

July, 2007

- **Additional Provisions in Development Control Regulations for Safety and**
- **Additional Provisions in Building Regulations/Byelaws for Structural Safety**  
—In Natural Hazard Zones of India

## **VOLUME -I (B)**

**FOR NAGAR PANCHAYAT  
(BASED ON THE REPORT AS PER VOLUME -I)**

**ADDITIONAL PROVISIONS IN DEVELOPMENT CONTROL REGULATIONS FOR  
SAFETY**

**&**

**ADDITIONAL PROVISIONS IN BUILDING REGULATIONS/BYE-LAWS FOR  
STRUCTURAL SAFETY**

**-IN NATURAL HAZARD ZONES OF INDIA**

**FOR NAGAR PANCHAYATS  
( BASED ON THE REPORT AS PER VOLUME-I)**

**Prepared by**

**COMMITTEE OF EXPERTS**

**Constituted by**

**MINISTRY OF HOME AFFAIRS  
NATIONAL DISASTER MANAGEMENT DIVISION**

# **Additional provision in DCR for safety in Natural Hazard Prone Areas and provisions for structural safety in building regulations/bye-laws**

## **INTRODUCTION:**

The recommendations by the Committee of Experts constituted by the National Disaster Management Division, Ministry of Home Affairs, Govt. of India, for amendment in the DCR and Building Bye-laws for safety in Natural Hazard Prone Areas have been listed in Volume – I.

Mainly these recommendations, have been made for larger cities, where development and construction activities are enormous and even the higher level authorities with substantial technical manpower may be available, though these recommendations are optimal in nature, but for smaller and medium size towns where the lower order construction activities and their nature are different, there appears to a need to further simplify these regulations and building bye-laws with a view to facilitate implementation in such Towns.

## **Planning System as the Constitutional Obligation**

According to the Constitution (74<sup>th</sup> Amendment) Act 1992 (74<sup>th</sup> CAA), it is the obligation of the Government of different States to amend their relevant laws as per its provisions. Practically all the States have amended their Municipal Acts as per the 74<sup>th</sup> CAA. However, most of the States are yet to devolve powers and functions as per 74<sup>th</sup> CAA. It is particularly true in respect to urban planning including town planning function, and constitution of District Planning Committee (DPCs), and Metropolitan Planning Committee (MPCs). It is the constitutional obligation to provide legislative support to the following provisions of 74<sup>th</sup> CAA:

- Devolution of town planning function to urban local bodies (ULBs) ( Article 243-W and Twelfth Schedule ) as a mandatory provision;
- Provisions for preparation and implementation of urban development plan;
- Constitution of DPCs (Article 243-ZD) with one of the members to be appointed by the State Government being a full-time Urban and Regional Planner known as District Planning Member.
- Constitution of MPCs (Article 243-ZE) with one of the members to be appointed by the State Government being a full-time Urban and Regional Planner known as Metropolitan Planning Member.
- Repealing or amendments in Development Authorities Acts as their role will cease or change after devolution of town planning function to ULBs; and
- Contents of Districts Plan, Metropolitan Area Plans to include spatial planning as per Article 243-ZD (3) and 243-ZE(3).

## **District Planning Committees (DPCs)**

The opportunities, problems and issues of rural –urban inter-relationship need a rural-urban platform to address them at the district level and integrate the rural urban concerns to ensure the continuum. Article 243ZD provides for constitution of District Planning Committee (DPC) at the district level to consolidate the plans prepared by the Panchayats and Municipalities in the district and to prepare a draft development plan for the district as a whole. The DPCs act

as a platform for integrated planning for rural and urban areas and formulation of district development plan. Most States have passed enabling Acts to constitute District Planning Committee. So far 14 states have constituted DPCs\*.

### **Metropolitan Planning Committees (MPCs)**

Most of the metropolitan cities are urban agglomerations comprising several municipal jurisdictions. The metropolitan area encompasses not only the main city having a municipal corporation status but also a number of other urban and rural local bodies, surrounding the main city corporation. Among 35 metropolitan urban agglomerations, 18 are multi municipal agglomeration, 14 are one municipality plus other urban settlements, and 3 are principally single municipal corporations.

The 74<sup>th</sup> Constitution Amendment under Article 243ZE mandatorily prescribes the constitution of Metropolitan Planning Committee (MPC). The MPC is required to integrate urban and rural planning, facilitate the development or regional infrastructure and promote environment conservation. MPC has been conceived as an inter-governmental, inter-organizational collaborative platform for preparation of proper plan for the metropolitan area in association with the main city.

Although there are 15 States which have metropolitan areas, but so far only 8 States, (Karnataka, Kerala, Maharastra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal) have passed enabling laws. West Bengal and Maharashtra, among them, are the only two States to have enacted separate Acts for the constitution of MPC. The MPC has actually been set up only for Kolkata in West Bengal in the year 2001 and is the first State to constitute MPC so far with Kolkata Metropolitan Development Authority (KMDA) serving as its secretariat.

The 74<sup>th</sup> Amendment has given importance to urban local bodies for city development but has also provided a valuable opportunity to the Development Authorities to be more purposeful and make more effective use of its technical resources by becoming the technical arm of the MPCs as in Kolkata MPC. This approach can make the Development Authorities more relevant and accountable by engaging them within the structure of urban governance, as envisaged in the Constitution Amendment.

