

भारतीय मानक

अस्थाई सरंचनाओं और पंडालों के निर्माण में अग्नि शमन  
के लिए एहतियाती उपाय — रीति संहिता  
( दूसरा पुनरीक्षण )

*Indian Standard*

FIRE PRECAUTIONARY MEASURES IN  
CONSTRUCTION OF TEMPORARY STRUCTURES AND  
PANDALS — CODE OF PRACTICE

( *Second Revision* )

ICS 13.220.01

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Safety Sectional Committee had been approved by the Civil Engineering Division Council.

Temporary structures including large pandals normally erected at fairs, festivals and such other outdoor assembly have not, in general, been subjected to adequate regulations from fire safety point of view though in certain regions certain minimum fire precautionary measures in the construction of such structures are ensured before giving a licence or permission for the erection of such structures. Therefore, with a view to give necessary guidance with regard to fire protection measures to be adopted in the erection of such structures, it has been felt necessary to formulate this standard.

This standard was first published in 1978, covering the safety aspects for temporary structures and pandals used by public excluding the temporary structures used for private functions. Since then the number of Indian Standards in regard to details of construction, fire safety and equipment have been formulated. The standard was revised in 1993 wherein having seen the more usage of temporary structures for private functions, the scope of this standard was enlarged to cover such type of structures also. This revision has been prepared so as to cover details of construction and use of fire fighting equipment according to the latest standards. Further the provisions have been aligned with National Building Code 2005.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

*Indian Standard*

**FIRE PRECAUTIONARY MEASURES IN  
CONSTRUCTION OF TEMPORARY STRUCTURES AND  
PANDALS — CODE OF PRACTICE**

*( Second Revision )*

**1 SCOPE**

This standard covers the fire safety in respect of construction, location, maintenance and use of temporary structures including pandals used by public and private functions for outdoor assembly.

NOTE — Temporary structure shall apply to all structures with roof or walls made of straw, hay, ulu grass, golpatta, hogla, darma, mat, canvas cloth or other like material which is not adopted for permanent or continuous occupancy.

**2 REFEREENCES**

The Indian Standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1646 : 1997	Code of practice for fire safety of buildings (general): Electrical installations ( <i>first revision</i> )
2190 : 1992	Selection, installation and maintenance of first-aid fire extinguishers — Code of practice ( <i>second revision</i> )
12349 : 1988	Fire protection — Safety signs
12407 : 1988	Graphic symbols for fire protection plans
12777 : 1989	Method for classification of flame — Spread of products
15612 (Part 1) : 2005	Textiles — Burning behaviour to curtains and drapes: Part 1 Classification scheme
15741 : 2007	Textiles — Resistance to ignition of curtains and drapes — Specification

**3 GENERAL REQUIREMENTS**

**3.1** The materials, design, construction, fabrication of structures or devices within the scope of this standard shall meet the requirements for resistance to fire of a

minimum of 10 minutes or total evacuation time whichever is more.

**3.1.1** Each temporary structure shall be permitted only in Fire Zones No.1 & 2 as the case may be, according to the purpose for which these are to be used, by special permit from the authority for a limited period and the provisions of this standard shall be complied with.

**3.1.2** Such temporary structures shall be completely removed on the expiry of the period specified in the permit.

**3.2** The choice of materials for such constructions shall preferably be of non-combustible or fire resistance type. The materials used for the decor shall be such that it shall not generate toxic smoke/fumes. Wherever materials of combustible nature are used these shall be treated with a fire retardant material of Class-I flame spread of IS 12777.

**3.3** The main structure shall be erected with at least 100 mm diameter post of non-combustible material or wooden post (preferably of sal, casurina or bamboo) and the rest of the structure may be of lighter poles and trusses tied/screwed properly with steel wire. The poles and trusses shall be nailed/screwed, wherever required. All supporting members shall be of sufficient size and strength to support the structure.

**3.4** The height of the ceiling of the structure or pandal from the ground shall not, in any case, be less than 3 m.

**3.5** No decorative paper/synthetic material shall be used anywhere in the pandal/structure.

**3.6** All fabrics, decorative clothing used in the construction and decoration of the structure shall conform to IS 15612 (Part 1) and IS 15741.

