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To the Members of CEN/TC 250 *Structural Eurocodes*

Secretariat of CEN/TC 250

Direct phone: +44 208 996 7421

E-mail: tracey.wilkins@bsi-global.com

Subject: CEN/TC 250 Position paper on reducing the number of NDPs

Dear Members

Please find attached the CEN/TC 250 Position paper on reducing the number of Nationally Determined Parameters (NDPs) in the Structural Eurocodes. The Chairman has prepared this paper in response to action 17 taken during the CEN/TC 250 meeting in Lisbon, 19-20 November 2015.

The intention is to discuss this paper at the CEN/TC 250 meeting in Stockholm on the 12-13 May 2016 and then issue for subsequent CIB following feedback received during the meeting.

Yours sincerely

Tracey Wilkins

Secretary to CEN/TC 250

**CEN/TC 250 Position paper on reducing the number of
Nationally Determined Parameters (NDPs) in the Structural
Eurocodes**

Draft for discussion and possible 'Committee Internal Ballot'

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Prepared by: Steve Denton with contributions from CEN/TC 250 members

1. Purpose of this document

This document presents the overall CEN/TC 250 approach and specific aspects of guidance for reducing the number of Nationally Determined Parameters (NDPs) in the Structural Eurocodes. Its purpose is to support decision making of CEN/TC 250 Sub-Committees (SCs), Working Groups (WGs), Horizontal Groups (HGs) and Project Teams (PTs) engaged in drafting the second generation of Structural Eurocodes.

Given the complexity and sensitivity of the objective, balanced and respectful judgements need to be made about the application of the guidelines. The obligation on SCs, WGs, HGs and PTs is that the guidelines should be understood and taken into consideration, informed judgements made, and that decisions taken can be justified.

2. Background

Achieving a reduction in the number of NDPs in the Eurocodes is an agreed objective of CEN/TC 250 and a specific requirement of the European Commission Mandate M/515 for the development of the second generation of EN-Eurocodes.

For this reason, in the scope of tasks for Project Teams in the Call for Experts for Phase 1 of the CEN/TC 250 work programme, the following was included concerning the reduction of NDPs:

“Nationally Determined Parameters (NDPs) allow Countries to decide on safety levels, and to give national geographic and climatic data, in National Annexes. The inclusion of NDPs in the published Eurocodes has been more extensive than was originally envisaged.

All tasks concerned with existing Eurocode parts include a requirement to work to reduce the number of NDPs and enable better consensus on values adopted by Countries. Guidance will be provided by CEN/TC 250 on the approach to be followed. However, it is expected that the work of Project Teams will be focussed only on a proportion of the existing NDPs, as identified and agreed with the relevant SC, WG or HG.”

Furthermore in the relevant task definitions, Sub-task no. 1 in all Tasks of Project Teams engaged in the evolution of first generation Eurocode Parts to second generation ones, states:

“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.”

This paper is intended to provide the guidance referenced in the Call for Experts.

The issue of NDPs has been the subject of discussions in CEN/TC 250 and its SCs, WGs and HGs for several years. In support of developing the guidelines contained in this position paper, at its meeting in Dublin in May 2015, CEN/TC 250 agreed to the establishment of an ad hoc group to provide guidance on the definition of legitimate NDPs.

CEN/TC 250 has considered the recommendations contained in the final report of this ad hoc group [2], as well as the associated discussions at the CEN/TC 250 meeting in Lisbon in November 2015, and the synthesis of these discussions presented by the CEN/TC 250 Chairman at that meeting [3], and has produced the guidelines presented in this paper.

Further background to the number of NDPs in the current generation of Eurocodes and their legal basis is included in Annex A.