### **PROPOSAL**

The enactment of 73<sup>rd</sup> and 74<sup>th</sup> Constitution Amendment Act is indeed a first step in the process of devolution of powers to the people at grass root level. In order to bring about uniformity in the constitution of Municipalities in the country three types of local bodies have been envisaged.

- (i) Nagar Panchayat for transitional area;
- (ii) Municipal Council for small urban areas;
- (iii) Municipal Corporations for large urban areas.

Besides, the Act envisages, to create MPCs and DPCs which have been empowered respectively to prepare Development Plans for Metropolitan Area and Development Plan for District as a whole. These Development Plans need to take care

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\* As per Ministry of Panchayati Raj, GOI as published in H.T dated 24<sup>th</sup> April, 07.

of the Natural Hazard Prone Areas and the land use zoning regulations as per recommendations given by MHA Committee as per volume – 1. However, the requisite amendments in the

planning legislation in the State are to be done in order to give a legal support to MPCs and DPCs while preparing Development Plans. The development and construction activities are to be regulated and controlled by the respective ULBs in their areas.

### **Municipal Corporations:**

Large Cities within its planning area/influence area / urban agglomeration area/development area or controlled area whichever may be applicable as defined in the respective Town Planning Act of the State is to be controlled by the Municipal Corporations. Therefore, the provisions of the structural safety in building regulations/bye-laws are to be incorporated as per recommendations in Volume – I. Till such time, the MPCs and DPCs are constituted and powers are devolved to ULBs the Development Authorities or other Local Authorities, as the nomenclature may be different in different States, who at present are implementing Development Plans and controlling and regulating developmental and construction activities through the existing DCRs and Bye-Laws which are required to be amended as per recommendations, given by the Expert Committee constituted by MHA, as listed in Volume – I

### **Municipal Councils:**

Such town may fall in the category of class III to class I towns having population ranging between 20,000 to 1,00,000 as per Census of India. In such towns, though the development and construction activities are of lower order in their area of jurisdiction as stated in the above para, and also presently the lack of technical staff may be constraint but in a time scale these urban areas will have far greater attraction for real estate development. For such towns and cities the development plan may have been prepared under planning legislation or yet to be prepared by DPC after its constitution. In both the cases, even if the legislative amendments have not been done, but while sitting projects and preparing planning schemes, the provision of chapter 3 of Volume – I which pertains to the regulations for land use zoning for natural hazard prone areas must be followed. Therefore, as a reference and guideline to DPCs, this chapter 3 is enclosed as Annexure to the proposed simplified version of Volume-1, termed as Volume – I(A). The provisions of chapter 4 and chapter 5 and appendix –B, the prescribed Forms must form part of the recommendations to amend building bye-laws of the Municipal Councils. However, certain professionals like, Construction Management Agencies, Quality Auditor, Quality Audit Agencies, Geo-Technical Agency etc. may not be required, similarly certain Forms like Form No.8,9,10, 15,16 may not be required and only one Form No.7 to ascertain the progress at plinth level would be sufficient. Accordingly the recommendations have been grouped and the volume applicable to Municipal Council Area would be termed as Volume – 1(A).

### **Nagar Panchayats :**

Small towns with class –IV to class VI as per Census of India, may have some building bye-laws for approval of building plans in their areas of jurisdiction but the technical expertise may be a big constraint, also the construction activities are of much lower order. The building bye-laws need to be simplified to a greater extent and the provision of Chapters 3, and 4 are not to be included, similarly, the technical professionals be limited with the requisite reduction in the Forms required to be certified. Thus, the simplified volume would be termed as volume 1(B) for such ULB's.

However, incase of life line buildings or building beyond ground +2 storey or having covered area more than 500 sqm (may be changed as per local requirements) may be referred to the DPCs,

wherever DPCs have not been constituted, in such cases it can be referred to the nearest Development Authority in the Commissioneries for Technical Advice or scrutiny from structural safety view point before approval by the Competent Authority of such ULBs.

**Directions :**

The State Government, MPCs or DPCs as may be applicable in a particular State may give necessary directions, as per legal provisions in the respective planning legislation, for scrutiny of the life line structures and other important buildings from the structural safety point of view by the technical staff available in higher order ULBs, before approval by the Competent Authority of the lower ULBs. For technical advice lower ULBs may be attached with the higher ULBs which may be the nearest higher ULBs in the respective Commissioneries.

**REFERENCE**

This document is based on the recommendations, of the Expert Committee constituted by the Govt. of India, Ministry of Home Affairs, as contained in Volume – I. therefore, the requisite clauses viz-a-viz class of towns of local authorities, where amendments in their DCR and bye-laws are required, have been kept as the same number, so that reference is easy and without any ambiguity. It is therefore, clarified that the clauses are not continuous in numbering but refer to the main document Volume – I. The guidelines and structural safety provision for landslides and cyclone prone areas need not be included wherever not applicable.

