SLOVENSKI PREDSTANDARD

SIST ENV 1991-2-3

prva izdaja
januar 1998

Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-3: Vplivi na konstrukcije - Obtežbe snega (prevzet ENV 1991-2-3:1995 z metodo platnice)

Eurocode 1: Basis of design and actions on structures - Part 2-3: Actions on structures - Snow loads

Eurocode 1: Bases du calcul et actions sur les structures - Partie 2-3: Actions sur les structures - Charges de neige

Eurocode 1: Grundlagen der Tragwerksplanung und Einwirkungen auf Tragwerke - Teil 2-3: Einwirkungen auf Tragwerke - Schneelasten

Deskriptorji: stavbe, inženirski objekti, gradbene konstrukcije, gradbeni predpisi, projektiranje, obtežbe, vremenski vplivi, odpornost proti vremenskim vplivom, sneg

ICS 91.010.30; 91.080

Referenčna številka
SIST ENV 1991-2-3:1998 ((sl),en)

Nadaljevanje na straneh II do V in od 1 do 59

UVOD

Predstandard SIST ENV 1991-2-3 (en), Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-3: Vplivi na konstrukcije - Obtežbe snega, prva izdaja, 1998, ima status slovenskega predstandarda in je z metodo platnice prevzet evropski predstandard
ENV 1991-2-3, Eurocode 1: Basis of design and actions on structures - Part 2-3: Actions on structures - Snow loads, 1995, v angleškem jeziku.

NACIONALNI PREDGOVOR

Evropski predstandard ENV 1991-2-3:1995 je pripravil tehnični odbor Evropske organizacije za standardizacijo CEN/TC 250 Konstrukcije, pododbor SC 1 Osnove projektiranja in vplivi na konstrukcije.

Odločitev za prevzem tega predstandarda po metodi platnice je sprejela delovna skupina USM/TC KON/WG 1 Osnove projektiranja, ki je pripravila tudi nacionalni dokument za uporabo v Sloveniji, potrdil pa tehnični odbor USM/TC KON Konstrukcije.

Ta predstandard se v Sloveniji lahko uporablja samo v skladu z nacionalnim dokumentom, ki je sestavni del SIST ENV 1991-2-3:1998.

Ta slovenski predstandard je dne 1998-01-10 odobril direktor USM.

Rok veljavnosti predstandarda je tri leta od njegove izdaje oziroma do izdaje evropskega standarda EN 1991-2-3.

ZVEZE S STANDARDI

Ta predstandard se uporablja v povezavi z naslednjimi standardi:

SIST ENV 1991-1:1998	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - 1. del: Osnove projektiranja
SIST ENV 1991-2-1:1998	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-1: Vplivi na konstrukcije - Gostote, lastne teže in koristne obtežbe
ENV 1991-2-2:1995*	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-2: Vplivi na konstrukcije - Vplivi požara na konstrukcije
SIST ENV 1991-2-4:1998	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-4: Vplivi na konstrukcije - Vplivi vetra
ENV 1991-2-5:1997*	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-5: Vplivi na konstrukcije - Vplivi temperaturnih sprememb
ENV 1991-2-6:1997*	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-6: - Vplivi na konstrukcije - Vplivi med gradnjo
ENV 1991-2-7	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - Del 2-7: Vplivi na konstrukcije - Nezgodni vplivi zaradi udarov in eksplozij
ENV 1991-3:1995*	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - 3. del: Prometne obtežbe mostov

*Dokument bo predvidoma prevzet kot SIST
* Dokument bo predvidoma prevzet kot SIST

ENV 1991-4:1995*	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - 4. del: Vplivi v silosih in rezervoarjih
ENV 1991-5**	Eurocode 1: Osnove projektiranja in vplivi na konstrukcije - 5. del: Vplivi žerjavov in strojev
ENV 1992	Eurocode 2: Projektiranje betonskih konstrukcij
ENV 1993	Eurocode 3: Projektiranje jeklenih konstrukcij
ENV 1994	Eurocode 4: Projektiranje sovprežnih konstrukcij
ENV 1995	Eurocode 5: Projektiranje lesenih konstrukcij
ENV 1996	Eurocode 6: Projektiranje zidanih konstrukcij
ENV 1997	Eurocode 7: Geotehnično projektiranje
ENV 1998	Eurocode 8: Projektiranje konstrukcij na potresnih področjih
ENV 1999	Eurocode 9: Projektiranje konstrukcij iz aluminijevih zlitin

Navedeni so nekateri standardi, ki so že objavljeni kot ENV, večinoma pa so v pripravi in bodo kot ENV predvidoma objavljeni v času veljavnosti tega predstandarda.

