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Prostori za gledalce - 3. del: Ločilni elementi - Zahteve

Spectator facilities - Part 3: Separating elements - Requirements

Zuschaueranlagen - Teil 3: Abschrankungen - Anforderungen

Installations pour spectateurs - Partie 3 : Éléments de séparation - Exigences

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97.200.10	Gledališka, odrska in studijska oprema ter delovne postaje	Theatre, stage and studio equipment
97.220.10	Športni objekti	Sports facilities

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English Version

Spectator facilities - Part 3: Separating elements - Requirements

Installations pour spectateurs - Partie 3 : Éléments de séparation - Exigences

Zuschaueranlagen - Teil 3: Abschrankungen - Anforderungen

This European Standard was approved by CEN on 10 December 2017.

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European foreword

This document (EN 13200-3:2018) has been prepared by Technical Committee CEN/TC 315 “Spectator facilities”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13200-3:2005.

The significant changes with respect to previous version (EN 13200-3:2005) are:

— Clause 3 Terms and definition; some have been added (3.1 Barrier) and other deleted (3.1 Separating element or barrier, 3.6 Barriers in front of and behind seating, 3.11 Design level, from EN 13200-3:2005);

— Clause 4 has been technically reviewed and updated;

— Clause 5 has been technically and editorially improved;

— all annexes, figures and tables have been technically changed.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been prepared in order to specify the general design criteria for spectator facilities permanent or not with the purpose of enabling their functionality.

This European Standard specifies safety and design characteristics of entry and exit elements of passage that are used in spectator facilities, either singularly or in combination, to provide a route.

Within this European Standard minimum and recommended values for dimensions and loadings are occasionally presented. It should be recognized that these values are to be considered as values that in part recognize different national requirements as a basic provision.

Attention is drawn to the fact that in certain countries additional/different requirements can be applicable due to existing national regulations or equivalent.

The EN 13200 series, *Spectator facilities*, consist of the following parts:

— Part 1: *General characteristics for spectator viewing area*;

— Part 2 [1)]: *Characteristics*;

— Part 3: *Separating elements - Requirements*;

— Part 4: *Seats - Product characteristics*;

— Part 5: *Telescopic stands*;

— Part 6: *Demountable (temporary) stands*;

— Part 7: *Entry and exit elements and routes*;

— Part 8 [1)]: *Safety Management*;

— Part 9 [1)]: *Communications systems in spectator facilities*.

1) Draft in preparation.

1 Scope

This document specifies design requirements for layout and product characteristics for separating elements within spectator accommodation at permanent or temporary entertainment venues including sport stadia, sport halls, indoor and outdoor facilities for the purpose of enabling their functionality.

Other permanent venues such as theatres, cinemas, opera houses, lecture halls and similar are excluded from this document.

Elements and barriers included in this document are:

— barrier front of a row of fixed seats;

— barrier adjacent to end row of seats;

— barrier behind a rear row of seats;

— barrier at the foot of a gangway or on stairway, aligned at right angles to the direction of movement;

— side or lateral barrier, aligned parallel to the direction of spectator movement;

— gangway barriers;

— gangway barriers in standing areas, aligned at right angles to the direction of spectator movement;

— crush barriers;

— barriers for spectator galleries;

— external perimeter barriers and barriers between sectors.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13200-1:2012, *Spectator facilities — Part 1: General characteristics for spectator viewing area*

EN 13200-7, *Spectator facilities — Part 7: Entry and exit elements and routes*

EN 1991-1-1, *Eurocode 1: Actions on structures — Part 1-1: General actions — Densities, self-weight, imposed loads for buildings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13200-1:2012 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
barrier
element of building or structure, permanent or temporary, intended to prevent persons from falling or to retain, stop, guide for separating persons

3.2
external perimeter barrier
barrier which separates the external area from the service area

Note 1 to entry: See EN 13200–1:2012, Figure A.1.

3.3
activity area barrier
barrier which separates viewing area from the activity area

3.4
segregation element
any barrier which serves to separate areas of standing or seated places from adjoining areas of standing or seated places

3.5
crush barrier
barrier which, combined with appropriate spacing, protects spectators from crushing, positioned in areas of standing accommodation

3.6
spectator gallery
limited space, usually attached to a hospitality area, from which standing spectators can view the event

3.7
turnstile
gate for admission with revolving arms which allows persons to pass through singly

3.8
temporary barrier
barrier lasting or meant to last for a limited time and that will normally be removed after the event

3.9
datum
finished level of the floor, roof, foundation slab, balcony, ramp, stage or pitch line of stairs, etc.

3.10
handrail
rail normally grasped by hand for guidance or support

3.11
infill panel
element of the barrier designed to prevent the risk of person falling

4 General requirements

4.1 Preliminary considerations

4.1.1 Where there exists for spectators a danger of falling or persons need to be retained, stopped, guided, separated, consideration shall be given to the need for either a barrier or other measures to achieve the objectives as mentioned in this sentence.

In the assessment of the need for a barrier and the type of barrier to be provided, the designer and ground management shall consider the building use and the risks to building users. Where in a building more than one use is anticipated, either the barrier design shall be chosen to suit the worst case or more than one type of barrier shall be provided as appropriate to the location.

4.1.2 Where walls, glazing or other elements of buildings or structures perform the functions of barriers, the designer shall either:

a) ensure that these separating elements satisfy the criteria given in this standard; or

b) provide additional barriers designed in accordance with this standard.

4.2 Design procedures

For barriers, limit state design procedures shall be used, according to the recommended procedure given in the Eurocode appropriate for the material to be used, treating the loads given as characteristic loads.

