

UK National Annex for Eurocode — Basis of structural design

ICS 91.010.30; 91.080.01

Committees responsible for this National Annex

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- Association of Consulting Engineers
- British Constructional Steelwork Association
- British Masonry Society
- Building Research Establishment
- Concrete Society
- Health and Safety Executive
- Highways Agency
- Institution of Civil Engineers
- Institution of Structural Engineers
- National House Building Council
- Office of the Deputy Prime Minister
- Steel Construction Institute

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A1	30 June 2009	See Introduction.

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National Annex (informative) to BS EN 1990:2002: Eurocode basis of structural design

Introduction

This National Annex has been prepared by BSI Subcommittee B/525/1, *Actions (loadings) and basis of design*. In the UK, it is to be used in conjunction with BS EN 1990:2002+A1:2005.

This National Annex has been updated to reflect the 2005 amendment to the Eurocode. The start and finish of text introduced or altered by National Amendment No. 1 is indicated in the text by tags **A1** **A1**.

NA.1 Scope

A1 This National Annex gives nationally determined parameters for the following clauses of BS EN 1990:2002+A1:2005.

a) The nationally determined parameters for the clauses below apply to buildings and civil engineering works. (See **NA.2.1**.)

— **A1.1(1)**

b) The nationally determined parameters for the clauses below apply to buildings (See **NA.2.2**.)

— **A1.2.1 (1) NOTE 2**

— **A1.2.2 (Table A1.1) NOTE**

— **A1.3.1 (1) [Tables A1.2(A) to (C)] NOTE**

— **A1.3.1 (5) NOTE**

— **A1.3.2 (Table A1.3)**

— **A1.4.2 (2) NOTE**

c) Nationally determined parameters for the clauses below apply to bridges (see **NA.2.3**).

— **A2.1.1(1) NOTE 3**

— **A2.2.1 (2) NOTE 1**

— **A2.2.2 (1), (3), (4), (6)**

— **A2.2.3 (2), (3), (4)**

— **A2.2.4 (1), (4)**

— **A2.2.6 (1) NOTE 1, NOTE 2, NOTE 3**

— **A2.3.1 (1), (5), (7), (8)**

— **A2.3.2 (1), Table A2.5 NOTE**

— **A2.4.1 (1) NOTE 1, Table A2.6 NOTE 2, (2) NOTE**

— **A2.4.3.2 (1) NOTE**

— **A2.4.4.1 (1) NOTE 3**

— **A2.4.4.2.1 (4)P NOTE**

— **A2.4.4.2.2 Table A2.7 NOTE**

— **A2.4.4.2.2 (3)P NOTE**

— **A2.4.4.2.3 (1) NOTE**

— **A2.4.4.2.3 (2) NOTE, (3) NOTE**

— **A2.4.4.2.4 (2) NOTE, Table A2.8 NOTE 3**

— **A2.4.4.2.4 (3) NOTE**

— **A2.4.4.3.2 (6) NOTE**

NOTE Clauses applicable for cranes and machinery; silos and tanks, etc. will be added by amending the National Annex at appropriate future dates.

- d) Guidance on use of the Informative Annexes B, C and D for buildings and civil engineering works. (See NA.3.1.)
- e) Guidance on use of the Informative Annexes B, C and D for bridges. (See NA.3.2.)
- f) References to non-contradictory complementary information applicable to buildings and civil engineering works. (See NA.4.1.)
- g) References to non-contradictory complementary information applicable to bridges. (See NA.4.2.) 

NA.2 Nationally determined parameters

NA.2.1 Nationally determined parameters for buildings and civil engineering works

NA.2.1.1 EN 1990 Clause A.1.1 Field of application

Table NA.2.1 provides modified values for the design working life given in Table 2.1 of EN 1990.

 NOTE The values of design working life in Table NA.2.1 are indicative. Alternative values of design working life may be determined for the individual project. 

Table NA.2.1 — Indicative design working Life

Design working life category	Indicative design working life (years)	Examples
1	10	Temporary structures ^a
2	10 to 30	Replaceable structural parts, e.g. gantry girders, bearings
3	15 to 25	Agricultural and similar structures
4	50	Building structures and other common structures, not listed elsewhere in this table
5	120	Monumental building structures, highway and railway bridges, and other civil engineering structures

^a Structures or parts of structures that can be dismantled with a view of being re-used should not be considered as temporary.

