurance requirements for the construction of the infills.</p> <p>Additionally the recent earthquakes, namely in l'Aquila (Italy), have shown that in many recent buildings where the structure behaved properly, heavy damage in claddings and cladding panels occurred.</p> <p>This recommends that the design provisions of EN 1998-1 for infilled frames should be extended to cover cladding elements and panels, together with other types of enclosures.</p>	<p>The main benefit of this action is to improve the rules already presented in EN 1998-1 for infilled frames and also to extend them to claddings and cladding panels. This shall reduce the risk of out of plane collapse of these types of elements.</p> <p>Such collapse may be detrimental to the main structure since it introduces irregularities in its seismic response.</p> <p>Also, such collapses are life-threatening and may cause heavy economical losses.</p>	<p>The aim of the project is to re-visit this issue in EN 1998-1 and to re-evaluate fully the implications of the presence of infills for the seismic design of buildings. This should be done in conjunction with the revision of Section 9 for Masonry buildings, in view of some common aspects that exist between the two situations.</p> <p>Topics for possible inclusion in the project are the improvement of the modeling and seismic design verifications for infill panels and cladding panels with and without openings (including the evaluation of strength, stiffness and deformation capacity) and the requirements for the connections to the main structure.</p>		This sub task has to be closely coordinated with sub tasks 3 and 6 (updating of Sections on concrete and masonry buildings).	
8	Aluminium structures	<p>To the contrary of all other structural materials covered by the Eurocodes, EN 1998-1 does not include information regarding Aluminium structures.This creates a "void" that some countries have "solved" in their National Annexes but it should be addressed and eliminated altogether in EN 1998-1.</p>	<p>The benefit of this action is to eliminate the current absence of seismic design rules for Aluminium structures. The action shall be developed in liaison with CEN/TC250/SC9 to ensure consistency with the provisions of EN 1999.</p>	<p>Inclusion of a new Section in EN 1998-1 for Aluminium buildings or extension of the provisions of Section 6 (Specific rules for Steel buildings) to encompass also Aluminium buildings.</p>		-	

Αναθεώρηση EN1998 – Phase 2

Task Ref:	SC8.T4	Task Name:	Evolution of EN 1998-5
Outline Task Scope:	Revision and update of EN1998-5. In drafting the new work, 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 reasonably practical.		
Starting documents:	EN 1998-5 and National Annexes. Information from the JRC database on the Nationally Determined Parameters.		

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 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	Soil structure interaction	Dynamic soil-structure interaction may influence substantially the seismic response of structures and, accordingly, the consideration of such effects is already required in EN 1998-5 (Foundations, retaining structures and geotechnical aspects) for some specific cases and in all cases in case of pile foundations. However, the provisions therein included are quite generic and there is room to extend and improve them with more practical information to the designer for shallow and deep foundations and for the verification of dynamic base failure. On the other hand there could be cases of pile foundations where soil structure interaction may be disregarded. These cases should be identified for the sake of the ease of use of EN 1998-5. The new provisions should take account of the implication of the development of the pushover analysis.	Extension of the practical use of EN 1998-5 to very common cases in foundations of buildings and bridges. Simplification of the design process in cases where soil structure interaction may be disregarded. Improvement of the consistency between EN 1998-5 and Eurocode 7, through proper liaison with CEN/TC250/SC7.	Updating of EN 1998-5 for the inclusion of soil structure interaction in the case of shallow and deep foundations, namely the effect of lateral restraint of piles provided by successive soil layers. Inclusion of specific seismic design provisions for modelling, analysis, dimensioning and detailing of piles. General revision of EN 1998-5 with regard to other geotechnical aspects.		PT1 output	SC8/WG4 "Seismic action and site classifications" SC7

Working Drafts of Phase 2



CEN/TC 250/SC 8 **N 800**

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

Email of secretary: sc8@lnec.pt
Secretariat: IPQ (Portugal)

Draft2 EN1998-1-2 NEN SC8 PT2

Document type: Working draft

Date of document: 2019-05-10

Expected action: COMM

Action due date: 2019-07-10

No. of pages: 247

Background: Official 2nd draft of EN 1998-1-2 revision by Project Team 2, on material-dependent clauses for new buildings, as delivered to NEN



CEN/TC 250/SC 8 **N 801**

CEN/TC 250/SC 8
Eurocode 8: Earthquake resistance design of structures

Email of secretary: sc8@lnec.pt
Secretariat: IPQ (Portugal)

Draft2 EN1998-5 NEN SC8 PT4

Document type: Working draft

Date of document: 2019-05-10

Expected action: COMM

Action due date: 2019-07-10

No. of pages: 101

Background: Official 2nd draft of EN 1998-5 revision by Project Team 4, as delivered to NEN



Αναθεώρηση EN1998 – Phases 3/4

- SC8.T5: Evolution of EN 1998-4 and EN 1998-6
 - Revision and update of EN1998-4 and EN 1998-6. In drafting the new work, 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 reasonably practical. Merging both parts should also be considered.
- SC8.T6: Evolution of existing parts of EN 1998 not included in the other tasks
 - Reduction of NDPs and enhancement of ‘ease of use’ in line with requirements of Mandate M/515. Removal of redundancies and inconsistencies with EN 1998-1.

