भारतीय मानक

वर्तमान भवनों के अतिरिक्त निर्माण और उनमें परिवर्तन के दौरान सुरक्षा — रीति संहिता

Indian Standard

SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS—CODE OF PRACTICE

UDC 69·059·3 : 614·8 : 006·78

BUREAU OF INDIAN STANDARDS
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Price Group 2

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Safety in Construction Sectional Committee had been approved by the Civil Engineering Division Council.

A large number of workmen, skilled and unskilled, are employed in the numerous construction work, big and small, under execution in the country. Due to the increased tempo of such works and large scale machanization, hazards of accidents have increased considerably. It has, therefore, become imperative that adequate safety rules are laid down for every phase of work and that these are meticulously followed.

Safety aspects in some of the constructions may assume such a great importance that instead of merely deputing supervisory staff in adequate strength to look after the safety aspects, it may become desirable to have a separate organization to control this important aspect.

Many safety measures are required to be taken during construction and alterations to existing buildings for the safety of workers and public. It has, therefore, been felt necessary to lay down the safety measures required to be taken during such construction with a view to minimizing the risk of accidents and injuries and accordingly this standard has been brought out.

Indian Standard

SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS—CODE OF PRACTICE

1 SCOPE

This standard lays down the safety requirements required for various operations and items during additional construction and alteration to existing buildings.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard :

IS No.	*Title*
3696 (Part 1) : 1987	Safety code for scaffolds and ladders: Part 1 Scaffold (*first revision*)
3696 (Part 2) : 1991	Safety code for scaffolds and ladders : Part 2 Ladders (*first revision*)
3764 : 1992	Excavation work — Code of safety (*first revision*)
4081 : 1986	Safety code for blasting and related drilling operations (*first revision*)

3 EXCAVATION AND TRENCHING

3.1 Trenches and foundation pits shall be adequately and securely fenced, provided with proper caution signs and marked with red lights at suitable intervals during night to avoid accidents. Adequate protective measures shall be taken to see that the excavation operations do not affect or damage adjoining existing buildings.

3.2 Position of all underground installations such as sewer, gas pipes, water pipes, electrical cables and other civic facilities that may cause danger during the work shall be checked and proper precautions shall be taken not to damage them.

3.3 Land shall be cleared of trees, loose boulders and other obstructions before excavation commences so as to avoid accidents.

3.4 Where hard rock is met with and blasting operations are considered necessary, the contractor shall obtain the permission of the Engineer-in-Charge in writing for resorting to blasting operation. Only low explosive like gun power shall be used.

3.4.1 Proper precautions shall be taken for safety of persons and adjoining property before undertaking any blasting operation. Red flags shall be prominently displayed around the area to be blasted. All the people on the work except those who actually light the fuses shall be withdrawn to a safe distance of not less than 300 meters from the blasting site. Recommendations given in IS 4081 : 1986 shall be followed for safety during various operations involved in the process of blasting.

NOTE — Explosive of high velocity of detonation shall not be used. Only low type of explosive or chemical which swells shall be used for the purpose of breaking hard rock.

3.5 All trenches 1·2 m or more in depth shall at all times be supplied with at least one ladder for each 30 m length or fraction thereof. Ladder shall be extended from the bottom of the trench to at least 90 cm above the surface of the ground. The side of the trenches which are 1·5 m or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1·5 m of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

3.6 Shoring and strutting, where necessary, shall closely follow the excavation.

3.7 Recommendations given in IS 3764 : 1992 shall be followed, to the extent applicable, depending on site condition.

4 SCAFFOLD AND LADDERS

4.1 Suitable scaffolds should be provided for workmen for all works that cannot be safely done from the ground or from solid construction, except such work as can be done safely from ladders for a short period. When a ladder is used, an extra *mazdoor* shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholes shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 to 4 (1 horizontal to 4 vertical).

4.2 Scaffolding or staging at and above 3·5 m height above the ground or floor shall have a guard rail properly attached, bolted, braced and secured at least 90 cm high above the floor or platform. Such guard rails shall be provided with openings as may be necessary for the delivery of materials. Scaffolding or staging shall be fixed to prevent it from swaying from the building or structure.