OSNOVA ZA IZDAJO STANDARDA

- Prevzem predstandarda ENV 1991-2-3:1995

OPOMBI

- Povsod, kjer se v besedilu predstandarda uporablja izraz "evropski predstandard", v SIST ENV 1991-2-3:1998 to pomeni "slovenski predstandard".

- Uvod in nacionalni predgovor nista sestavni del predstandarda.

** Dokument je v fazi izdelave in bo predvidoma prevzet kot SIST

VSEBINA **Stran**

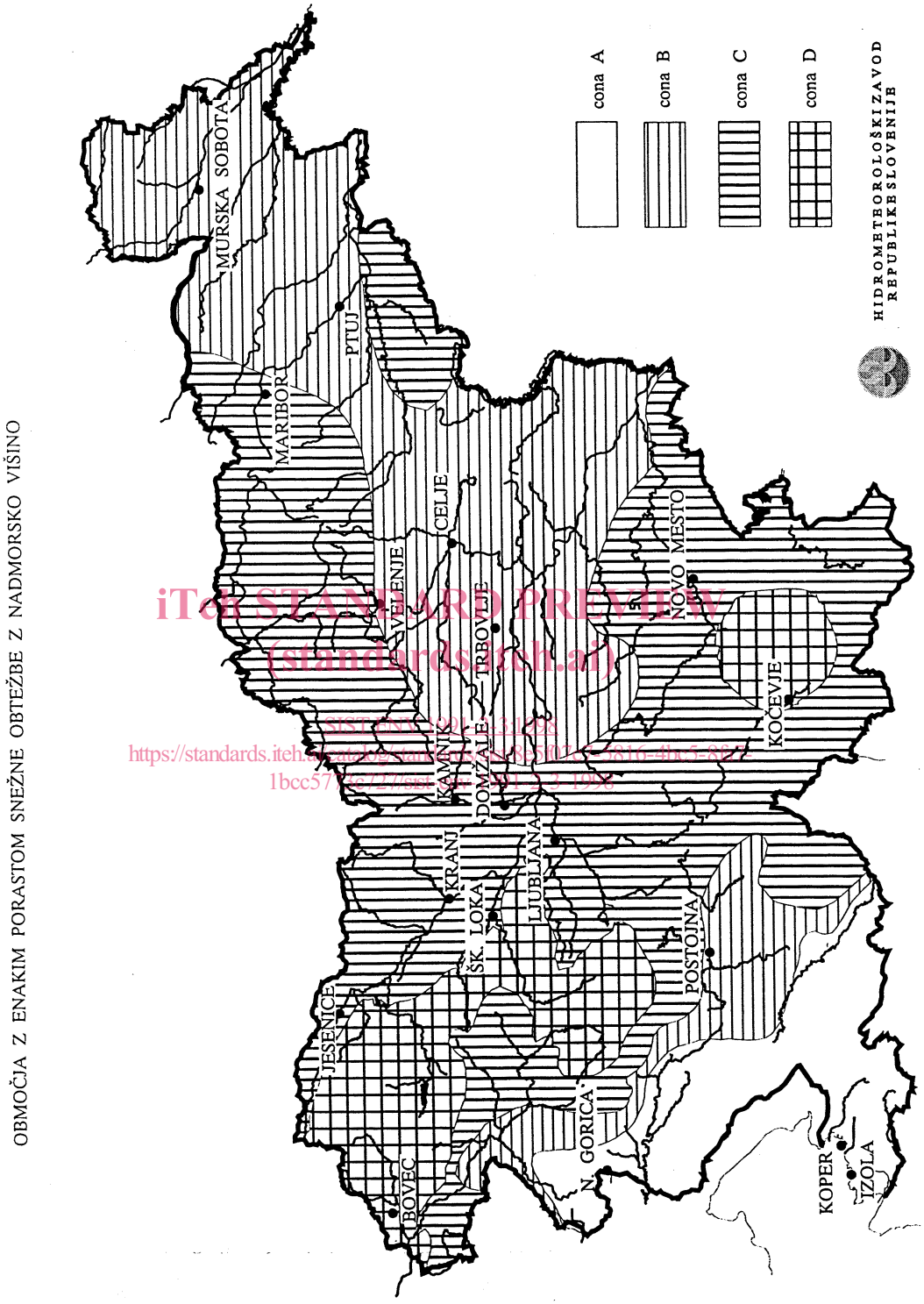
Nacionalni dokument za uporabo v Sloveniji

