# CYS National Annex to CYS EN 1994-1-1:2004

# Eurocode 4:

# Design of Composite steel and concrete structures

# Part 1-1: General rules and rules for Buildings

Prepared by
Eurocodes Committee, Scientific and Technical
Chamber of Cyprus under a Ministry of Interior's Programme

# NATIONAL ANNEX

# TO

# CYS EN 1994-1-1: 2004 Eurocode 4: Design of Composite steel and concrete structures

# Part 1-1: General rules and rules for Buildings

**This National Annex has been approved by the Board of Governors of the Cyprus Organisation for Standardisation on 11/06/2010.**

# INTRODUCTION

This National Annex has been prepared by the Eurocodes Committee of the Technical Chamber of Cyprus which was commissioned by the Ministry of Interior of the Republic of Cyprus.

# NA 1 SCOPE

This National Annex is to be used together with CYS EN 1994-1-1: 2004.

This National Annex gives:

(a) Nationally determined parameters for the following clauses of CYS EN 1994-1-1: 2004 where National choice is allowed (see Section NA 2):

- 2.4.1.1 (1)
- 2.4.1.2 (5)
- 2.4.1.2 (6)
- 2.4.1.2 (7)
- 2.4.2
- 3.1 (4)
- 3.5 (2)
- 6.4.3. (1)(h)
- 6.6.3.1 (1)
- 6.6.3.1 (3)
- 6.6.4.1 (3)
- 6.8.2 (1)
- 6.8.2 (2)
- 9.1.1 (2)
- 9.6 (2)
- 9.7.3 (4)
- 9.7.3 (8)
- 9.7.3 (9)
- B.2.5 (1)
- B.3.6 (5)

(b) Decisions of the use of the Informative Annex A, B and C (see section NA3).

(c) References to non-contradictory complementary information to assist the user to apply CYS EN 1994-1-1: 2004 (see Section NA 4).

# NA 2 NATIONALLY DETERMINED PARAMETERS

## NA 2.1 Clause 2.4.1.1 Design values of action:

The recommended value for $\gamma_p$ (partial safety factor for pre-stress by controlled imposed deformation) for both favourable and unfavourable effect, $\gamma_p$=1.0 shall be used.

## NA 2.2 Clause 2.4.1.2 (5): Design values of materials or product properties

The recommended value for $\gamma_v$ (partial factor for shear connection), $\gamma_v$ =1.25 shall be used.

## NA 2.3 Clause 2.4.1.2 (6): Design values of materials or product properties

The recommended value for $\gamma_{vs}$ (partial factor for longitudinal shear in composite slabs), $\gamma_{vs}$ =1.25 shall be used.

## NA 2.4 Clause 2.4.1.2 (7) : Design values of materials or product properties

The recommended value for γmf and γmf,s (partial factors for fatique verification of headed studs in buildings) $\gamma_{mf,s}$ =1.0 shall be used. For γmf the value is that given in EN 1992 and it's National Annex.

## NA 2.5 Clause 2.4.2 Combination of actions

The combination rules for buildings are given in EN 1990, Section 6 and in the National Annex to Annex A of EN 1990.

## NA 2.6 Clause 3.1(4) Concrete

The recommended values for shrinkage of concrete for composite structures for buildings are those given in Annex C.

- in dry environments (whether outside or within buildings but excluding concrete-filled members):

  $325 \times 10^{-6}$ for normal concrete

  $500 \times 10^{-6}$ for lightweight concrete;

- in other environments and in filled members:

  $200 \times 10^{-6}$ for normal concrete

  $300 \times 10^{-6}$ for lightweight concrete.

## NA 2.7 Clause 3.5(2) Profiled steel sheeting for composite slabs in buildings

The recommended minimum value for the nominal thickness of steel sheets to be used is 0.70 mm.

## NA 2.8 Clause 6 .4.3.1 ( h) Simplified v erification for bui ldings without di rect calculations

No further information for other types of steel sections are provided in this National Annex.

## NA 2.9 Clause 6.6.3.1 (1) Headed stud connectors in solid slab and concrete encasement – Design Resistance

The recommended value γv (partial factor), $\gamma_v$=1.25, shall be used.

## NA 2.10 Clause 6.6.3.1 (3) Headed stud connectors in solid slab and concrete encasement – Design Resistance

No further information for buildings is provided in this National Annex.

