



Overview of the Evolution of EN 1996: Eurocode 6 - Design of masonry structures

17 November 2020

Structure of this slide deck



- Specific overview of the evolution of EN 1996 parts:
- *EN 1996-1-1: Eurocode 6 - Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures*
 - *EN 1996-3: Eurocode 6 - Design of masonry structures - Part 3: Simplified calculation methods for unreinforced masonry structures*

Overview of the Evolution of EN1996-1-1: *General rules for reinforced and unreinforced masonry structures*

17-11-2020



Agenda – Evolution of EN 1996-1-1 General rules

- Key changes to EN 1996-1-1
- New content included in the scope of EN 1996-1-1
- How ease of use has been enhanced

Key changes to EN 1996-1-1



- *Evolution, no revolution*

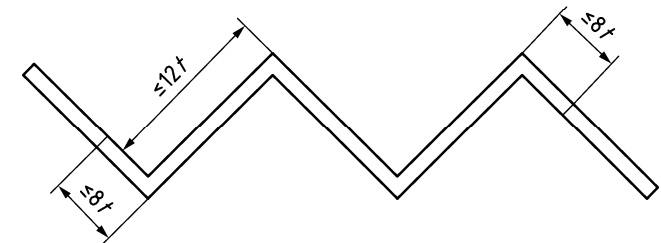
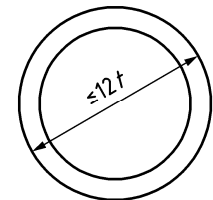
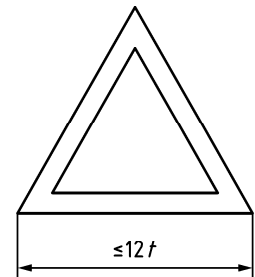
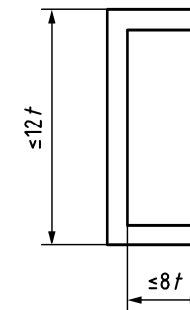
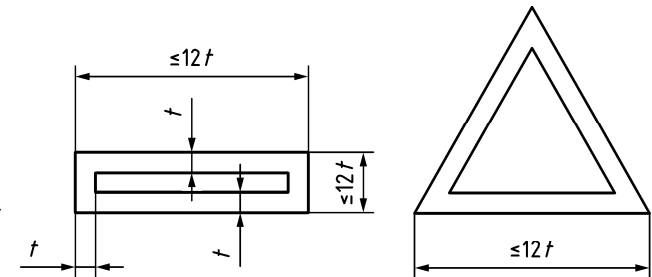
- *Improvement of the structure and consistency*
 - *Section Ultimate limit states*
 - *Consistency between ULS of unreinforced and reinforced masonry*

- *Technical*
 - *Improvement of verification of combined loading*
 - *Improvement of the capacity reduction factor for slenderness and eccentricity;*

New content included in scope of EN 1996-1-1



- *Masonry units with innovative geometrical properties*
- *Out-of-plane shear friction coefficient for laterally loaded masonry*
- *Definition of stress-strain relationships for different types of units*
- *Detailed rules for confined masonry instead of some principles*
- *Informative annex for the design of complex shapes*
- *Informative annex for mean material properties*





How ease of use has been enhanced

- *Review of NDP (only 21 in 2005 version)*
 - *2 NDP's removed*
 - *Most other NDP relate to material properties and local building methods that deviate considerably in the existing National Annexes*
- *Restructuring of clauses and increased consistency throughout the document*
- *Where possible made consistent with other Eurocode parts e.g with EN 1992-1-1 on global building imperfections*
- *Volume of text increased with 18% due to new content*

Overview of the Evolution of EN 1996-3: Simplified calculation methods for unreinforced masonry structures

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Agenda – Evolution of EN 1996-3: Simplified Calculation methods

- Key changes to EN 1996-3
- New content included in the scope of EN 1996-3
- How ease of use has been enhanced



Key changes to EN 1996-3

- *Made consistent with changed to EN 1996-1-1 especially related to rules for capacity reduction factor for slenderness and eccentricity;*
- *New capacity reduction factors for the design to cover wall-slab interaction*
- Simplified rules now lead to equal or more conservative design compared to EN 1996-1-1
- Shear design rules were deleted from the main text and replace by rules in Annex A, because they were nearly the same as those in EN 1996-1-1

New content included in scope of EN 1996-3



- *Adjusted conditions for application concerning the clear wall height*
- *Annex A contains simplified design rules for shear walls*
- *Adjusted capacity reduction factors taking into account partly supported slabs*
- *Adjusted design rules for basement walls concerning variable earth pressure coefficient*



How ease of use has been enhanced

- *The number of NDP's was reduced from from 7 to 5*
- *Enhances range of application conditions*
- *Simplified design rules for shear walls in annex A*
- *Simplified rules for the design of masonry walls under concentrated loads*
- *Design of walls subjected to bending and low vertical load is simplified*
- *Reduced content of annex D concerning material properties*