## CONTENTS

### INTRODUCTION

Planning System as Constitutional obligation	
DPCs and MPCs	
Proposals	
Municipal Corporations	
Municipal Council	
Nagar Panchayat	
Directions and References	3-6

<b>Chapter 5 - ADDITIONAL PROVISIONS IN BUILDING REGULATIONS/ BYE-LAWS FOR STRUCTURAL SAFETY IN NATURAL HAZARD PRONE AREAS</b>	8-10
--	------

5.1 STRUCTURAL DESIGN	
5.2 STRUCTURAL DESIGN BASIS REPORT	
5.3 SEISMIC STRENGTHENING/RETROFITTING	
5.9 STRUCTURAL REQUIREMENTS OF LOW COST HOUSING	
5.10 INSPECTION	

<b>APPENDIX B - REGISTRATION, QUALIFICATIONS AND DUTIES OF PROFESSIONALS</b>	11-17
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B 1. REGISTRATION OF PROFESSIONALS	
B 2. APPOINTMENT OF PROFESSIONALS	
B 3 GENERAL DUTIES AND RESPONSIBILITIES APPLICABLE TO ALL PROFESSIONALS	
B 4 DEVELOPER	
B 5 OWNER	
B 6 BUILDER/CONTRACTOR	

<b>APPENDIX –C 1. MINUTES OF THE MEETING OF MEMBERS OF EXPERT GROUP HELD ON 20.4.2007.</b>	
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2. LETTER DATED 4.5.07 TO MEMBERS.

<b>FORMS</b>	18-27
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# ADDITIONAL PROVISIONS IN BUILDING REGULATIONS/ BYE-LAWS FOR STRUCTURAL SAFETY IN NATURAL HAZARD PRONE AREAS

## 5.1 STRUCTURAL DESIGN

For any building under the jurisdiction of these regulations structural design/ retrofitting shall only be carried out by a Structural Engineer on Record (SER) or Structural Design Agency on Record (SDAR).

Generally, the structural design of foundations, elements of masonry, timber, plain concrete, reinforced concrete, pre-stressed concrete and structural steel shall conform to the provisions of part VI Structural Design Section - 1 Loads, Section - 2 Foundation, Section - 3 Wood, Section - 4 Masonry, Section - 5 Concrete & Section - 6 Steel of National Building Code of India (NBC), taking into consideration the Indian Standards as given below:

### For General Structural Safety

1. IS: 456:2000 "Code of Practice for Plain and Reinforced Concrete
2. IS: 800-1984 "Code of Practice for General Construction in Steel
3. IS 875 ( Part 2):1987 Design loads ( other than earthquake ) for buildings and structures Part2 Imposed Loads
4. IS: 1904:1987 "Code of Practice for Structural Safety of Buildings: Foundation"
5. IS1905:1987 "Code of Practice for Structural Safety of Buildings: Masonry Walls

### For Earthquake Protection

- 14 IS: 1893-2002 "Criteria for Earthquake Resistant Design of Structures (Fifth Revision)"
- 15 IS:13920-1993 "Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces - Code of Practice"
- 16 IS:4326-1993 "Earthquake Resistant Design and Construction of Buildings - Code of Practice (Second Revision)"
- 17 IS:13828-1993 "Improving Earthquake Resistance of Low Strength Masonry

## 5.2 STRUCTURAL DESIGN BASIS REPORT

In compliance of the design with the above Indian Standard, the Structural Engineer on Record will submit a structural design basis report in the Proforma attached herewith covering the essential safety requirements specified in the Standard.

(i) The "Structural Design Basis Report (SDBR)" consists of four parts (**Form No. 6**)

Part-1 - General Information/ Data

Part-2 - Load Bearing Masonry Buildings

(iii) SDBR as detailed below shall be submitted to the appropriate authority as soon as design of foundation is completed, but not later than **one month** prior to commencement of construction.

Part-1 Completed

Part-2, Part-3 or Part-4 ( if applicable) Completed

## 5.3 SEISMIC STRENGTHENING/RETROFITTING

Prior to seismic strengthening/ retrofitting of any existing structure, evaluation of the existing structure as regards structural vulnerability in the specified wind/ seismic hazard zone shall be carried out by a RSE/RSDA. If as per the evaluation of the RSE/RSDA the seismic resistance is assessed to be less than the specified minimum seismic resistance as given in the note below, action will be initiated to carry out the upgrading of the seismic resistance of the building as per applicable standard guidelines.

Note: (a) for masonry buildings reference is to be made to IS: 4326 and IS: 13935 and (b) for concrete buildings and structures reference to be made to BIS code on evaluation and seismic strengthening for retrofitting of RCC buildings under preparation at present.

## 5.9 STRUCTURAL REQUIREMENTS OF LOW COST HOUSING

Notwithstanding anything contained herein, for the structural safety and services for development of low cost housing, the relevant provisions of applicable IS Codes shall be enforced.

## 5.10 INSPECTION

The general requirement for inspection of the development shall also include the following regulation.

### **5.10.1 General Requirements**

The building unit intended to be developed shall be in conformity with Regulation on requirement of site. Generally all development work for which permission is required shall be subject to inspection by the Competent Authority as deemed fit.

