SLOVENSKI STANDARD
SIST EN 1992-1-1:2005/A1:2015

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Evrokod 2: Projektiranje betonskih konstrukcij - 1-1. del: Splošna pravila in pravila za stavbe

Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings

Eurocode 2: Bemessung und Konstruktion von Stahlbeton- und Spannbetontragwerken - Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den Hochbau

Eurocode 2: Calcul des structures en béton - Partie 1-1: Règles générales et règles pour les bâtiments

Ta slovenski standard je istoveten z: EN 1992-1-1:2004/A1:2014

ICS:

91.010.30	Tehnični vidiki	Technical aspects
91.080.40	Betonske konstrukcije	Concrete structures

SIST EN 1992-1-1:2005/A1:2015 en,fr,de

EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings

Eurocode 2: Calcul des structures en béton - Partie 1-1: Règles générales et règles pour les bâtiments

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This amendment A1 modifies the European Standard EN 1992-1-1:2004; it was approved by CEN on 8 November 2014.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 1992-1-1:2004/A1:2014) has been prepared by Technical Committee CEN/TC 250 “Structural Eurocodes”, the secretariat of which is held by BSI.

This Amendment to the European Standard EN 1992-1-1:2004 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2015, and conflicting national standards shall be withdrawn at the latest by December 2015.

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1 Modification to the Foreword

In the section "National annex for EN 1992-1-1", *between* "6.4.4 (1)" *and* "6.4.5 (3)", *add* "6.4.5 (1)".

2 Modification to 3.3.2, Properties

In Paragraph (2)P, replace "strength to proof strength (f_{pk} /$f_{p0,1k}$)" *with* "strength to proof strength ($(f_p / f_{p0,1})_k$".

3 Modification to 3.3.4, Ductility characteristics

In Paragraph (5), replace "f_{pk} /$f_{p0,1k} \geq k$" *with* "$(f_p / f_{p0,1})_k \geq k$".

4 Modification to 6.4.5, Punching shear resistance of slabs and column bases with shear reinforcement

In Paragraph (1), replace:

"(1) Where shear reinforcement is required it should be calculated in accordance with Expression (6.52):

$$v_{Rd,cs} = 0,75\, v_{Rd,c} + 1,5\, (d/s_r)\, A_{sw}\, f_{ywd,ef}\, (1/(u_1\, d))\, \sin\alpha \quad (6.52)$$

where

A_{sw} is the area of one perimeter of shear reinforcement around the column [mm^2]

s_r is the radial spacing of perimeters of shear reinforcement [mm]

$f_{ywd,ef}$ is the effective design strength of the punching shear reinforcement, according to $f_{ywd,ef} = 250 + 0,25\, d \leq f_{ywd}$ [MPa]

d is the mean of the effective depths in the orthogonal directions [mm]

α is the angle between the shear reinforcement and the plane of the slab

If a single line of bent-down bars is provided, then the ratio d / s_r in Expression (6.52) may be given the value 0,67."

with the following text:

"(1) Where shear reinforcement is required it should be calculated in accordance with Expression (6.52):

$$v_{Rd,cs} = 0,75\, v_{Rd,c} + 1,5\, (d / s_r)\, A_{sw}\, f_{ywd,ef}\, [1 / (u_1\, d)]\, \sin\alpha \leq k_{max} \cdot v_{Rd,c} \quad (6.52)$$

where

A_{sw} is the area of one perimeter of shear reinforcement around the column [mm^2];

s_r is the radial spacing of perimeters of shear reinforcement [mm];

$f_{ywd,ef}$ is the effective design strength of the punching shear reinforcement according to $f_{ywd,ef} = 250 + 0,25\, d \leq f_{ywd}$ [MPa];

d is the mean of the effective depths in the orthogonal directions [mm];

α is the angle between the shear reinforcement and the plane of the slab;

$v_{Rd,c}$ according to 6.4.4;

k_{max} is the factor, limiting the maximum capacity that can be achieved by application of shear reinforcement.

