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Spectator facilities - Part 1: General characteristics for spectator viewing area

Zuschaueranlagen - Teil 1: Allgemeine Merkmale für Zuschauerplätze

Installations pour spectateurs - Partie 1 : Caractéristiques générales des espaces d'observation pour spectateurs

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91.040.10	Javne stavbe	Public buildings
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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EUROPEAN STANDARD

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English Version

Spectator facilities - Part 1: General characteristics for spectator viewing area

Installations pour spectateurs - Partie 1 : Caractéristiques générales des espaces d'observation pour spectateurs

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This European Standard was approved by CEN on 14 December 2018.

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

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European foreword

This document (EN 13200-1:2019) 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of an identical text or by endorsement, at the latest by August 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.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 13200-1:2012.

The following significant changes have been made to the previous edition:

a) editorial changes of the text;

b) all drawings has been checked in order to improve clarity and comprehension;

c) In 5.2 “Requirements for seating places” a clarification has been made on clear width for the row passage with tip-up seats;

d) 5.4 “Places for spectators with special needs” has been improved.

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 document has been prepared in order to specify the general design criteria for spectator facilities, with the purpose of enabling their functionality. Within this document, minimum and recommended values for dimensions are occasionally presented.

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

In certain countries, the minimum number of spectators is related to the application of this document.

1 Scope

This document specifies design and management requirements for spectator facilities at permanent or temporary entertainment venues including sport stadia, sport halls, indoor and outdoor facilities for the purpose of enabling their functionality.

This document is not applicable to other permanent venues such as theatres, cinemas, opera houses, auditoriums, lecture halls and similar places where persons congregate.

NOTE Provisions for media facilities are not included in this document.

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 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 following terms and definitions 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
spectator facility
area of congregation comprising an activity area, a viewing area and a service area

Note 1 to entry: A spectator facility includes all the spaces where the public assembles, indoors or outdoors, permanently or temporarily, views sports, entertainment or miscellaneous events (see Annex A).

3.2
activity area
area where the event takes place

3.3
viewing area
area from which the spectators view the event

Note 1 to entry: The viewing area includes stands for spectators seated, standing and with special needs, passageways and gangways necessary for circulation, vomitories for entry and exit.

3.4
service area
area where publically accessible utilities are found

Note 1 to entry: The service area includes toilets, first aid, cafeterias, souvenirs shop, including passages, concourses, ramps and stairs between the viewing area and the external area (see Annex A).

3.5
place
space in the viewing area needed for a safe and good view of the event taking place, which is for a spectator who is sitting or standing or a wheelchair user

3.6
vomitory
element of passage that provides entry to or exit from the viewing area

3.7
stand
structure providing a viewing area

3.8
sector
unit of the viewing area comprising one or more similar blocks

3.9
block
unit of the viewing area comprising a number of rows between rear and/or front gangways and one or two lateral passageways

3.10
row
line of a number of similar and adjacent places for spectators that are laterally spaced

3.11
passageway
access route to a sector or block

Note 1 to entry: A passageway, on level ground, slope or stair, includes vomitory and gangway.

3.12
sightline
line joining the eye of a spectator and the point of interest on the activity area without optical interruption

3.13
point of interest
point on the activity area from which the sightline is linked to the eye point

3.14
design capacity
total number of spectators for which a spectator facility or some division of a spectator facility (block or sector) is designed

3.15
flow capacity
number of spectators that can safely pass through a given width of a space in a specified time

3.16
viewing slope
non-stepped sloping area providing standing accommodation for the spectator

3.17
place of safety
place where a person is no longer in danger from fire or other emergencies

3.18
external area
place external to the activity area, viewing area and service area intended to be used as public road, parking and passages for spectators

3.19
indoor facility
facility in which both the activity area and viewing area are covered and enclosed

3.20
outdoor facility
open facility or uncovered activity area

4 Materials and technical installations

4.1 General

The materials and technical installations shall be made in accordance with the law in force in each country and shall take into account the applicable European Standards.

4.2 Structures, finishes and furniture

Fire resistance requirements of structural elements should be assessed in accordance with the requirements and test procedures established by the regulations in force in each country, regardless of the type of material structural elements are made of (e.g. concrete, clay, steel, solid wood, laminated timber, composite members).

The size, thickness and protections of the above-mentioned types of materials and the classification of the premises according to fire load should be determined in accordance with the tables and methods specified by the regulations in force in each country. The applicable European standards shall also be taken into account.

Passages, stairs and steps of outdoor facilities shall be free from stagnation in case of rain and provide appropriate slip resistance.

NOTE The pavements of outdoor sports facilities do not require classification for the purposes of reaction to fire.

Chairs and other upholstered furniture shall belong to reaction to fire class 1 IM, whereas seats that are neither upholstered nor coated, and that are made of rigid combustible materials, shall belong to a reaction to fire class not higher than 2.

In indoor facilities where the viewing area is extended to the activity area, reaction to fire classification of pavements is needed.

If the pavements are made of combustible materials, they shall clearly be counted within fire load for the assessment of the fire resistance requirements of structural elements of sports facilities.

If devices are provided for actual improvement of overall safety conditions of indoor facilities and of indoor premises in outdoor facilities, such as effective gas evacuation systems installed with automatic fire detection systems and/or automatic sprinkler systems, the use of materials that belong to higher reaction to fire classes may be permitted.

4.3 Electrical installations

For the purposes of fire prevention, electrical installations:

— shall not be a cause of fire or explosion;

— shall neither keep the fire alight nor be a propagate way of spreading fire. The fire behaviour of structural members shall be compatible with the specific intended use of each of the premises;

— shall be divided so that possible failures do not bring the entire system out of order;

— shall have switching devices located in “protected” positions and shall be provided with clear indications of the relevant circuits.