### **5.10.2 Record of Construction Progress**

#### **(d) Completion Report**

- i) It shall be incumbent on every applicant whose plans have been approved, to submit a completion report in Form No.11.
- ii) It shall also be incumbent on every person / agency who is engaged under this Development Control Regulations to supervise the erection or re-erection of the building, to submit the completion report in Form No.12 and 13 prescribed under these Development Control Regulations.
- iii) No completion report shall be accepted unless completion plan is approved by the Competent Authority.

### **5.10.3 Issue of Occupancy Certificate**

The Authority issuing occupancy certificate before doing so shall ensure that following are complied from consideration of safety against natural hazard.

- (i) Certificate of lift Inspector has been procured & submitted by the owner, regarding satisfactory erection of Lift.
- (ii) The Certificate of Competent Authority and or fire department for completion and or fire requirements as provided in regulations has been procured and submitted by the owner.
- (iii) If any project consists of more than one detached or semi detached building / buildings in a building unit and any building / buildings there of is completed as per provisions of D.C.R.. (Such as Parking, Common Plots, Internal Roads, Height of the Building, Infrastructure facilities, lift and fire safety measures), the competent authority may issue completion certificate for such one detached or semi detached building / buildings in a building unit.

The occupancy certificate shall not be issued unless the information is supplied by the Owner and the Architect on Record/ Engineer on Record concerned in the schedule as prescribed by the Competent Authority from time to time.

## REGISTRATION, QUALIFICATIONS AND DUTIES OF PROFESSIONALS

### B1. REGISTRATION OF PROFESSIONALS

B1.1 The competent Authority shall register Town Planners (RTP), Architects (RA), Structural Engineers (RSE), Construction Engineers (RCE), Developers (RD), Owner wherever applicable, till such time there is no legislative frame for the professionals like engineers and others, similar to Architects Act 1972.

Application for registration shall be submitted by these professionals to the competent authority.

Registration shall be valid for a period of three years and shall be renewable.

### B1.2 REGISTERED STRUCTURAL ENGINEER (RSE)

On the basis of their academic qualifications and experience, Structural Engineers shall be "Registered" The eligibility criteria for registration and the "Scope of Work" which can be entrusted to the Structural Engineer are given below.

This registration shall be renewed every three years.

The registration may be cancelled permanently or for a specified period for unprofessional conduct.

**Scope of work:** To prepare structural design and structural drawings of High rise buildings, Educational Institutes, Hospitals, Public buildings, Special structures, Lifeline Buildings and the likes.

**Eligibility:**

- (i) B. E. Civil or equivalent with minimum 10 years experience (after attaining the degree) in structural design work at a responsible position as a structural designer OR
- (ii) M. E. Structures/ Earthquake Engineering or Ph.D. in Structural Engineering with minimum 5 years of experience (after attaining the degree) in structural design work at a responsible position a structural designer

- (iii) The experience as stated above shall be under a Structural Engineer on Record. (This requirement shall be waived for the first ten years of the promulgation of these Regulations)
- (i) This requirement shall be waived for the first five years of the promulgation of these Regulations)

#### **B1.4 REGISTERED CONSTRUCTION ENGINEER (RCE)**

- (A) The requirements for registration shall be:
  - (i) B.E. Civil or equivalent with five years experience in construction or
  - (ii) Diploma in Civil Engineering with seven years experience in construction
  - (iii) B.Arch or its equivalent with a degree or diploma in Construction Management and five years of experience in construction.
  - (iv) The experience as stated above shall be under one or more Construction Engineer on Record or under one or more reputed construction companies. Such company or companies established within or outside the area of jurisdiction of the competent authority shall be of minimum ten years of standing.
- (B) The registration shall be renewed every three years.
- (C) The registration may be cancelled for unprofessional conduct permanently or for a specified period.

#### **B.1.9 REGISTERED ARCHITECT (RA)**

##### **Qualification and Experience:-**

The person/ firm/company acting as Architect shall be registered with Council of Architecture and shall be bound by the terms & conditions as prescribed under the professional rules by the Council of Architecture to render professional services.

#### **B.1.10 TOWN PLANNER ON RECORD (TPR)**

The qualifications, responsibility and the professional charges shall be applicable as prescribed by the Institute of Town Planners, India for rendering professional services.

### **B3 GENERAL DUTIES AND RESPONSIBILITIES APPLICABLE TO ALL PROFESSIONALS**

- a) Each Professional shall clearly indicate on every plan, document & submission, prepared by him the details of his / her designation with registration number and date, full name and his/her address below the signature for identification.

- b) The Structural Engineer on Record and Architect on Record shall be responsible for adhering to the provisions of the relevant and prevailing 'Indian Standard Specifications'. They will not be held responsible for the severe damage or collapse that may occur under the natural forces going beyond the design forces provided in the above 'Indian Standard Specifications'