NOTE The value of k_{max} for use in a country may be found in its National Annex. The recommended value is 1,5.

If a single line of bent-down bars is provided, then the ratio d / s_r in Expression (6.52) may be given the value 0,67.".

5 Modification to 11.6.4.2, Punching shear resistance of slabs or column bases with shear reinforcement

In Paragraph (1), replace the whole Expression (11.6.52) with the following one:

"$v_{lRd,cs} = 0{,}75\, v_{lRd,c} + 1{,}5\, (d / s_r)\, A_{sw} f_{ywd,ef}\, [1 / (u_1 d)] \sin\alpha \leq k_{max} \cdot v_{lRd,c}$ (11.6.52)".

6 Modification to 12.6.5.2, Simplified design method for walls and columns

Replace the whole Paragraph (1):

"(1) In absence of a more rigorous approach, the design resistance in terms of axial force for a slender wall or column in plain concrete may be calculated as follows:

$$N_{Rd} = b \times h_w \times f_{cd,pl} \times \Phi \qquad (12.10)$$

where

N_{Rd} is the axial resistance

b is the overall width of the cross-section

h_w is the overall depth of the cross-section

Φ Factor taking into account eccentricity, including second order effects and normal effects of creep; see below

For braced members, the factor Φ may be taken as:

$$\Phi = 1{,}14 \times (1 - 2e_{tot}/h_w) - 0{,}02 \times l_0/h_w \leq (1 - 2 \times e_{tot}/h_w) \qquad (12.11)$$

where:

$$e_{tot} = e_o + e_i \qquad (12.12)$$

e_o is the first order eccentricity including, where relevant, the effects of floors (e.g. possible clamping moments transmitted to the wall from a slab) and horizontal actions;

e_i is the additional eccentricity covering the effects of geometrical imperfections, see 5.2"

with the following text:

"(1) In absence of a more rigorous approach, the design resistance in terms of axial force for a slender wall or column in plain concrete may be calculated as follows:

$$N_{Rd} = b \cdot h_w \cdot f_{cd,pl} \cdot \Phi \qquad (12.10)$$

where

N_{Rd} is the axial resistance;

b is the overall width of the cross-section;

h_w is the overall depth of the cross-section;

Φ is the factor taking into account eccentricity, including second order effects; see below.

For braced members, the factor Φ may be taken as:

$$\Phi = 1{,}14 \cdot (1 - 2 \cdot e_{tot} / h_w) - 0{,}02 \cdot l_0 / h_w \leq 1 - 2 \cdot e_{tot} / h_w \quad (12.11)$$

where:

$$e_{tot} = e_0 + e_i + e_\varphi \quad (12.12)$$

e_0 is the first order eccentricity including, where relevant, the effects of floors (e.g. possible clamping moments transmitted to the wall from a slab) and horizontal actions. In determination of e_0 an equivalent first order end moment M_{0e} can be used, see 5.8.8.2 (2);

e_i is the additional eccentricity covering the effects of geometrical imperfections, see 5.2;

e_φ is the eccentricity due to creep.

In some cases, depending on slenderness, the end moment(s) can be more critical for the structure than the equivalent first order end moment M_{0e}. In such cases Expression (12.2) should be used.".

7 Modification to H.1.2, Bracing system without significant shear deformations

In Paragraph (4), replace the whole Expression (H.4):

$$\text{“}\xi = 7{,}8 \cdot \frac{n_s}{n_s + 1{,}6} \cdot \frac{1}{1 + 0{,}7 \cdot k} \quad \text{(H.4)”}$$

with the following one:

$$\text{„}\xi = 7{,}8 \cdot \frac{n_s}{n_s + 1{,}6} \cdot \frac{1}{1 + 3{,}9\,k} \quad \text{(H.4)”.}$$