NA.2.2 Nationally determined parameters for buildings**NA.2.2.1 Clause A.1.2.1 (1)**

a) All effects of actions that can exist simultaneously should be considered together in combination of actions.

b) With regard to Note 2 of Clause A.1.2.1 (1) of EN 1990 no modifications are allowed through the National Annex for A1.2.1 (2) and (3).

NA.2.2.2 Clause A.1.2.2

Table NA.A1.1 provides values for the symbols of Table A1.1 of EN 1990.

Table NA.A1.1 — Values of Ψ factors for buildings

Action	Ψ_0	Ψ_1	Ψ_2
Imposed loads in buildings, category (see EN 1991-1.1)			
Category A: domestic, residential areas	0,7	0,5	0,3
Category B: office areas	0,7	0,5	0,3
Category C: congregation areas	0,7	0,7	0,6
Category D: shopping areas	0,7	0,7	0,6
Category E: storage areas	1,0	0,9	0,8
Category F: traffic area, vehicle weight ≤ 30 kN	0,7	0,7	0,6
Category G: traffic area, $30 \text{ kN} < \text{vehicle weight} \leq 160 \text{ kN}$	0,7	0,5	0,3
Category H: roofs ^a	0,7	0	0
Snow loads on buildings (see EN 1991-3)			
— for sites located at altitude $H > 1\,000$ m a.s.l.	0,70	0,50	0,20
— for sites located at altitude $H \leq 1\,000$ m a.s.l.	0,50	0,20	0
Wind loads on buildings (see EN 1991-1-4)	0,5	0,2	0
Temperature (non-fire) in buildings (see EN 1991-1-5)	0,6	0,5	0

^a See also EN 1991-1-1: Clause 3.3.2 (1)

NA.2.2.3 Clause A.1.3**NA.2.2.3.1 Values for the symbols γ of Table A1.2 (A)**

Table NA.A1.2 (A) provides the values for the symbols γ of Table A1.2 (A). The values chosen are:

$$\gamma_{Gj,\text{sup}} = 1,10$$

$$\gamma_{Gj,\text{inf}} = 0,90$$

$$\gamma_{Q,1} = 1,50 \text{ where unfavourable (0 where favourable)}$$

$$\gamma_{Q,i} = 1,50 \text{ where unfavourable (0 where favourable)}$$

NOTE For Ψ values see Table A1.1 (BS).

Table NA.A1.2 (A) — Design values of actions (EQU) (Set A)

Persistent and transient design situations	Permanent actions		Leading variable action ^a	Accompanying variable actions	
	Unfavourable	Favourable		Main (if any)	Others
(Eq. 6.10)	1,10 $G_{kj,sup}$	0,90 $G_{kj,inf}$	1,5 $Q_{k,1}$ (0 when favourable)		1,5 $\Psi_{0,i} Q_{k,i}$ (0 when favourable)

^a Variable actions are those considered in Table NA.A1.1.

In cases where the verification of static equilibrium also involves the resistance of structural members, as an alternative to two separate verifications based on Tables NA.A1.2 (A) and A1.2 (B), a combined verification, based on Table NA.A1.2 (A), should be adopted, with the following set of values.

$$\gamma_{Gj,sup} = 1,35$$

$$\gamma_{Gj,inf} = 1,15$$

$$\gamma_{Q,1} = 1,50 \text{ where unfavourable (0 where favourable)}$$

$$\gamma_{Q,i} = 1,50 \text{ where unfavourable (0 where favourable)}$$

provided that applying $\gamma_{Gj,inf} = 1,00$ both to the favourable part and to the unfavourable part of permanent actions does not give a more unfavourable effect.

NA.2.2.3.2 Values for the symbols γ and ξ of Table A1.2 (B)

Table NA.A1.2 (B) provides the values for the symbols γ and ξ of Table A1.2 (B). The values chosen are:

$$\gamma_{Gj,sup} = 1,35$$

$$\gamma_{Gj,inf} = 1,00$$

$$\gamma_{Q,1} = 1,50 \text{ where unfavourable (0 where favourable)}$$

$$\gamma_{Q,i} = 1,50 \text{ where unfavourable (0 where favourable)}$$

$$\xi = 0,925$$

NOTE For Ψ values see Table NA.A1.1.