### **B3.1 STRUCTURAL ENGINEER ON RECORD (SER)**

#### **Duties and Responsibilities**

- (A) At the time of seeking permission from Competent Authority for starting construction, the Owner shall submit an undertaking from SER that
- (i) the SER is agreeable to accept the assignment to prepare designs, drawings and specifications.
  - (ii) the designs shall be carried out according to relevant national codes and specifications and good engineering practice.
  - (iii) A structural design report giving salient features of the structure, loads and soil characteristics and capacity, etc. shall be submitted in the prescribed format
- (B) In the case of high-rise buildings and Special Structures, SER shall
- (i) prepare Preliminary Design of the structure in addition to the Report indicated in A (iii) above.
  - (ii) get required soil (geo-technical) investigation done from an approved laboratory and submit the report concerning the same in prescribed format to the Competent Authority.
  - (iii) get the Preliminary Design checked through third party verification by a member of Structural Design Review Panel and submit a certificate concerning the same to the Competent Authority. Provided that in case of high-rise buildings having seven or more structural floors and special structures detailed design verification of major structural components will be required.
- (C) All Reports and other submissions to the Competent Authority shall only be signed by Registered Structural Engineer (SER) as a proprietor, partner or as a designated officer of the company.
- (D)
- a) To prepare a report of the structural design.
  - b) To prepare detailed structural design and to prescribe the method and technique of its execution strictly on the basis of National Building Code or relevant Indian Standard Specifications.
  - c) To prepare detailed structural drawings and specifications for execution indicating thereon, design live loads, safe soil bearing capacity, specifications of material, assumptions made in design, special precautions to be taken by contractor to suit the design assumptions etc whatever applicable.

- d) To supply two copies of structural drawings to the supervisor.
- e) To advise the Owner/ Architect/Engineer for arranging for tests and their reports for soil, building material etc. for his evaluation and design consideration.
- f) To prepare the revised calculations & drawings in case of any revision with reference to the earlier submission of drawings & design in a particular case.
- g) To inform in writing the Competent Authority within 7 days, if for any reason, he/she is relieved of his appointment/responsibilities as the registered Structural designer for the development.

### **B3.2 CONSTRUCTION ENGINEER ON RECORD (CER)**

All construction work shall be carried out under the supervision of a Construction Engineer on Record.

#### **Duties and Responsibilities:**

- a) To adhere strictly to the structural drawings, specifications and written instructions of the Structural Engineer on Record and Architect on Record / Engineer on Record
- b) To follow the provisions of N.B.C. or I.S. specifications as regards materials, components, quality control and the process of construction.
- c) To provide for safety of workers and others during excavation, construction and erection.
- d) TO provide safe and adequate temporary structure required for construction and erection.
- e) To bring to the notice of the structural designer and Architect/Engineer any situation or circumstances which in his opinion are liable to endanger the safety of the structure.
- f) To deposit with the Competent Authority one set of working drawings of the works executed along with the progress certificates before proceeding with the next stage of the work.
- g) He/she shall be in overall charge of the site and responsible for overall supervision of the work.
- h) He/she shall ensure that all the work under his charge is carried out in conformity with the approved drawings and as per the details and specifications supplied by the registered Architect/Engineer.
- i) He/she shall take adequate measures to ensure that no damage is caused to the work under construction and adjoining properties.
- j) He/she shall also ensure that no undue inconvenience is caused in the course of his/her work to the people in the neighborhood.

- k) He shall also ensure that no nuisance is caused to traffic & neighboring people by way of noise, dust, smell, vibration etc. in the course of his/her work.

#### **B 4 DEVELOPER**

##### **Duties and responsibilities**

The responsibilities of developers shall be:

1. To obtain and submit to the Competent Authority, along with application for development permission, each progress report and application for occupation certificate.
2. To appoint an Architect on Record/ Engineer on Record and Structural Engineer on Record.
3. To obtain at relevant stages certificates from them, for submission to the Competent Authority, that in designing the real estate development and providing detailed drawings and specifications for it they have complied with requirements as laid out in the Regulations.
4. To appoint a registered CER as site supervisor.
5. To obtain and adhere to the quality assurance procedure prepared by the registered site supervisor.
6. To adequately enable the site supervisor to carry out his responsibilities.
7. To certify along with the site supervisor that construction of the real estate development has been carried out as per the design, detailed drawings and specifications provided by the Architect on Record/ Engineer on Record and Structural Engineer on Record.
8. To obtain development permission from the Competent Authority prior to commencement of construction of the real estate development
9. To regularly submit progress reports and certificates as required by the Competent Authority.
10. To inform in writing the Competent Authority within 7 days, if for any reason he ceases to be the developer or is relieved of his responsibilities as the developer of the real estate development
11. To inform in writing the Competent Authority within 7 days, if for any reason any of the registered professionals appointed by him have been relieved of their responsibilities or have resigned.
12. The appointment of the registered Architect/ Engineer on Record shall mean that he (the Developer) has authorized the Architect on Record / Engineer on Record to do all things necessary and to take all adequate measures for

preparing the design, drawings and specifications for the project and to appoint on his behalf appropriate persons to act as registered, clerk of works site supervisor, required for the proper execution of the project and to retain on behalf of the owner any other specialist or expert required on the work of the project.

