N E P A L N A T I O N A L B U I L D I N G C O D E

NBC 107 : 1994

PROVISIONAL RECOMMENDATION ON FIRE SAFETY

His Majesty's Government of Nepal
Ministry of Physical Planning and Works
Department of Urban Development and Building Construction
Babar Mahal, Kathmandu, NEPAL
2060

NEPAL NATIONAL BUILDING CODE

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This publication represents a standard of good practice and therefore takes the form of recommendations. Compliance with it does not confer immunity from relevant legal requirements, including bylaws

श्री ५ को सरकार (मन्त्रिपरिषद्) को मिति २०६०।४।१२ को निर्णयानुसार स्वीकृत

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Preface

This Nepal Standard was prepared during 1993 as part of a project to prepare a draft National Building Code for Nepal.

In 1988 the Ministry of Housing and Physical Planning (MHPP), conscious of the growing needs of Nepal's urban and shelter sectors, requested technical assistance from the United Nations Development Programme and their executing agency, United Nations Centre for Human Settlements (UNCHS).

A programme of Policy and Technical Support was set up within the Ministry (UNDP Project NEP/88/054) and a number of activities have been undertaken within this framework.

The 1988 earthquake in Nepal, and the resulting deaths and damage to both housing and schools, again drew attention to the need for changes and improvement in current building construction and design methods.

Until now, Nepal has not had any regulations or documents of its own setting out either requirements or good practice for achieving satisfactory strength in buildings.

In late 1991 the MHPP and UNCHS requested proposals for the development of such regulations and documents from international organisations in response to terms of reference prepared by a panel of experts.

This document has been prepared by the subcontractor's team working within the Department of Building, the team including members of the Department and the MHPP. As part of the proposed management and implementation strategy, it has been prepared so as to conform with the general presentation requirements of the Nepal Bureau of Standards and Metrology.

The subproject has been undertaken under the aegis of an Advisory Panel to the MHPP.

The Advisory Panel consisted of :

Mr. UB Malla, Joint Secretary, MHPP	**Chairman**
Director General, Department of Building (Mr. LR Upadhyay)	**Member**
Mr. AR Pant, Under Secretary, MHPP	**Member**
Director General, Department of Mines & Geology (Mr. PL Shrestha)	**Member**
Director General, Nepal Bureau of Standards & Metrology (Mr. PB Manandhar)	**Member**
Dean, Institute of Engineering, Tribhuvan University (Dr. SB Mathe)	**Member**
Project Chief, Earthquake Areas Rehabilitation & Reconstruction Project	**Member**
President, Nepal Engineers Association	**Member**
Law Officer, MHPP (Mr. RB Dange)	**Member**
Representative, Society of Consulting Architectural & Engineering Firms (SCAEF)	**Member**

Representative, Society of Nepalese Architects (SONA) **Member**
Deputy Director General, Department of Building,
(Mr. JP Pradhan) **Member-Secretary**

The Subcontractor was BECA WORLEY INTERNATIONAL CONSULTANTS LTD. of New Zealand in conjunction with subconsultants who included :

Golder Associates Ltd., Canada
SILT Consultants P. Ltd., Nepal
TAEC Consult (P.) Ltd., Nepal
Urban Regional Research, USA

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0. Foreword

0.1 This Standard covers the basic requirements for fire safety in the design of ordinary **buildings**.

0.2 This Standard, with due consideration to the severe limitations on the issue of fire protection in Nepali conditions, takes a modest approach. It deals only with the minimum requirements of exits from and access to ordinary residential buildings from the fire safety point of view. **Designers are encouraged, wherever possible, to incorporate higher levels of fire safety in their designs by following other relevant reference, Standards or Codes.**

1 Scope

1.1 This Standard provides fundamental requirements for fire safety in ordinary buildings. These requirements do not necessarily cover the fire safety provisions needed for other buildings. For the design of such other buildings, other relevant Codes and Standards which might be followed have been suggested.

2 Interpretation

2.1 General

2.1.1 In this Standard the word "shall" indicates a requirement that is to be adopted in order to comply with the Standard, while the word "should" indicates recommended practice.

2.1.2 Commentary clauses are prefaced by the letter C and the number of the appropriate clause subject to comment.

2.1.3 Words implying the singular also include the plural and vice-versa where the context requires it.

2.2 Terminology

For the purpose of this Standard, the following definitions shall apply, unless inconsistent with the context :

IMPORTANT BUILDINGS means those buildings which either house facilities essential before and after disaster (eg, hospitals, fire and police stations, communication centres, etc), or which by their very purpose have to house several persons at one time (eg, cinema halls, schools, convention centres, etc), or will have national and international importance (eg, palaces, etc), or which house hazardous facilities (eg, toxic or explosive facilities, etc).