Safety requirements described in IS 3696 (Parts 1 and 2) shall be followed while using scaffolds and ladders.

5 WORKING PLATFORM, GANGWAYS AND STAIRWAYS

5.1 These should be so constructed that they do not sag unduly or unequally. If the height of the platform or the gangway or the stairway is more than 3·5 m above ground level or floor level, they should be constructed with planks closely secured and suitably fastened.

5.2 Openings in the Floor of Buildings

Every openings in the floor of a building or in a working platform shall be provided with necessary railing and/or toe guard.

5.3 Safe Means of Access

Safe means of access shall be provided to all working platforms and other workings places. Every ladder shall be securely fixed. Ladders conforming to the requirements described in IS 3696 (Part 2) : 1991 shall be used.

6 ELECTRICAL INSTALLATIONS AND SYSTEM

6.1 Adequate precautions shall be taken to prevent danger from electrical installations as described in Indian Standard Recommendations for preventive measures against hazards at worksites for electrical safety (under preparation).

6.2 Temporary electrical lines shall be hung overhead and not run along the floor. All electrical system components shall be protected from damage.

7 STACKING OF MATERIALS

7.1 No materials at worksites shall be so stacked or placed as to cause danger or inconvenience to any worker or the public. Necessary fencing and lights to protect the public from accidents are to be provided.

7.2 No overloading which is likely to disturb the stability of the structure, shall be done on any of the floor or a part of the building.

7.2.1 Waste materials should be cleared and removed as demolition proceeds so as to prevent overloading and obstruction for workmen.

7.3 Materials liable to cause persons to slip or trip and fall should be cleared immediately.

7.4 Projecting nails shall be removed or bent over.

8 PROTECTIVE BARRIERS

Where there is a danger of collapse of structure, steps shall be taken to barricade the area and support the structure.

9 SAFETY EQUIPMENT FOR WORKERS

9.1 All necessary personal safety equipment as considered necessary should be kept available for use of the persons employed on the site and maintained in a condition suitable for immediate use.

9.2 Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective hand and foot wear and protective goggles.

9.3 Workers employed in white washing and stacking of cement bags or any materials which are injurious to the eyes shall be provided with protective goggles.

9.4 Workers engaged in welding works shall be provided with welders protective eye shields.

9.5 Stone breakers shall be provided with protective goggles, leg guards and protective clothings and they should be seated at sufficiently safe distance from each other.

9.6 Whenever workmen are employed on the work of lead painting, the following precautions should be taken:

a) No paint containing lead or lead products shall be used except in the form of paste or ready mixed paint.

b) Suitable face masks shall be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is to be dry rubbed and scrapped.

9.7 Use of Hoisting Machines

9.7.1 Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following requirements:

a) These shall be of good mechanical construction, sound material and adequate strength and free from patent repair and defects and shall be kept in good working condition.

b) Every rope used in hoisting or lowering materials or as a means of suspension, shall be of durable quality and adequate strength, and free from patent defects.

9.7.2 In case of every hoisting machine and of every chain, ring, hook, shackle, swivel and block used in hoisting or as a means of suspension, the safe working load shall be ascertained by approved means. Every hoisting machine referred to above shall be marked with safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above shall be loaded beyond the safe working load except for the purpose of testing.

9.7.3 In case of departmental machines, the safe working load shall be notified. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the principal employer and whenever the contractor brings any machinery to site of work, he should get it verified by the competent authority.

9.7.4 Motors, transmission gears, electric wiring and other parts of hoisting appliances should be provided with means to reduce the risk of accidental descent of the load. Precautions should be taken to avoid the risk of any part of a suspended load being accidentally dislodged.

9.7.5 When workers are employed on electrical installations which are already energised, insulating mats and wearing apparel, such as gloves, sleeves and tools, as may be necessary, shall be provided. The workers should not wear any ring, watch, and carry keys or other materials which are good conductor of electricity.

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