**3.7** No nylon or synthetic ropes shall be used anywhere in the structure. Only ropes made of coir, manila or coconut fibres shall be treated with fire retardant solutions in accordance with **3.2** before use.

**3.8** Temporary structures shall be adequately guyed/ braced and made secure to withstand a wind pressure of 0.98 kN/m<sup>2</sup> (0.01 kgf/cm<sup>2</sup>).

**3.9** In no case, the height of corridor/passageway shall be less than 3 m.

#### **4 LOCATION**

**4.1** There shall be a clear space of 4.5 m on all sides between the structure and the adjacent buildings or other structures. In cases where temporary structures are erected in the lawns which are part of residential premises, the entire frontage shall be kept open.

**4.2** No temporary structure shall be erected beneath and adjacent to any live electrical line. The gap between the live wires and any part of the structure shall in no case be less than 2 m.

**4.3** No temporary structure shall be erected near furnace, railway line, electrical sub-station, chimney or under high tension wire or like hazard unless a safety distance of 15 m is maintained.

#### **5 MEANS OF ACCESS**

**5.1** All temporary structures shall be approachable and the gate provided shall have a clear opening of 5 m. Arch way shall not be at a height less than 5 m from the ground level.

**5.2** The temporary structure shall be approachable to fire engine. No part of temporary structures shall be more than 45 m away from the motorable road.

#### **6 CAPACITY**

**6.1** The capacity of any temporary structure or pandal or enclosure for outdoor assembly shall be the number of fixed seats plus an allowance of one person for each 0.50 m<sup>2</sup> of floor area designated or used as standing space or for movable seats. A distance of 450 mm along any undivided bench or platform shall constitute one seat in computing capacity. The floor area or ramps, aisles, passageways or spaces within such structures of enclosures used for access or circulation shall not be considered in computing the capacity of a place of outdoor assembly, and shall not be used for access or circulation and shall not be considered in computing the capacity of a place of outdoor assembly, and shall not be used for seats or for standing.

**6.2** The number of persons admitted to any place of outdoor assembly shall not exceed the capacity as computed in accordance with the provisions of **6.1**.

#### **7 ENCLOSURE AND EXITS**

**7.1** All sides of the temporary structure shall be left open. If this is not possible for certain reasons, the lower portions of the side walls shall not be fixed.

**7.2** Where provisions laid down in **7.1** cannot be adhered, adequate and unrestricted exits shall be

provided, depending on the capacity of the assembly, as given in **7.3** to **7.9**.

**7.3** A minimum of two exits of not less than 2.5 m width separately, located at extremities from each other, shall be provided for any type of temporary structures.

**7.3.1** Each of the exits shall be minimum 3 m wide for larger pandals and these exits may be provided after gap of 10 m.

**7.4** The clear width of exits shall be determined on the basis of not less than one unit of 50 cm for each 50 persons to be accommodated. The width of each exit shall not be less than 2.5 m.

**7.5** The line of travel from any seat to the nearest exit on the seating area shall not be greater than 15 m.

**7.6** All exit points shall be clearly indicated with sign 'EXIT' (including in local language) over each doorway or opening in plain legible letters ( not less than 5 cm high and with principal strokes of such letters not less than 1.8 cm in width) enabling everybody in the auditorium to visualize the exit points easily. Fire protection-safety signs and fire protection plans shall be in accordance with IS 12349 and IS 12407.

**7.6.1** Exit light should be adequately illuminated with reliable light source when the structure is occupied by the public. Suitable directions signs shall be displayed in a conspicuous location to indicate the proper direction of egress. Exit and direction signs shall also be painted with fluorescent paint. Doors wherever fitted to exits shall open outwards and shall not be closed or bolted during the presence of persons in the structure.

**7.6.2** The emergency lighting shall be provided to be put on within 20 s of the failure of the normal lighting supply.

**7.7** Cross gangways shall be provided affording passage after every 10 row of seats, width of such passage being not less than 1.5 m.

**7.8** Longitudinal gangways shall be formed at the sides and central portion. The width of side longitudinal gangway shall be not less than 1.2 m and central longitudinal gangway shall be not less than 1.5 m. Each row (between side and longitudinal gangway) shall comprise of not more than 12 seats. The seats shall be tied up together in a bank of not less than 4 seats and secured to the ground.