3. Objectives and governing principles

CEN/TC 250 has three primary objectives associated with the treatment of NDPs during the development of the second generation of the Structural Eurocodes. These are:

1. To reduce the number of National Determined Parameters
2. To develop Standards that can be implemented by CEN members
3. To maintain consensus, evidenced through positive formal votes by CEN members

In support of these objectives, CEN/TC 250 has established the following principles to guide efforts to reduce the number of NDPs in the Eurocodes:

1. The development of the second generation of the Eurocodes is an 'evolution', thus the approach to reviewing NDPs should build from the basis for them set out in Guidance Paper L (see Annex A)
2. Some parameters must be NDPs, even if all countries agree on a specific value or choice
3. Some parameters are subject to variation for geographic or climatic reasons; these must be NDPs although the Eurocodes should be as clear as possible on how they are to be determined
4. Effort should be made to limit the number of other NDPs, but this must be done pragmatically and respectfully of national positions

4. Approach

The approach to reducing the number of NDPs comprises three steps. These are to be undertaken by SCs, WGs and HGs, in conjunction with their relevant PTs.

These three steps are directly applicable to the review of current NDPs during the revision of existing Eurocode parts.

The guidance underpinning each step is also applicable in the development of new Eurocode parts or where the introduction of a new NDP into an existing Eurocode part is being considered as a result of a change in scope or technical provisions.

4.1 Step 1: Identification of parameters that must be NDPs

In the first step, all parameters that must be NDPs are to be identified. Such 'essential NDPs' are:

- partial factors for materials and actions,
- the probability of the design seismic action being exceeded in a structure's design reference period,
- the time of fire exposure,
- design accidental actions,
- classification of structures in Consequences Classes corresponding to different Reliability Classes and levels, taking into account quality management requirements

All essential NDPs shall be retained in the Eurocodes, thereby allowing them to be specified in National Annexes. The only exception to this are cases when an NDP was included in the current Eurocodes with a recommended value of 1.0 and there is consensus that it can be removed. This might arise, for example, where all countries have adopted the recommended value of 1.0 and other related NDPs such as general partial factors for materials or actions provide an adequate basis to treat those matters within the competence of European member states.

4.2 Step 2: Review of other NDPs

All NDPs that are not classified as essential in Step 1 shall be reviewed in an effort to try to reduce their

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number. This review should be undertaken pragmatically, respecting the position of different CEN Members and seeking to understand why different opinions are held.

In undertaking this review, NDPs relating to the following are discouraged:

- technical issues, such as the choice of one mechanical model versus another, or one coefficient versus another in a resistance formulation,
- limits on geometric or similar parameters (e.g., size of cross section, upper or lower limits on reinforcement ratio or density) which have to do with limits of applicability of mechanical models,
- choice between advanced and simplified methods.

In addition, consideration should be given to eliminating NDPs that concern issues of performance that could be addressed at a project rather than national level. Consideration may also be given to using classes for some families of related NDPs. If such approaches are proposed, examples should be presented at the CEN/TC 250 Coordination Group to promote consistency.

4.3 Step 3: Reporting

Each SC, WG and HG shall report to CEN/TC 250 on the outcome of their efforts to reduce the number of NDPs. This shall be done by preparing a table listing the current NDPs and, as a minimum, identifying those deemed as essential, providing justification for the retention of other NDPs and confirming whether consensus has been reached on NDPs to be removed. This table shall also identify any new NDPs and why they are needed.

References

- [1] CEN/TC 250 Mandate M/515 EN “Mandate for amending existing Eurocodes and extending the scope of Structural Eurocodes”, December 2012. (CEN/TC 250 document reference N993)
- [2] CEN/TC 250 Ad Hoc Group on Reduction of NDPs. “Guidance for the definition of legitimate Nationally Determined Parameters (NDPs) in Structural Eurocodes”, October 2015. (CEN/TC 250 document reference N1362)
- [3] CEN/TC 250 Chairman’s notes on the reduction of NDPs. Presentation given at CEN/TC 250 meeting Lisbon as a synthesis of discussions, November 2015. (CEN/TC 250 document reference N1403)

Annex A Further background to National Determined Parameters

A.1 Number of NDPs in the current generation of Eurocodes

Table A.1 provides a summary of the number of NDPs in the current EN Eurocodes and their breakdown, relative to the number of Parts in each Eurocode and its total number of pages.