## NA 2.11 Clause 6.6.4.1 (3) Sheeting with ribs parallel to the supporting beams

No further information for means to achieve appropriate anchorage is provided in this National Annex.

## NA 2.12 Clause 6.8.2 (1) Partial factor for fatique assessment for buildings

The recommended value for $\gamma_{mf}$ (partial factor for fatique strength), $\gamma_{mf}$= 1.0, shall be used.

## NA 2.13 Clause 6.8.2 (2) Partial factor for fatique assessment for buildings

No further information for partial factor γf for different kinds of fatique loading is provided in this National Annex.

## NA 2.14 Clause 9.1.1 ( 2) C omposite s labs with pr ofiled s teel s heeting f or buildings – General

The recommended value for the upper limit on the ratio $b_r$ / $b_s$ (sheets with narrowly spaced webs, see figure 9.2), $b_r$ / $b_s$=0.6, shall be used.

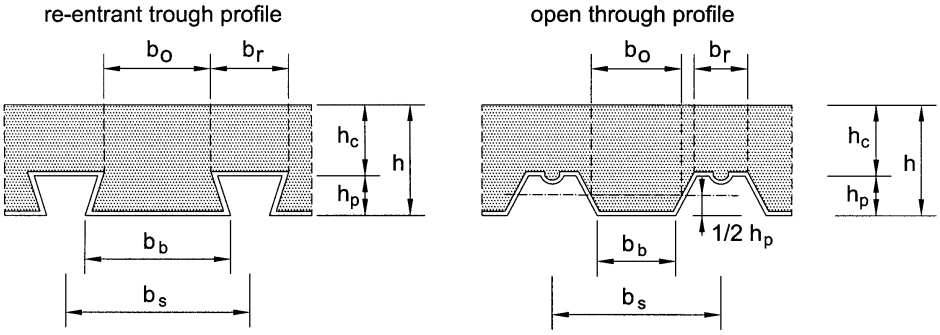


**Figure 9.2 (CYS): Sheet and slab dimensions**

## NA 2.15 Clause 9.6 (2) Verification of profiled steel sheeting as shuttering for serviceability limit

The recommended value for $\delta_s$,max (the deflection $\delta_s$, of the sheeting under its own weight plus the weight of wet concrete) should not exceed L/180.Where L is the effective span between supports. $\delta_{s,max}$<= L/180, shall be used.

## NA 2.16 Clause 9.7.3 (4) longitudinal shear for slabs without anchorage

The recommended value for $\gamma_{vs}$ (partial safety factor for the ultimate limit state), for the m-k method $\gamma_{vs}$=1.25, shall be used.

## NA 2.17 Clause 9.7.3 (8) Longitudinal shear for slabs without anchorage

The recommended value for γvs for the partial connection method, (partial safety factor for the ultimate limit state), $\gamma_{vs}$ =1.25, shall be used.

## NA 2.20 Clause 9.7.3 (9) Longitudinal shear for slabs without anchorage

The recommended value for μ (nominal factor), μ=0.5, shall be used.

## NA 2.18 Clause B.2.5 (1) Test evaluation

The recommended value for $\gamma_v$ (partial safety factor for shear connection), $\gamma_v$=1.25, shall be used.

## NA 2.19 Clause B 3.6 (5) Determination of the design values for $T_{u,Rd}$

The recommended value for $\gamma_{vs}$ (partial safety coefficient), $\gamma_{vs}$=1.25, shall be used.

# NA 3 Guidance on using Informative Annexes A, B and C

## NA 3.1 Annex A

Annex A may be used for stiffness of joint components in buildings.

## NA 3.2 Annex B

Annex B may be used for standard test (test on shear connectors and testing of composite floor slabs).

Note: These standard testing procedures are included in the absence of Guidelines for ETA. When such Guidelines have been developed this Annex can be withdrawn.

## NA 3.3 Annex C

Annex C may be used for shrinkage of concrete for composite structures for buildings.

## NA 4 References to Non-Contradictory Complementary Information

None.

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**CYPRUS ORGANISATION FOR STANDARDISATION**
Limassol Avenue and Kosta Anaxagora 30,
2nd & 3rd Floor, 2014 Nicosia, Cyprus
P.O.BOX.16197, 2086 Nicosia, Cyprus
Tel: +357 22 411411 Fax: +357 22 411511
E-Mail: cystandards@cys.org.cy
Website: www.cys.org.cy