The following safety equipment shall be provided:

— lighting installation;

— alarm system;

— detection system;

— fire-extinguishing systems.

Safety electrical power supply shall be automatic with short interruption (< 0,5 sec) for signalling systems, alarm systems and lighting installations and with average interruption (< 15 sec) for water firefighting systems.

Battery chargers shall be automatic and shall be capable of being fully charged within 12 h.

The safety electrical power supply endurance shall allow safe conduct of rescue and turning off operations for the necessary time. The minimum endurance is established for each plant as follows:

— indication and alarm system: 30 min;

— emergency lighting: 60 min;

— water firefighting systems: 60 min.

Indoor facilities, outdoor facilities intended for night use and indoor premises of outdoor sport facilities shall be equipped with emergency lighting.

The emergency lighting shall ensure a lighting level not lower than 5 lx 1 m above the floor along exit routes; self-powered lamps that can ensure functioning for at least 1 h are allowed.

If an event takes place after sunset or lasts beyond sunset, spectator areas shall be fitted with lighting. Indoor spectator facilities and spectator viewing areas shall be fitted with lighting. For visual comfort of spectators rather than safety or emergency reasons, the lighting level shall be at least 10 lx.

NOTE For more information about lighting, see EN 12193 and EN 1838.

4.4 Spectator control devices

Where provided, a closed circuit television system (CCTV) shall allow the observation of the viewing area, service area and passageways of the facility, from a dedicated and attended room, as well as registration of relevant images.

The system shall also allow the recognition of an individual spectator during night-time events.

In general, a video surveillance installation that is capable of managing and controlling the flow of spectators inside and outside a sports facility implies the structural analysis of the sports facility.

Cameras for the protection of fan passageways and entrance/exit areas shall be deployed so that movements of people near the perimeter fence are always under control.

The number of cameras varies depending on the type of installation. The key requirement is to cover the entire viewing area.

CCTV may be extended to service and external areas.

An essential feature is the capability of the system to monitor real-time incidents that occur on the grandstands and outside, with a resolution that allows authorities to identify the responsible people.

The cameras shall be placed on secure vibration-free points that are inaccessible to the public.

In case of rotating cameras the speed of operation and then the rotation shall be controlled to allow a 180° reorientation in few seconds.

4.5 Public address announcements

4.5.1 General

Concerning the public address system, it is important to ensure that the sound levels are suitably adjusted to take account of any changes during an event. This can be achieved automatically by the installation of an ambient noise sensing system. Where such a system is installed, it is important that it be fail-safe at maximum power.

Consideration shall be given to occupational health hazards caused by excessive noise.

4.5.2 Public address announcement and systems

It is essential that event holders facilitate spectator safety and that security authorities are capable of communicating clearly with spectators inside and outside the spectator facilities by means of a sufficiently powerful and reliable public address system.

Such a system shall:

— have its control centre located in, or immediately adjacent to, the spectator facilities control room, in a position where the operator has CCTV coverage of the spectator facility;

— be capable of addressing messages exclusively to individual sectors of the spectator facilities, including banks of turnstiles, internal rooms, hospitality suites and blocks of seating;

— be capable of having its volume automatically increased to guarantee that messages will always be audible to spectators even when sudden increases in the crowd noise level occur.

NOTE For example the scoring of a goal during the delivery of a safety message would cause the volume level of the system to instantly and automatically rise above the surge in crowd noise levels.

— have an override which shall permit the spectator facilities controller to cut in to any separate sound in the event of an emergency;

— have an emergency, alternative power supply which shall ensure that the system remained operative without interruption in the event of a power failure for a minimum period of three hours.

4.6 Auxiliary power

It is essential that power be maintained to provide the continuous operation of all control point functions and of the selected communication systems in the event of a power failure, fire or other emergency.

Auxiliary power shall therefore be provided, sufficient at the very least to enable emergency lighting and all other safety related installations (emergency lights, control rooms, scoreboards, etc.) to function for a minimum of three hours after the failure of the normal supply.

NOTE Examples include public address system, CCTV, etc.

It is essential to test the necessary communication systems to ensure that they do continue to function normally when the auxiliary power takes over.

4.7 Scoreboards and video screens

The scoreboards and video screens within the spectator facilities are an important issue which shall be addressed at an early stage of the design process. The screens are to be placed in a location where they do not represent any risk to spectators.

They shall be positioned to fill in open corner spaces between side and end of stands. They shall also be situated on top of or suspended from a grandstand roof.

The principal determining factors when deciding the best position for the screen are:

— to provide optimal viewing for all spectators;

— to eliminate or minimize the capacity reduction caused by loss of seats;

— to be placed in a location where the screens do not represent any risk to spectators.

The scoreboards shall resume the main information delivered by communication or alarm systems. The scoreboards and video screen shall be used for displaying messages during emergencies and shall be connected to an electrical installation with a three-hour standby power supply in the event of a normal power outage.

Scoreboards and video screens shall be provided and used to record in written form the match result and provide short and simple public messages.

4.8 Orientation system

The signs inside and outside of the spectator facilities shall be included in the design.

Clear, comprehensive signposting shall be provided at the spectator facilities approaches, around and throughout the spectator facilities in order to show the routes to the different sectors. Prominent, clearly visible signage that guides spectators to exits, toilets, concessions, retail outlets, and other customer services should be provided.

Tickets shall clearly identify the location of the seats for which they have been issued.

Information on the tickets shall correlate with the information provided on signposts, both outside and inside the spectator facilities. Colour-coding of tickets can be used to support the entry process.

The design of the way finding system shall meet the requirements of people with special needs (e.g. colour contrast, size of information) and provide the information based on the two sense principle (e.g. tactile and visual, visual and audio).

NOTE For more information on graphical symbols, see ISO 7001.