When using limit state design, the partial safety factors for loads and materials shall be those recommended by the appropriate material's code of practice. The strength of the barrier shall be designed as Ultimate Limit State and the deflection as Serviceability Limit State.

4.3 Barrier design and loading

Barriers shall be designed to resist safely the minimum horizontal imposed loads specified in Table A.1.

Regardless of the height of the barrier (4.4), the horizontal imposed load shall be considered to act at a height of 1,1 m above the datum, when applied as a static load at right angles to the longitudinal axis.

Designers shall ensure that any construction or structure acting as a support for barriers is of adequate strength and stability to resist safely all applied loads, without excessive stress, deflection or distortion.

Where values are given for minimum and recommended levels of loading, the adoption of a value shall be substantiated by documented risk assessment, taking into account the purpose and position of that barrier during its lifecycle.

Recommended values suit all applications. In applying Table A.1 due accord should be given to the National Regulations regarding safety.

4.4 Barrier heights

Barriers used in standing accommodation, seated accommodation and on stairways and ramps shall be designed to a height of not less than 1,1 m, measured from the datum, unless they fall into one of the following two categories:

a) barriers immediately behind a row of seats should be a minimum height of 1,1m above the datum, which in this case is the level of the seat (see Figures A.1 and A.2).

In all cases, as stated in 4.3, regardless of the height, the horizontal imposed load shall still be considered to act at a height of 1,1 m above the datum.

NOTE 1 Further guidance on the height of crush barriers is provided in 5.4.

b) barriers within 530 mm in front of fixed seating can be a minimum height of 800 mm above the datum (see Figures A.1 and A.2).

NOTE 2 See specified in EN 13200–1:2012, Figures 3 and 4.

In such cases, consideration shall be given to the horizontal width of the barrier to prevent falling over, i.e. in certain instances a lower height can be acceptable with a wide barrier (see Figure A.3).

4.5 Deflection

A barrier for the protection of people that is structurally safe shall not possess sufficient flexibility to alarm the building users when subjected to normal service.

This recommendation is in addition to any recommendations for limiting deflection under full load given in the appropriate structural codes for the material to be used, in which even the most onerous limit is to be applied.

4.6 Fixings

Care shall be taken to ensure that the strength of the fixing is adequate for the loading to which the barrier will be subjected. All joints shall be designed to provide the full strength of the members being joined.

Wherever a single fixing or support is essential to prevent the collapse or failure of a barrier, or of a critical part of a barrier, the design shall avoid reliance wholly on the pull-out strength of the fixing. Fixing design shall take particular account of the material into which the fixing is placed, the spacing between fixings, the edge distance, and the position of any reinforcement.

4.7 Safety details

The finished barrier shall have no sharp edges or projections that can cause injury to persons or damage to clothing or other objects.

Infill panels and balusters are intended to provide support and protection to the user, and shall be designed to restrain people without causing additional injury from sharp edges, thin sections, projecting details, etc. (see Table A.1).

4.8 Support from adjacent construction

Designers shall ensure that any construction or structure acting as support for barriers is of adequate strength and stability to sustain all applied loads safely without excessive stress, deflection or distortion.

4.9 Maintenance

The design shall provide the safe maintenance of barriers. Consideration shall be given to the possibility of tampering or vandalism.

4.10 Barriers and sightline considerations

All spectators viewing areas shall have a clear, unobstructed view of the whole activity area, as defined in EN 13200-1.

NOTE It is recognized that even barriers meeting the height requirements listed in 4.4 can obstruct sightlines.

5 Specific requirements

5.1 General

The requirements for design and loading for all barriers are given in Tables A.1, B.1 and B.2. This clause is additionally concerned with barriers in the following locations.

5.2 External perimeter barriers

External perimeter barriers subjected to crowd loading at sports ground can include walls, fences, turnstiles, ingress exit doors and gates. The height of external perimeter barrier will vary according to its location and required function.

For the height of 1,1 m the horizontal imposed load shall be 3 kN/m length and the uniformly distributed load on the surface of infill shall be 2 kN/m^2; for the height of 2,5 m the horizontal imposed load shall be 1 kN/m length and distributed load on the surface of infill shall be 0,8 kN/m^2.

The interpolation between the loads and height is permitted (see Figures C.3 and C.4).

Allowance shall also be made for forces simultaneously and independently induced by other factors, for example, wind forces or attached installations.

Consideration should also be given to the security aspects of external fencing particularly the ease with which undesirable objects i.e. flares, canisters, tickets etc. can be passed into or out of the venue.

5.3 Activity area barriers

5.3.1 Form, height and imposed load

Such activity area barriers can take the form of crush barriers, walls or rails; for the height and horizontal imposed load in function of typology (for example Type A or A_{ROF} Annex A or segregation elements).

The characteristics of the activity area perimeter barrier and the distance of the barrier from the activity area shall be established by the spectator facilities management in consultation with the relevant authorities and legislation, sports federation and the organizer of the event to ensure safety of spectators, management personnel and participants in the activity area as required.

If spectators can lean on, or gather immediately behind the perimeter barrier, it shall be deemed a crush barrier and therefore meet the horizontal imposed load and height requirements as specified in 5.5.

5.3.2 Emergency access to the activity area

In certain cases forward evacuation onto the activity area can form part of the emergency evacuation plan, provided that the activity area leads directly to an exit which itself leads to a place of safety.

However, regardless of whether the activity area forms part of the emergency evacuation plan, any activity area barrier or fence placed in front of the spectator viewing area shall be provided with gates or openings which allow spectators access to the of activity area.

5.3.3 Requirements dependent upon sports or activities

Individual requirements for specific sports or activities shall be required.

Requirements for the protection of the playing field can be either (or a combination of):

a) police/security;

b) moat;

c) high seating configuration;