ORDINARY BUILDINGS are the buildings, which do not come under the category of important buildings. They include commercial and office buildings.

3 Types of Construction and Appliances

3.1 Fire Places

All buildings having a kitchen should be provided **with a fireplace and a chimney** in order to reduce the possibilities of the occurrence of accidental fire. Open hearths should be discouraged and eliminated wherever possible. Timber construction should not be placed near the fire place, nor should it remain exposed in the vicinity of fire. Such surfaces should remain encased by plaster, whether of mud or other binders, suitable for the purpose.

3.2 Fire Extinguishers

Occupants are encouraged to install appropriate portable fire extinguishers in their building.

Where open hearth or kerosene stoves are used for cooking, sufficient water should be stored in containers for emergency use in case of fire.

4 Fire Zones

In urban areas, the demarcation of fire zones should be carried out in consultation with the relevant municipal authority as and when deemed necessary.

These shall conform to the requirements specified by the Department of Urban Development and Building Construction or any other agency responsible for developing and demarcating such fire zones.

5 General Requirements

All buildings shall be designed in such a way that they can contribute to the containment of a fire and thus reduce its spread to other buildings.

5.1 Provision of a Proper Access

Every building should have an access as defined by Architectural Design Requirements (NBC 206) and should be wide enough to enable the fireman to easily approach to the building site.

5.2 Provision of Wide Doors

The entry door shall be as defined by Architectural Design Requirements (NBC 206) and should be sufficiently wide and tall so that easy access in available to the fire man.

5.3 Provision of Fire Escape Ways

All buildings should have sufficient ways as defined by Architectural Design Requirements (NBC 206) so as to allow the rapid evacuation of all occupants in the event of fire, if any. In addition to the main entrance, the side and/or rear entrance shall be incorporated in the design.

The set back and/ or open space shall conform to the planning and building by-laws adopted by the concerned and authorized territorial authority.

5.4 Provision of Open Space

The front entrance should have enough open space as defined by Architectural Design Requirements (NBC 206) so that a number of people can gather and contribute in extinguishing the fire, if any.

6 Exit Requirements

6.1 General Requirements

An exit normally shall consist of either a doorway, corridor or passageway to an internal staircase, to an external staircase, to a verandah leading to the street, to the roof of a building, or to the street. The exit may also lead to another building in the neighbourhood. The exit should :

a) be able to allow the evacuation of all the occupants in a relatively short time;

b) meet the minimum requirements as to size;

c) be free of any obstructions and shall not provide any resistance to movement;

d) be clearly visible, preferably with proper signs;

e) be continuous and shall not intrude into private space.

6.2 Number of Exits

6.2.1 Stairs

The number of stairs in any building, especially when it exceeds 500 square metres in plinth area, shall be a minimum of two, one internal and the other an external fire escape. Additional stairs shall be provided in proportion to any increase in the plinth area.

In the case of residential buildings, the minimum width of the stairs shall be 90 cm. For other buildings, the minimum width shall be 1.5 m. The distance from any point in a passageway to a staircase in a building shall not exceed 20 metres.

6.2.2 Fire Escapes

Every building more than five storeys high shall have a separate fire escape having a minimum width of 75 cm. The fire escape shall have a minimum tread width of 20 cm and each riser shall be not more than 19 cm high. The number of risers per flight shall not be more than 15. Such a fire escape shall carry users towards an open space.

6.2.3 Exit Doors

Exit doors shall open to a passageway or to a corridor.

They should open outwards, but without restricting the movement of people passing outside the door.

The maximum distance of such an exit doorway from any point in a passage shall be 20 m.

The exit doorway shall neither be smaller than 90 cm in width, nor 180 cm in height.

7 Access to a Building

It shall comply with all applicable zoning requirements and by-laws of the local planning and building authority.

The access leading to a building should preferably be by a road at least four metres wide, and no such road should lead to a dead end. The road should not have such sharp or restricted turns that the passage of a fire engine is made difficult in the event of fire.

8 Lightning Arresters/Conductors

There have been many incidents in Nepal when lightning strikes have resulted in fire in buildings and a consequential loss of life and property. The need to install lightning arresters/conductors is therefore important.

A lightning arrester shall be located in the highest part of every building and it shall be connected by a conductor to an earth rod buried in the earth. The lightning arrester shall be so located that as much as possible of the building lies inside the surface of an imaginary cone having a vertex angle of 45 degrees and its apex at the top of the arrester.

9 References

- National Building Code of India 1983, Part IV, Bureau of Indian Standards, New Delhi.
- United Building Code (UBC), Part VII, Chapters 33 & 37, USA.
- MV Lisitsyan and EC Pronin, "Architectural Design for Dwelling Houses", Moscow, 1990 (available in Russian and English).