13. He shall not cause or allow any deviations from the approved drawings in the course of the execution of the project against the instruction of Architect on Record /Engineer on Record /Site Supervisor on Record /Clerk of Works on Record / Structural Engineer on Record and shall bear all responsibility for any irregularity committed in the use and function of the building or its parts for which the approval has been obtained.
14. When no registered construction contractor or site supervisor is required to be appointed and not appointed he shall be responsible for their duties and responsibilities under the Regulations.
15. He shall not commence the use of building or shall not give the possession to occupy the building to any one before obtaining the occupancy certificate from the Competent Authority.
16. He shall provide adequate safety measures for structural stability and protection against fire hazards likely from installation of services like electrical installation, plumbing, drainage, sanitation, water supply etc. wherever required under the regulations.
17. He shall exhibit the names of registered persons only, on site and no additional names will be exhibited/displayed.
18. He shall explain the construction design and its intended use as per approved plan only, to the prospective purchaser of the premises under construction.
19. He shall make available copies of titles for the land, approved plans and all certificates issued to the Competent Authority under these Regulations.

#### **B 5 OWNER**

“Owner”, in relation to any property, includes any person who is for the time being, receiving or entitled to receive, whether on his own account or on account of or on behalf of, or for the benefit of, any other person or as an agent, trustee, guardian, manager or receiver for any other person or for any religious or charitable institution, the rents or profits of the property; and also includes a mortgaging possession thereof.

## **B 6 Builder/Contractor**

The minimum qualification and competence for the builder/contractor for various categories of building and infrastructural development shall be as decided by the Authority to ensure compliance of quality, safety and construction practices as required under the NBC.

### **Duties and Responsibilities:**

1. To appoint a registered Construction Engineer for site supervision.
2. To obtain and adhere to the quality assurance procedure including testing of materials for quality prepared by the registered Construction Engineer and keep proper record of all tests report of materials including water quality.
3. To adequately enable the site supervisor to carry out his responsibilities.
4. To certify along with the RCE/site supervisor that construction of the real estate development has been carried out as per the design, detailed working drawings and specifications provided by the Architect on Record/Engineer on Record and Structural Engineer on Record.
5. To regularly submit progress report and certificates as required by the Competent Authority.
6. To inform in writing to the Competent Authority within 7 days, if for any reason he ceases to be the Builder/Contractor or is relieved of his responsibilities of the real estate development.
7. To inform in writing to the Competent Authority within 7 days, if for any reason any of the registered professionals appointed by him have been relieved of their responsibilities or have resigned.
8. The appointment of the registered Construction Engineer shall mean that he has authorized the RCE to do all things necessary and to take all adequate measures for construction as per architectural/Structural design, working drawings, quality of materials and workmanship for the project and to appoint appropriate persons to act as registered, clerk of work/site supervisor, required for the proper execution of the project and to retain on behalf of him any other specialist or expert required on the work of the project.
9. He shall not cause any deviations from the approved drawings in the course of the execution of the project against the instruction of Architect on Record Construction/Engineer on Record/Site Supervisor on Record/Clerk of Works on record/Structural Engineer on Record unless a written permission is obtained by him and he shall bear all responsibility for any irregularity committed in this behalf.
10. He shall provide adequate safety measures for all labourers/technical , staff, material, timbering, scaffolding, shuttering and other stability and protection against fire hazards like from installation of services like electrical installation etc.,
11. He shall submit the certificate for execution of work as per structural safety requirements and give written notice to the Authority regarding completion of work described in the permit.

**FORM NO 1**  
(Para 4.3.1 and 4.3.2)

**CERTIFICATE OF UNDERTAKING**  
**FOR HAZARD SAFETY REQUIREMENT**

TO,

REF : Proposed work of \_\_\_\_\_

(Title of project)

C.S.No./R.S.No. \_\_\_\_\_ Inward No. \_\_\_\_\_ at  
Village \_\_\_\_\_ Taluka (F.P. \_\_\_\_\_ Scheme No. \_\_\_\_\_  
of \_\_\_\_\_ Village/Town/City

1. Certified that the building plans submitted for approval will satisfy the safety requirements as stipulated under Building Regulation No. ...and the information given therein is factually correct to the best of our knowledge and understanding.
2. It is also certified that the structural design including safety from hazards based on soil conditions shall be duly incorporated in the design of the building and these provisions shall be adhered to during the construction.

Signature of Owner with date \_\_\_\_\_

Name in Block Letters \_\_\_\_\_ Structural Engineer on Record with date

Address \_\_\_\_\_ Name in Block Letters \_\_\_\_\_

\_\_\_\_\_ Address \_\_\_\_\_

\_\_\_\_\_

Signature of Developer  
with date \_\_\_\_\_

Signature of the Architect on Record/  
Engineer on Record  
with date \_\_\_\_\_

Name in Block Letters \_\_\_\_\_

Name in Block Letters \_\_\_\_\_

Address \_\_\_\_\_ Address \_\_\_\_\_

\_\_\_\_\_

**Note : The certificate of Undertaking shall be signed by person concerned as per the provisions of Paras 4.3.1 and 4.3.2.**

**FORM NO. 2**  
(Para 4.3.1 and 4.3.2)

**CERTIFICATE OF UNDERTAKING OF ARCHITECT ON RECORD/  
ENGINEER ON RECORD**

To

Ref : Proposal work of \_\_\_\_\_

(Title of the project)

C.S.No.R.S.No./F.P.No. \_\_\_\_\_ Inward No. \_\_\_\_\_ at

Village \_\_\_\_\_ Taluka \_\_\_\_\_

Scheme No. \_\_\_\_\_ of \_\_\_\_\_

(Village/Town/City)

For \_\_\_\_\_

(Name of Owner /Developer/Builder)

Address: \_\_\_\_\_

Tel.No.: \_\_\_\_\_

I am a member of Council of Architects/Institution of Engineers (India) and I am possessing current registration to act as registered Architect/Engineer.

