

***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***



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**Eurocode 4: Design of Composite steel and concrete**  
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## 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 1994-1:2004 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  $\gamma_{mf,s}$  (partial factors for fatigue verification of headed studs in buildings)  $\gamma_{mf,s}$  is set to 1.0. For  $\gamma_{mf}$  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<sup>-6</sup> for normal concrete
  - 500 x 10<sup>-6</sup> for lightweight concrete;
- in other environments and in filled members:
  - 200 x 10<sup>-6</sup> for normal concrete
  - 300 x 10<sup>-6</sup> 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  $\gamma_v$  (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 fatigue assessment for buildings**

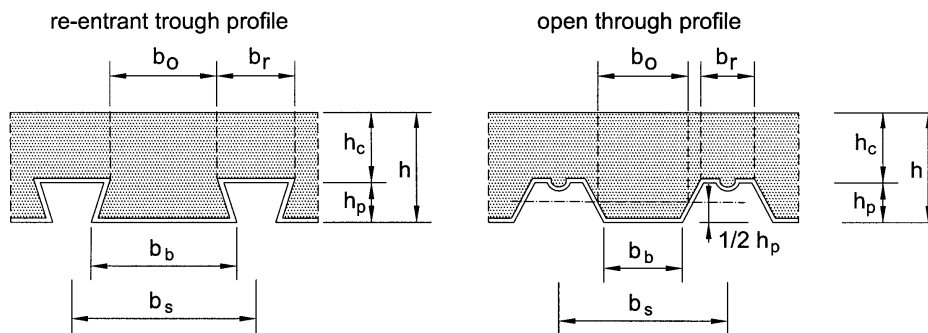
The value defined for symbol  $\gamma_{mf}$  (partial factor for fatigue strength),  $\gamma_{mf}$  is set to 1.0, shall be used.

**NA 2.12 Clause 6.8.2 (2) Partial factor for fatigue assessment for buildings**

No further information for partial factor  $\gamma_f$  for different kinds of fatigue 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  $\gamma_{vs}$  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  $\mu$  (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 to 1.25.

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

The defined value for symbol  $\gamma_{vs}$  (partial safety coefficient),  $\gamma_{vs}$  is set to 1.25.

## **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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