Deadline for Tender: February 5th, 2018

Αναθεώρηση EN1998 – Phases 3/4

Task Ref:	SC8.T5	Task Name:	Evolution of EN 1998-4 and EN 1998-6	Proposed Task Phase:	P3
Outline Task Scope:	Revision and update of EN1998-4 and EN 1998-6. In drafting the new work, 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 reasonably practical. Merging both parts should also be considered.				
Starting documents:	EN 1998-4, EN 1998-6 and National Annexes. Information from the JRC database on the Nationally Determined Parameters. New version of EN1998-1.				

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
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 reducing the number of Nationally Determined Parameters (NDPs) in the Structural Eurocodes"	
2	Enhanced ease of use	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. Remove redundancies and inconsistencies with EN1998-1 and transfer to EN1998-1 sections 1 to 4 what can be considered as general. Merging both parts should also be considered.			CEN/TC 250 N1239 "Position paper on enhancing ease of use of the Structural Eurocodes" (N1239).	
3	EN 1998-4	EN 1998-4 covers seismic design of Silos, Tanks and Pipelines. Although less common than Buildings and Bridges, Silos and Tanks may be of significant cost and, in some cases, may pose large risk to the population and/or to the environment in case of failure during a seismic event. The stability of silos and tanks subjected to strong seismic actions may involve rather complex interaction phenomena between soil-structure and stored material (either fluid or granular). Also challenging may be the design of a pipeline system through areas with poor and possibly unstable soils. Base isolation and energy dissipation systems should also be considered in coordination with EN1998-1. The contents of EN 1998-4 refers to EN 1998-1 (Seismic action) and to EN 1998-5 (Soil structure interaction) and since these matters are up for revision in those Parts, the corresponding revision of EN 1998-4 is necessary. Furthermore, such revision is also justified by the fact that it is foreseen that other Eurocodes relevant for the design of silos and tanks shall be updated (EN 1991-4, EN 1992-3, EN 1993-4-1 and EN 1993-4-2).	Revision of the contents of EN 1998-4 to incorporate the more recent developments in the seismic design of silos and tanks. Explicit consideration of performance levels and the corresponding return periods to be used. Improvement of the consistency between EN 1998-4 and Parts 1 and 5 of EN 1998 and with the parts of Eurocodes 1, 2 and 3 dealing with Silos and Tanks. Simplification by removing redundancies and inconsistencies.	Thorough updating of EN 1998-4 (including its Annexes) for consistency with the revised versions of EN 1998-1 and EN 1998-5. Possible transfer of part the Informative Annexes contents into Normative text. Transfer of general clauses to EN1998-1.		This sub task shall require interaction with the tasks and subtasks related to the revision of EN 1991-4, EN 1992-3, EN 1993-4-1 and EN 1993-4-2
4	EN 1998-6	EN 1998-6 covers seismic design of Towers, Masts and Chimneys. The stability of these slender structures very much depends on the long period content of the seismic action (also on its rotational components) and on the foundation compliance. Accordingly the contents of EN 1998-6 refers to EN 1998-1 (Seismic action) and to EN 1998-5 (Soil structure interaction) and since these matters are up for revision in those Parts, the corresponding revision of EN 1998-6 is necessary. Furthermore, such revision is also justified by the fact that it is foreseen that other Eurocodes relevant for the design of Towers, Masts and Chimneys shall be updated (EN 1990-A3, EN 1993-3-1 and EN 1993-3-2). As it is intended to transfer all general information to EN1998-1, it should be considered moving the remaining sections as specific sections in EN1998-4.	Revision of the contents of EN 1998-6 to incorporate the more recent developments in the seismic design of Towers, Masts and Chimneys. Improvement of the consistency between EN 1998-6 and Parts 1 and 5 of EN 1998 and with the parts of Eurocodes 0 and 3 dealing with Towers, Masts and Chimneys. Simplification by removing redundancies and inconsistencies. Merging of parts 4 and 6.	Thorough updating of EN 1998-6 (including its Annexes) for consistency with the revised versions of EN 1998-1 and EN 1998-5. Possible transfer of part of the Informative Annexes contents into Normative text and possible transfer to EN1998-1 and EN1998-4.		This sub task shall require interaction with the tasks and subtasks related to the revision of EN 1990-A3, EN 1993-3-1 and EN 1993-3-2