I hereby certify that I am appointed as the Architect on Record / Engineer on Record to prepare the plans, sections and details as required under the provisions of the Act / Development control Regulations for the above mentioned project and that I have prepared and signed the same and that the execution of the project shall be carried out under my direction, and supervision of a Construction Engineer on Record, as per the approved drawings. I am fully conversant with the provisions of the Regulations, which are in force, and about my duties and responsibilities under the same and I undertake to fulfill them in all respects, except under the circumstances of natural calamities.

I also undertake to provide my guidance for the adequate measure to be taken by the owners for installation of plumbing, drainage, sanitation and water supply. The appointment of a Construction Engineer on Record, building contractor, plumbing contractor and electrical contractor shall be made at the appropriate stage by the owner before the relevant work commences.

Signature : \_\_\_\_\_

Reg. No. \_\_\_\_\_ Date :

Name : \_\_\_\_\_

Address : \_\_\_\_\_

Tel. No. : \_\_\_\_\_

**FORM NO. 6**  
(PARA 5.2)

**STRUCTURAL DESIGN BASIS REPORT**

1. This report to accompany the application for Building Development Permission.
2. In case information on items 3, 10, 17, 18 and 19 can not be given at this time, it should be submitted at least one week before commencement of construction.

<b>Part 1</b>			
<b>General Data</b>			
S.No.	Description	Information	Notes
1	<b>Address of the building</b> <ul style="list-style-type: none"> <li>• Name of the building</li> <li>• Plot number</li> <li>• Subplot number</li> <li>• TPS scheme                             <ol style="list-style-type: none"> <li>a. Name</li> <li>b. Number</li> </ol> </li> <li>• Locality/Township</li> <li>• District</li> </ul>		
2	Name of owner		
3	Name of Builder on record		
4	Name of Architect/Engineer on record		
5	Name of Structural engineer on record		
6	Use of the building		
7	Number of storeys above ground level (including storeys to be added later, if any)		
8	Number of basements below ground level		
9	<b>Type of structure</b> <ul style="list-style-type: none"> <li>• Load bearing walls</li> <li>• R.C.C frame</li> <li>• R.C.C frame and Shear walls</li> <li>• Steel frame</li> </ul>		
10	<b>Soil data</b> <ul style="list-style-type: none"> <li>• Type of soil</li> <li>• Design safe bearing capacity</li> </ul>		IS: 1893 Cl. 6.3.5.2 IS: 1904
11	<b>Dead loads (unit weight adopted)</b> <ul style="list-style-type: none"> <li>• Earth</li> <li>• Water</li> <li>• Brick masonry</li> <li>• Plain cement concrete</li> <li>• Reinforced cement concrete</li> <li>• Floor finish</li> <li>• Other fill materials</li> <li>• Piazza floor fill and landscape</li> </ul>		IS: 875 Part 1

12	<b>Imposed (live) loads</b> <ul style="list-style-type: none"> <li>• Piazza floor accessible to Fire Tender</li> <li>• Piazza Floor not accessible to Fire Tender</li> <li>♥ • Floor loads</li> <li>♦ • Roof loads</li> </ul>		IS: 875 Part 2
13	Cyclone / Wind <ul style="list-style-type: none"> <li>• Speed</li> <li>• Design pressure intensity</li> </ul>		IS: 875 Part 3
14	Seismic zone		IS:1893 2002)
15	Importance factor		IS:1893 (2002) Table 6
16	Seismic zone factor(Z)		IS:1893 Table 2
17	Response reduction factor		IS: 1893 Table-7
18	Fundamental natural period - approximate		IS: 1893 Cl. 7.6
19	Design horizontal acceleration spectrum value ( $A_h$ )		IS: 1893 Cl. 6.4.2
20	♠ Expansion / Separation Joints		

- ♥ Enclose small scale plans of each floor on A<sub>4</sub> sheets
- ♦ In case terrace garden is provided, indicate additional fill load and live load
- ♠ Indicate on a small scale plan on A<sub>4</sub> sheet

Signature

(Structural Engineer)