1 Karakteristične obtežbe snega

Slovenijo lahko razvrstimo v štiri območja oziroma cone glede na spreminjanje snežne obtežbe z višino, vendar so tudi znotraj teh območij manjša odstopanja. Tako imajo kraji, ki ležijo na koncu ozkih in globokih dolin precej večjo obtežbo, kot bi jim jo prisodili glede na nadmorsko višino (na primer kraji ob Bohinjskem jezeru, Mežica). Obenem pa je snežna odeja na območjih z burjo razmeroma neenakomerna, saj zaradi vetra nastajajo tako zameti kot tudi spihana mesta. Enako velja za gorski svet. Ker je mreža postaj v gorskem svetu razmeroma redka in ker so tudi meritve močno odvisne od mikrolokacije in niso reprezentativne za širše območje, so snežne obtežbe izračunane samo do nadmorske višine 1500 m. Ocena snežne obtežbe na Kredarici, to je na višini 2514 m, je 24 kN/m^2. Za vmesne nadmorske višine se vrednosti snežne obtežbe linearno interpolirajo.

Preglednica snežnih obtežb s_k (kN/m^2)

nadmorska višina (m)	CONE			
	A	B	C	D
0	0.25	-	-	-
100	0.25	1.4	1.7	-
200	0.50	1.4	1.7	-
300	0.75	1.5	1.9	3.0
400	1.00	1.6	2.1	3.0
500	1.20	1.7	2.3	3.5
600	1.60	1.8	2.7	4.0
700	-	2.0	3.2	4.5
800	-	2.2	3.7	5.0
900	-	2.4	4.2	6.0
1000	-	2.7	5.4	7.5
1100	-	3.0	6.2	9.0
1200	-	3.3	7.0	10.5
1300	-	3.6	7.8	12.0
1400	-	3.9	8.6	13.5
1500	-	4.2	9.2	15.0



Po mnenju Ministrstva za informiranje Republike Slovenije z dne 18. februarja 1992, štev. 23/96-92, spada ta publikacija med proizvode informativne narave iz 13. točke tarifne številke 3, za katere se plačuje 5-odstotni prometni davek.

EUROPEAN PRESTANDARD

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

ENV 1991-2-3

February 1995

ICS 91.040.00

Descriptors: buildings, structures, design, computation, loads:forces, weather effects, weather resistances, snow

English version

Eurocode 1 - Basis of design and actions on structures - Part 2-3: Actions on structures - Snow loads

Eurocode 1 - Bases du calcul et actions sur les structures - Partie 2-3: Actions sur les structures - Charges de neige

Eurocode 1 - Grundlagen der Tragwerksplanung und Einwirkungen auf Tragwerke - Teil 2-3: Einwirkungen auf Tragwerke - Schneelasten

This European Prestandard (ENV) was approved by CEN on 1993-06-30 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existance of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

ENV 1991-2-3

Contents

Foreword

Objectives of the Eurocodes

(1) The 'Structural Eurocodes' comprise a group of standards for the structural and geotechnical design of buildings and civil engineering works.

(2) They cover execution and control only to the extent that is necessary to indicate the quality of the construction products, and the standard of the workmanship, needed to comply with the assumptions of the design rules.

(3) Until the necessary set of harmonised technical specifications for products and for methods of testing their performance are available, some of the Structural Eurocodes cover some of these aspects in informative Annexes.

Background to the Eurocode Programme

(4) The Commission of the European Communities (CEC) initiated the work of establishing a set of harmonized technical rules for the design of building and civil engineering works which would initially serve as an alternative to the different rules in force in the various Member States and would ultimately replace them. These technical rules became known as the 'Structural Eurocodes'.

(5) In 1990, after consulting their respective Member States, the CEC transferred the work of further development, issue and updating of the Structural Eurocodes to CEN, and the EFTA Secretariat agreed to support the CEN work.

(6) CEN Technical Committee CEN/TC 250 is responsible for all Structural Eurocodes.