Αναθεώρηση EN1998 – Phases 3/4

Task Ref:	SC8.T6	Task Name:	Evolution of existing parts of EN 1998 not included in the other tasks	Proposed Task Phase:	P3
Outline Task Scope:	Reduction of NDPs and enhancement of 'ease of use' in line with requirements of Mandate M/515. Removal of redundancies and inconsistencies with EN 1998-1.				
Starting documents:	EN 1998-2 New version of EN 1998-1				

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
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.	Reduced national variation and improved ease of use of the Eurocodes.	Modified clauses	CEN/TC 250 "Position paper on reducing the number of Nationally Determined Parameters (NDPs) in the Structural Eurocodes"	
2	Enhanced ease of use	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. Remove redundancies and inconsistencies with EN1998-1 and transfer to EN1998-1 sections 1 to 4 what can be considered as general, e. g. analysis methods, to reduce the volume of the standard.	Improved ease of use of the Eurocodes for practical users.	Modified clauses	CEN/TC 250 N1239 "Position paper on enhancing ease of use of the Structural Eurocodes" (N1239).	
3	Seismic isolation, additional damping and new technologies	The design of Bridges with seismic isolation is covered by Section 7 of EN 1998-2. To the contrary of the corresponding section in EN 1998-1 (for buildings), this section covers already the use of dampers for passive energy dissipation but the new version of EN1998-1 will cover part of this topic. The present section should be updated to take into account EN1998-1 and in view of the more recent technologies in passive control. This shall also be an opportunity to improve the interface between the design standard (EN 1998) and the relevant product standard (EN 15129) since in the current versions of the two standards a consistent interface has not been fully achieved. Transfer to EN1998-1 sections 1 to 4 what can be considered as general, general clauses related to base isolation and energy dissipation systems. Remove what is related to isolators and aseismic devices (products under EN15129).	The main benefit shall be the improvement of the interface between the products standard and the structural design standard. At present, the technical specification of the antisismic devices by the structural designer is not straightforward. In addition, removal of redundancies will decrease the volume of this part.	Redrafting of Section 7 (Bridges with seismic isolation) of EN 1998-2 and the Annexes related to this subject (Annexes J, JJ and K).		This sub task shall require interaction with CEN/TC340 in charge of the development of product standards for antisismic devices.

Progress

CEN/TC 250 SC8 

PT2 Progress

PT2 Convenor André PLUMIER
Ljubljana – 14 – 15 March 2019

PT2 Progress Organisation of work

Development of Chapters per material	Work share
10 Reinforced concrete General + pushover Precast	<i>Humberto Varum André Plumier</i>
11 Steel	<i>Raffaele Landolfo</i>
12 Composite Pushover steel + composite	<i>Dimitrios Lignos Dimitrios Lignos</i>
13 Timber General + pushover	<i>Massimo Fragiacomo</i>
14 Masonry General + pushover	<i>Katrin Beyer</i>
15 Aluminium	<i>Raffaele Landolfo</i>
16 Infills – cladding - Partitions	<i>André Plumier + Humberto Varum +Katrin Beyer</i>
Internal review	<i>André Plumier Philippe Bisch Antonio Correia</i>

36th SC8 Meeting

LJUBLJANA March 14 & 15, 2019

Progress Report for PT4 : EN 1998-5
Alain Pecker

SC8.T4 : PROJECT TEAM COMPOSITION

- **PT leader :** Alain Pecker ENPC - France
- **PT members :**
 - Luigi Callisto La Sapienza – Italie
 - George Gazetas NTUA - Greece
 - Amir Kaynia NGI – Norway
 - Kyriasis Pitolakis AUTH – Greece
- **SC8**
 - Philippe Bisch SC8 Chairman
 - Antonio Correia SC8 Secretary

Task SC8.T5 (PT 5)

Evolution of EN 1998-4 and EN 1998-6

36th meeting of CEN/TC 250/SC 8 meeting in Ljubljana, Slovenia



Task SC8.T5: Evolution of EN 1998-4 and EN 1998-6

Project Team 6

Development of EN 1998-2 and evolution of EN 1998

Paolo Franchin

SC8 meeting – Ljubljana – March 14-15th 2019

Φόρμα σχολιασμού → ΕΛΟΤ (ΤΕ67) → CEN/TC250/SC

Template for comments and secretariat observations

Date: XXXX-XX-XX

Document: NXXX

Project:

MB/ NC ¹	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment ²	Comments	Proposed change	Observations of the secretariat

¹ **MB** = Member body / **NC** = National Committee (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by **)

² **Type of comment:** **ge** = general **te** = technical **ed** = editorial

Αναθεώρηση Ευρωκωδίκων

Δρ Τηλέμαχος Παναγιωτάκος
Μέλος CEN/TC250/HGB, SC8.T3, SC8.T6

Ευχαριστώ !

ΟΑΣΠ, 4 Ιουλίου 2019
Επιτροπή Αντισεισμικής Προστασίας Γεφυρών