**7.9** The seating arrangement shall be such that the clearance between rearmost point of the immediate front seat and the foremost point of the next rear seat in two successive rows is not less than 55 cm. Where self folding seats are provided, the clearance between the two rows may be reduced, in any case shall be not less than 30 cm.

## 8 ELECTRICAL ARRANGEMENTS

**8.1** The temporary lighting of the structure shall be installed by a licensed contractor. The load per circuit, insulation test and the installation shall conform to IS 1646.

**8.2** All electrical wirings in the structure or pandal shall be in PVC sheathed conductors or vulcanized rubber cables of tough rubber and all joints shall be made with porcelain insulated connectors. Twisted and tapped joints shall not be permitted.

**8.3** No part of electrical circuit, bulbs, tube lights, etc, in the structure of pandal shall be within 15 cm of any decorative or other combustible material.

**8.4** In case incandescent gas portable lights instead of electricity are used in the structure or pandal, such lights shall not be hung from the ceilings of the main structure or pandal but shall be placed on separate stands securely fixed.

**8.5** No halogen lamps shall be used anywhere inside the pandal/temporary structure.

## 9 FIRE PROTECTION MEASURES

**9.1** The ground enclosed by any temporary structure, pandal tent or shamiana, a distance of not less than 4.5 m outside of such structure shall be cleared of all combustible materials or vegetation and any materials obstructing the movement.

**9.2** Storage of combustible materials like shavings, straw, flammable and explosive chemicals and similar materials shall not be permitted to be stored inside any temporary structure.

**9.3** No fire works or open flame of any kind shall be permitted in any temporary structure or in the immediate vicinity.

### 9.4 Open Fires

No open fires except small size controlled fires as for religious purposes shall be permitted inside or near the pandals or other temporary structures.

**9.5** Kitchen area for cooking of snacks/food shall be totally segregated from the main pandal/temporary structure and preferably made of GI sheets.

## 10 FIRE FIGHTING ARRANGEMENTS

### 10.1 Provision of Water for Fire Fighting

Supply of water shall not be less than 0.75 l/m<sup>2</sup> of floor area for each pandal or other temporary structure. The water shall be stored in buckets/drums and kept in

readiness for use. Half quantity may be kept inside the temporary structure and the other half outside in its immediate vicinity. The buckets or receptacles stating water shall at times be readily available for immediate use for dealing with the fires.

**10.2** A minimum number of fire buckets at a rate of two buckets per 50 m<sup>2</sup> of floor space and one water type extinguisher, 9 l capacity, per 100 m<sup>2</sup> of floor space shall be provided in all temporary structures. For protection of electrical installation, one carbon dioxide or ABC Dry Powder extinguisher of adequate size shall be provided for each switch gear, main meter and stage area. The location of these equipments shall be such that these are easily accessible in the event of a fire. The number of fire buckets and other various types of extinguishers may be provided as stipulated by the local licensing authority/fire authority or as per IS 2190.

**10.3** Advance intimation shall be given to fire service department of the proposed construction of any temporary structure or pandal for public functions, its location, size and type of temporary structure, number of people expected to be accommodated, arrangement of exits, etc.

**10.3.1** Local licensing authority may recommend the provision of stand by fire service at any temporary structure if such measure is deemed necessary. In such cases adequate water supply for the fire fighting service shall be ensured.

**10.4** A responsible person shall always be made available at the site of the temporary structure to organize prompt evacuation, fire fighting to deal with emergencies at the incipient stage and informing the fire service. The emergency fire service telephone number shall be displayed prominently.

## 11 MAINTENANCE

**11.1** All temporary structures shall be maintained in a safe and sanitary condition. All devices or safeguards which are required by this standard shall be maintained in good working condition.

**11.2** All temporary structures shall be periodically inspected and any deterioration and defect observed shall be brought to the notice of the authority for remedy.

**11.3** Particular attention shall be paid to ensure that the means of escape and gangways, exits, etc are not obstructed in any way and all buckets and extinguishers are easily visible and accessible before public is admitted at any time.