Eurocode Programme

(7) Work is in hand on the following Structural Eurocodes, each generally consisting of a number of parts:

EN 1991	Eurocode 1	Basis of design and actions on structures
EN 1992	Eurocode 2	Design of concrete structures
EN 1993	Eurocode 3	Design of steel structures
EN 1994	Eurocode 4	Design of composite steel and concrete structures
EN 1995	Eurocode 5	Design of timber structures

EN 1996	Eurocode 6	Design of masonry structures
EN 1997	Eurocode 7	Geotechnical design
EN 1998	Eurocode 8	Design of structures for earthquake resistance
EN 1999	Eurocode 9	Design of aluminium alloy structures

(8) Separate sub-committees have been formed by CEN/TC250 for the various Eurocodes listed above.

(9) This part of Eurocode 1 is being published as a European Prestandard (ENV) with an initial life of three years.

(10) This Prestandard is intended for experimental application and for the submission of comments

(11) After approximately two years CEN members will be invited to submit formal comments to be taken into account in determining future actions.

(12) Meanwhile feedback and comments on this Prestandard should be sent to the Secretariat of CEN/TC250/SC1 at the following addresses:

SNV / SIA (until end May 1995)
Selnaustrasse 16
CH-8039 ZURICH
SWITZERLAND

SIS / BST (from June 1995)
Box 5630
S- 114 86 Stockholm
SWEDEN

or to your national standards organisation.

National Application Documents (NAD's)

(13) In view of the responsibilities of authorities in member countries for safety, health and other matters covered by the essential requirements of the Construction Products Directive (CPD), certain safety elements in this ENV have been assigned indicative values which are identified by [ ] ("boxed values"). The authorities in each member country are expected to review the "boxed values" and may substitute alternative definitive values for these safety elements for use in national application.

(14) Some of the supporting European or International standards may not be available by the time this Prestandard is issued. It is therefore anticipated that a National Application Document (NAD) giving any substitute definitive values for safety elements, referencing compatible supporting standards and providing guidance on the national application of this Prestandard, will be issued by each member country or its Standards Organization.

(15) It is intended that this Prestandard is used in conjunction with the NAD valid in the country where the building or civil engineering works is located.

Matters specific to this Prestandard

(16) The scope of Eurocode 1 is defined in clause 1.1.1 and the scope of this Part of Eurocode 1 is defined in 1.1.2. Additional parts of Eurocode 1 which are planned are indicated in clause 1.1.3.

(17) This Part is complemented by a number of annexes, some normative and some informative. The normative annexes have the same status as the sections to which they relate.

(18) The characteristic value of the snow load on the ground shall be provided in the form of maps or otherwise (see annex A) by the competent authority. The value provided for characteristic loads shall conform with the definitions given in ENV 1991-1 clause 4.2. In the cases where the value of the snow load on the ground is not consistent with the definition of the characteristic value, the NAD should state the corresponding value.

(19) In the particular case considered in section 2 where the snow load can be treated as an accidental action, the NAD should provide guidance for the treatment of the action in design.

(20) Allowance shall be made in the NAD for local effects which are unlikely to have been considered in the statistical analysis for national loads. Particularly important are effects due to local topography and diversion of the wind.

(21) Where there is doubt about the validity of the recommended snow loads, the procedure to consult the competent authority should be given in the NAD.

Section 1 General

1.1 Scope

1.1.1 Scope of ENV 1991 - Eurocode 1

(1)P ENV 1991 provides general principles and actions for the structural design of buildings and civil engineering works including some geotechnical aspects and shall be used in conjunction with ENV 1992-1999.

(2) It may also be used as a basis for the design of structures not covered in ENV 1992-1999 and where other materials or other structural design actions are involved.

(3) ENV 1991 also covers structural design during execution and structural design for temporary structures. It relates to all circumstances in which a structure is required to give adequate performance.

(4) ENV 1991 is not directly intended for the structural appraisal of existing construction, in developing the design of repairs and alterations or, for assessing changes of use.

(5) ENV 1991 does not completely cover special design situations which require unusual reliability considerations such as nuclear structures for which specified design procedures should be used.

1.1.2 Scope of ENV 1991-2-3 Snow loads

(1)P Design guidance is provided for loads imposed by snow which has fallen in calm air and in windy conditions for the structural design of buildings and civil engineering work.

(2)P This Part does not generally apply for sites at altitudes above 1500m .

(3) Annex B may be used in specific regions where all the snow normally melts and clears between individual weather systems and wind speeds are high.