Eurocode	No of Parts	No of Pages	No of NDPs
EN 1990	1 + Annex A2	90 + 30	54
EN 1991	10	770	292
EN 1992	4	450	176
EN 1993	20	1250	236
EN 1994	3	330	42
EN 1995	3	225	21
EN 1996	4	300	31
EN 1997	2	340	42
EN 1998	6	600	103
EN 1999	5	500	58

Table A.1: Analysis of NDPs in current Eurocodes

A.2 Legal basis of NDPs

NDPs replaced the “boxed” values in the ENV-Eurocodes.

It is accepted by all those involved in the conversion of ENVs to the first generation of EN Eurocodes that the NDPs were invaluable in that phase as a means to overcome disagreement between CEN Member States on key issues and avoid impasse situations. In that sense, their use was beyond the original intention.

The original legal basis of the NDPs and their predecessors (the “boxed values” in the ENVs) is not wholly clear. However, their incorporation in the EN Eurocodes followed Guidance Paper L (GPL), which stated:

“2.1.1. The determination of the levels of safety of buildings and civil engineering works and parts thereof, including aspects of durability and economy, is, and remains, within the competence of the Member States.

2.1.2 Possible difference in geographical or climatic conditions (e.g. wind or snow), or in ways of life, as well as different levels of protection that may prevail at national, regional or local level ... will be taken into account ... by providing choices in the EN Eurocodes for identified values, classes, or alternative methods, to be determined at the national level (named Nationally Determined Parameters). Thus allowing the Member States to choose the level of safety, including aspects of durability and economy, applicable to works in their territory.

2.1.3 When Member States lay down their Nationally Determined Parameters, they should:

- choose from the classes included in the EN Eurocodes, or
- use the recommended value, or choose a value within the recommended range of values, for a symbol where the EN Eurocodes make a recommendation, or

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- when alternative methods are given, use the recommended method, where the EN Eurocodes make a recommendation,
- take into account the need for coherence of the Nationally Determined Parameters laid down for the different EN Eurocodes and the various Parts thereof.

Member States are encouraged to co-operate to minimize the number of cases where recommendations for a value or method are not adopted for their nationally determined parameters.

2.1.4 The Nationally Determined Parameters laid down in a Member State should be made clearly known to the users of the EN Eurocodes and other parties concerned, including manufacturers.

2.1.5 When EN Eurocodes are used for the design of construction works, or parts thereof, the Nationally Determined Parameters of the Member State on whose territory the works are located shall be applied.

Note: Any reference to a EN Eurocode design should include the information on which set of Nationally Determined Parameters was used, whether or not the Nationally Determined Parameters that were used correspond to the recommendations given in the EN Eurocodes.”

GPL was written in relation to the Construction Products Directive (CPD), to which it referred and was issued by the Commission. The CPD has been replaced by the Construction Product Regulation (CPR), and it is the Commission’s view that guidance papers are not relevant for a Regulation. However, the Guidance papers remain published documents from the Commission.

The documents applicable today are:

- The Construction Products Regulation (CPR) No. 305/2011
- The European Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products, Document No. C(2003)4639 (called hereafter Commission Recommendation)

The introduction to Annex I of the Construction Products Regulation (CPR) states that:

“Construction works as a whole and in their separate parts must be fit for their intended use, taking into account in particular the health and safety of persons involved throughout the life cycle of the works. Subject to normal maintenance, construction works must satisfy these basic requirements for construction works for an economically reasonable working life.”

The Commission Recommendation states:

“For each Nationally Determined Parameter, the Eurocodes give a recommended value. However, Member States may choose a different specific value as the Nationally Determined Parameter, if they consider it necessary in order to ensure that building and civil engineering works are designed and executed in a way that does not endanger the safety of persons, domestic animals or property.”

It states also

“Member States should use the recommended values provided by the Eurocodes when nationally determined parameters have been identified in the Eurocodes. They should diverge from those recommended values only where geographical, geological or climatic conditions or specific levels of protection make that necessary.”

The excerpts from the Commission Recommendation, based themselves on GPL, represent a clear Commission basis for the NDPs.