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

17 November 2020
Copyright © CEN, 2021. Reuse and reproduction of this document is authorised, provided the source is acknowledged as follows: “reprinted with authorisation of CEN, copyright @CEN, rue de la Science 23, 1040 Brussels, Belgium”.
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

17-11-2020
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 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*