Note: Use of Annex B has to be agreed with the National Competent Authority.

(4) This Part does not give guidance on:

- impact snow loads resulting from snow sliding off or falling from a higher roof;
- loads which could occur if snow and ice block drainage systems;

- the additional wind loads which could result from changes in shape or size of the building structure due to the presence of snow or the accretion of ice;
- loads in areas where snow is present all the year;
- ice loading;
- lateral loading due to snow (e.g. lateral loads exerted by drifts);
- the increase in load due to heavy rain falling on snow.

(5) ENV 1991-2-3 shall be used only in conjunction with ENV 1991-1 and other Parts of ENV 1991.

1.1.3 Further Parts of ENV 1991

(1) Further Parts of ENV 1991 which, at present, are being prepared or are planned are given in 1.2.

1.2 Normative references

This European Prestandard incorporates by dated or undated reference, provisions from other standards. These normative references are cited in the appropriate places in the text and publications listed hereafter.

ISO 3898 1987 Basis of design for structures
Notations. General symbols

Note: The following European Prestandards which are published or in preparation are cited at the appropriate places in the text and publications listed hereafter.

ENV 1991-1	Eurocode 1: Basis of design and actions on structures Part 1 : Basis of design
ENV 1991-2-1	Eurocode 1: Basis of design and actions on structures Part 2.1: Densities, self-weight and imposed loads
ENV 1991-2-2	Eurocode 1: Basis of design and actions on structures Part 2.2: Actions on structures exposed to fire
ENV 1991-2-4	Eurocode 1: Basis of design and actions on structures Part 2.4 Wind loads
ENV 1991-2-5	Eurocode 1: Basis of design and actions on structures Part 2.5: Thermal actions
ENV 1991-2-6	Eurocode 1: Basis of design and actions on structures Part 2.6: Loads and Deformations imposed during execution
ENV 1991-2-7	Eurocode 1: Basis of design and actions on structures Part 2.7: Accidental actions

ENV 1991-3	Eurocode 1: Basis of design and actions on structures Part 3: Traffic loads on bridges
ENV 1991-4	Eurocode 1: Basis of design and actions on structures Part 4: Actions in silos and tanks
ENV 1991-5	Eurocode 1: Basis of design and action on structures Part 5: Actions induced by cranes and machinery
ENV 1992	Eurocode 2: Design of concrete structures
ENV 1993	Eurocode 3: Design of steel structures
ENV 1994	Eurocode 4: Design of composite steel and concrete structures
ENV 1995	Eurocode 5: Design of timber structures
ENV 1996	Eurocode 6: Design of masonry structures
ENV 1997	Eurocode 7: Geotechnical design
ENV 1998	Eurocode 8: Earthquake resistant design of structures
ENV 1999	Eurocode 9: Design of aluminium alloy structures

1.3 Distinction between principles and application rules

(1) Depending on the character of the individual clauses, distinction is made in this part between principles and application rules.

(2) The principles comprise:

– general statements and definitions for which there is no alternative, as well as

– requirements and analytical models for which no alternative is permitted unless specifically stated.

(3) The principles are identified by the letter P following the paragraph number.

(4) The application rules are generally recognized rules which follow the principles and satisfy their requirements.

(5) It is permissible to use alternative rules different from the application rules given in this Eurocode, provided it is shown that the alternative rules accord with the relevant principles and have at least the same reliability.

(6) In this Part the application rules are identified by a number in brackets eg. as this clause.

1.4 Definitions

(1) For the purposes of this prestandard, a basic list of definitions is provided in ENV 1991-1, 'Basis of design'.

1.5 Symbols

(1) For the purpose of this Prestandard, the following symbols apply.

Note: The notation used is based on ISO 3898:1987

(2) A basic list of notations is provided in ENV 1991-1, 'Basis of design' and the additional notations below are specific to this Part.

Latin upper case letters

C_e exposure coefficient

C_t thermal coefficient

Latin lower case letters

F_s force exerted by a sliding mass of snow

b width

h height

k coefficient to take account of the irregular shape of snow

l_s length of snow drift

s snow load on the roof

s_k characteristic value of snow on the ground

s_e snow load per metre width due to overhang

Greek Lower case letters

α pitch of roof, measured from horizontal [°]

β angle between the horizontal and the tangent to the curve for a cylindrical roof

γ weight density of snow

μ snow load shape coefficient