# *NATIONAL ANNEX TO CYS EN 1994-1-1: 2004 (Including Corrigendum AC:2009)*

# *Eurocode 4: Design of Composite steel and concrete structures*

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

CYPRUS ORGANISATION FOR STANDARDISATION

# NATIONAL ANNEX

# TO

# CYS EN 1994-1-1: 2004 (Including Corrigendum AC:2009) 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 Directors of the Cyprus Organisation for Standardisation (CYS) on 14.06.2019.**

*Note: Correction on 15.11.2019 - NA 1 SCOPE*

# INTRODUCTION

This National Annex has been prepared by the CYS TC 18 National Standardisation Technical Committee of Cyprus Organisation for Standardisation. (CYS)

# NA 1 SCOPE

This National Annex is to be used together with CYS EN 1994-1-1:2004 (including Corrigendum AC:2009). Any reference in the rest of text to CYS EN 1994-1-1:2004 means the above document.

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) P
- 2.4.1.2 (6) P
- 2.4.1.2 (7) P
- 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) P
- 9.6 (2)
- 9.7.3 (4) P
- 9.7.3 (8) P
- 9.7.3 (9)
- B.2.5 (1)
- B.3.6 (5)

(b) Decisions on 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 value defined for symbol $\gamma_p$ (partial safety factor for pre-stress by controlled imposed deformation) for both favourable and unfavourable effect, $\gamma_p$ is set to 1.0.

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

The value defined for symbol $\gamma_v$ (partial factor for shear connection), $\gamma_v$ is set to 1.25.

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

The value defined for symbol $\gamma_{vs}$ (partial factor for longitudinal shear in composite slabs), $\gamma_{vs}$ is set to 1.25.

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

The value defined for symbol γmf,s (partial factors for fatique verification of headed studs in buildings) $\gamma_{mf,s}$ is set to 1.0. For γmf the value set is that given in EN 1993 and it's National Annex.

## NA 2.5 Clause 3.1(4) Concrete

The values defined 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 x $10^{-6}$ for normal concrete

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

- in other environments and in filled members:

  200 x $10^{-6}$ for normal concrete

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

## NA 2.6 Clause 3.5(2) Profiled steel sheeting for composite slabs in buildings

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

## NA 2.7 Clause 6.4.3.1 (h) Simplified verification for buildings without direct calculations

| Table 6.1. (CYS) defines the maximum depth of uncased steel members.Steel Member | Nominal Steel Grade | | | |
|---|---|---|---|---|
| | S 235 | S 275 | S 355 | S 420 and S 460 |
| IPE | 600 | 550 | 400 | 270 |
| HE | 800 | 700 | 650 | 500 |

## NA 2.8 Clause 6.6.3.1 (1) Headed stud connectors in solid slab and concrete encasement – Design Resistance

The value defined for symbol γv (partial factor), $\gamma_v$ is set to 1.25.

## NA 2.9 Clause 6.6.3.1 (3) Headed stud connectors in solid slab and concrete encasement – Design Resistance

No further information for buildings is provided.

## NA 2.10 Clause 6.6.4.1 (3) Sheeting with ribs parallel to the supporting beams

The means to achieve appropriate anchorage is defined in 6.6.5.4. EN1994.

## NA 2.11 Clause 6.8.2 (1) Partial factor for fatique assessment for buildings

The value defined for symbol $\gamma_{mf}$ (partial factor for fatique strength), $\gamma_{mf}$ is set to 1.0, shall be used.

## NA 2.12 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.

## NA 2.13 Clause 9.1.1 (2) Composite slabs with profiled steel sheeting for buildings – General

The value defined for the upper limit on the ratio $b_r$ / $b_s$ (sheets with narrowly spaced webs, see figure 9.2), is set to 0.6.

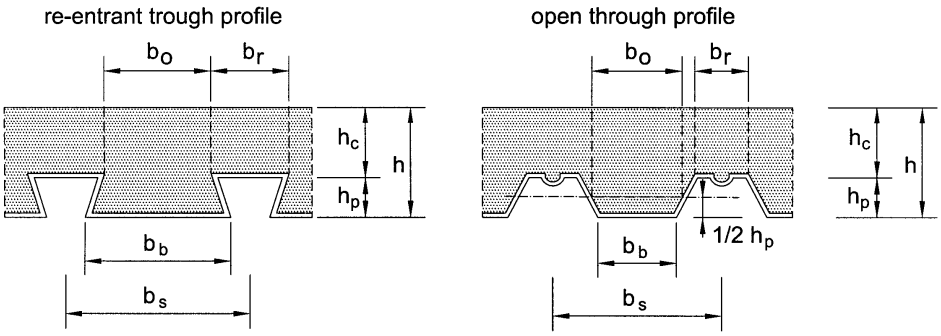


**Figure 9.2 (CYS): Sheet and slab dimensions**

## NA 2.14 Clause 9.6 (2) Verification of profiled steel sheeting as shuttering for serviceability limit

The defined value for symbol $\delta_s$,max (the deflection $\delta_s$, of the sheeting under its own weight plus the weight of wet concrete)is set not to exceed L/180.

## NA 2.15 Clause 9.7.3 (4) longitudinal shear for slabs without anchorage

The value defined for symbol $\gamma_{vs}$ (partial safety factor for the ultimate limit state), for the m-k method $\gamma_{vs}$ is set to 1.25.

## NA 2.16 Clause 9.7.3 (8) Longitudinal shear for slabs without anchorage

The defined value for symbol γvs for the partial connection method, (partial safety factor for the ultimate limit state), $\gamma_{vs}$ is set to 1.25.

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

The defined value for symbol μ (nominal factor), is set to 0.5..

## NA 2.17 Clause B.2.5 (1) Test evaluation

The defined value for symbol $\gamma_v$ (partial safety factor for shear connection), $\gamma_v$ is set to1.25.

### NA 2.18 Clause B 3.6 (5) Determination of the design values for $T_{u,Rd}$

The defined value for symbol $\gamma_{vs}$ (partial safety coefficient), $\gamma_{vs}$ is set to1.25.

## 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 may 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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**NA to CYS EN 1994-1-1:2004 (Including AC:2009)**


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