## ANNEX A

(Foreword)

## COMMITTEE COMPOSITION

Fire Safety Sectional Committee, CED 36

<i>Organization</i>	<i>Representative(s)</i>
Delhi Fire Services, New Delhi	SHRI R. C. SHARMA ( <b>Chairman</b> ) SHRI A. K. SHARMA ( <i>Alternate</i> )
Bhabha Atomic Research Centre, Mumbai	SHRI A. K. TANDLE
Builders Association of India, New Delhi	NOMINATION AWAITED
Central Building Research Institute, Roorkee	DR M. P. SINGH DR SUVIR SINGH ( <i>Alternate</i> )
Central Electricity Authority, New Delhi	SHRI C. S. KASANA SHRI P. C. KUREEL ( <i>Alternate</i> )
Central Glass and Ceramic Research Institute, Kolkata	NOMINATION AWAITED
Central Industrial Security Force, New Delhi	DEPUTY INSPECTOR GENERAL (FIRE) SHRI S. L. NAGARKAR ( <i>Alternate</i> )
Central Public Works Department, New Delhi	SHRI SATYA PRAKASH BARNWAL SHRI ASHOK KUMAR GOEL ( <i>Alternate</i> )
Centre for Fire & Explosive Environment Safety, New Delhi	DIRECTOR DR K. C. WADHWA ( <i>Alternate</i> )
Chennai Petroleum Corp. Ltd, Chennai	SHRI J. P. K. HEPAT
Controllerate of Quality Assurance, Pune	LT COL B. T. MANJUNATH SHRI M. B. PARADKAR ( <i>Alternate</i> )
Council of Architecture, New Delhi	SHRI A. R. RAMANATHAN SHRI GIRISH MISHRA ( <i>Alternate</i> )
Delhi Metro Rail Corporation Ltd, New Delhi	SMT TRIPTA KHURANA
Directorate General of Factory Advice Service & Labour Institute, Mumbai	SHRI A. K. GANGULY SHRI S. P. BANDOPADHYAYA ( <i>Alternate</i> )
Electricity Consumer Grievances Redressal Forum, New Delhi	SHRI HEMANT KUMAR
Engineer-in-Chief's Branch, New Delhi	SHRI A. K. RAY SHRI S. K. GUPTA ( <i>Alternate</i> )
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Engineers India Limited, New Delhi	SHRI ARVIND KUMAR MS ALPANA SRIVASTAVA ( <i>Alternate</i> )
GAIL, New Delhi	SHRI JAYANT CHAKRABORTY
Indian Oil Corporation Limited, Noida	SHRI T. K. KUMAR
Institution of Fire Engineers, New Delhi	PRESIDENT GENERAL SECRETARY ( <i>Alternate</i> )
Lloyd Insulations (India) Limited, New Delhi	SHRI K. K. MITRA SHRI SANJEEV ANGRA ( <i>Alternate</i> )
Ministry of Home Affairs, New Delhi	SHRI OM PRAKASH SHRI D. K. SHAMI ( <i>Alternate</i> )
Mumbai Fire Brigade, Mumbai	CHIEF FIRE OFFICER DEPUTY CHIEF FIRE OFFICER ( <i>Alternate</i> )
National Thermal Power Corporation Ltd, New Delhi	SHRI D. K. SURYANARAYAN
Oil Industry Safety Directorate, New Delhi	SHRI S. C. GUPTA SHRI B. R. GADEKAR ( <i>Alternate</i> )
Reliance Refineries Limited, Jamnagar	SHRI VARADENDRA KOTI SHRI UMESH KHANDALKAR ( <i>Alternate</i> )
Shriram Institute of Industrial Research, Delhi	NOMINATION AWAITED
State Bank of India, Mumbai	SHRI J. S. GAHLAUT

<i>Organization</i>	<i>Representative(s)</i>
In personal capacity ( <i>P/4 Belgacuta, Kolkata</i> )	SHRI S. N. KUNDU
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<i>Member Secretary</i>	
SHRI S. CHATURVEDI Scientist 'E' (Civ Engg), BIS	





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This Indian Standard has been developed from Doc No.: CED 36 (7651).

## Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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