Part 2		Load bearing masonry buildings																		
S.No.	Description	Information			Notes															
1	Building category				IS:4326 Cl. 7 read with IS: 1893  <table border="1"> <tr> <td>Bldg zone</td> <td>II</td> <td>III</td> <td>IV</td> <td>V</td> </tr> <tr> <td>Ordinary</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>Important</td> <td>C</td> <td>D</td> <td>E</td> <td>E</td> </tr> </table>	Bldg zone	II	III	IV	V	Ordinary	B	C	D	E	Important	C	D	E	E
Bldg zone	II	III	IV	V																
Ordinary	B	C	D	E																
Important	C	D	E	E																
2	Basement Provided																			
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)																			
4	Type of wall masonry																			
5	Type and mix of Mortar				IS:4326 Cl. 8.1.2															
6	<b>Re: size and position of openings (See note No.1)</b> <ul style="list-style-type: none"> <li>• Minimum distance (b<sub>5</sub>)</li> <li>• Ratio (b<sub>1</sub>+b<sub>2</sub>+b<sub>3</sub>)/l<sub>1</sub> or (b<sub>6</sub>+b<sub>7</sub>)/l<sub>2</sub></li> <li>• Minimum pier width between consequent opening (b<sub>4</sub>)</li> <li>• Vertical distance (h<sub>3</sub>)</li> <li>• Ratio of wall height to thickness<sup>4</sup></li> <li>• Ratio of wall length between cross wall to thickness</li> </ul>				IS:4326 Table 4, Fig.7															
7	<b>Horizontal seismic band</b> <ul style="list-style-type: none"> <li>• at plinth level</li> <li>• at window sill level</li> <li>• at lintel level</li> <li>• at ceiling level</li> <li>• at eave level of sloping roof</li> <li>• at top of gable walls</li> <li>• at top of ridge walls</li> </ul>	<b>P</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>IP</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>NA</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	(see note no.2)  IS:4326 Cl. 8.4.6 IS:4326 Cl. 8.3 IS:4326 Cl. 8.4.2 IS:4326 Cl. 8.4.3 IS:4326 Cl. 8.4.3  IS:4326 Cl. 8.4.4															

8	<b>Vertical reinforcing bar</b> <ul style="list-style-type: none"> <li>at corners and T junction of walls</li> <li>at jambs of doors and window openings</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS:4326 Cl. 8.4.8
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS:4326 Cl. 8.4.9
9	Integration of prefab roofing/flooring elements through reinforced concrete screed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS:4326 Cl. 9.1.4
10	<b>Horizontal bracings in pitched truss</b> <ul style="list-style-type: none"> <li>in horizontal plane at the level of ties</li> <li>in the slopes of pitched roofs</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Notes**

- Information in item 6 should be given on separate A4 sized sheets for all walls with large number of openings.
- P indicated **"Information Provided"**  
TP indicates **"Information to be Provided"**  
NA indicates **"Not Applicable"**  
Tick mark one box

Signature

(Structural Engineer)

**FORM NO. 11**  
(Para 5.10.2 d)

**COMPLETION REPORT**

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Reference No.

Owner's Name:

Submitted on:

The

Chief Executive Authority / Municipal Commissioner,  
Urban Development Authority / Municipal Corporation

Location:

Received on:

Sir,

The work of erection/re-erection of building as per approved plan is completed under the Supervision of Architect/Construction Engineer who have given the completion certificate which is enclosed herewith.

We declare that the work is executed as per the provisions of the Act and Development Control Regulations/Byelaws and to our satisfaction. We declare that the construction is to be used for \_\_\_\_\_ the purpose as per approved plan and it shall not be changed without obtaining written permission.

We hereby declare that the plan as per the building erected has been submitted and approved.

We have transferred the area of parking space provided as per approved plan to an individual/association before for occupancy certificate.

**Any subsequent change from the completion drawings will be our responsibility.**

**Yours faithfully,**

**(Developer's / Builder's Signature)**

**(Owner's Signature)**

**Name of Developer / Builder**

**Name of Owner**

**Date:**

**Address:**

**Encl: Completion Certificate**

**FORM NO. 12**  
(Para 5.10.2d)

**BUILDING COMPLETION CERTIFICATE BY ARCHITECT ON RECORD**

Reference No.

Owner's Name :

Location :

Submitted on:

Received on :

The Chief Executive Authority  
Urban / Area Development Authority

Sir,

1. The building/s has/have been constructed according to the sanctioned plan.
2. The building/s has /have been constructed as per approved plan and design as per detailed architectural drawings and specifications prepared by Architect on Record.
3. Construction has been done under our supervision / guidance and adhres to the drawings submitted.

Signature of the Owner  
Date

Signature of Architect on Record  
Date

Name in block letter:

Name in block letters:

Address : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**FORM NO. 13**  
(Para 5.10.2.d)

**BUILDING COMPLETION CERTIFICATE BY CONSTRUCTION ENGINEER ON RECORD**

Reference No.

Owner's Name:

Location :

Submitted on:

Received on :

The Chief Executive Authority  
Urban / Area Development Authority

Sir,

1. The building/s has/have been constructed according to the sanctioned plan.
2. The building/s has / have been constructed as per
  - the detailed structural drawings and structural specifications prepared by the Structural Engineer on Record
  - the detailed Architectural drawings and Architectural specifications prepared by the Architect on Record.
  - detailed drawings and specifications of all services
3. All materials used in the construction have been tested as provided in specifications and a record of test reports has been kept.

Signature of the Owner

Signature of Construction  
Engineer on Record

Date

Date

Name in block letter:

Name in block letters:

Address: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**FORM NO. 14**  
(Para 5.10.2d )

**BUILDING COMPLETION CERTIFICATE BY STRUCTURAL ENGINEER ON RECORD**

Reference No.

Owner's Name :

Location :

Submitted on :

Received on :

The Chief Executive Authority  
Urban / Area Development Authority

Sir,

This is to certify that detailed structural drawings of the buildings/s has / have been prepared on the basis of a detailed analysis and a detailed design carried out according to relevant provisions of the latest Indian Standard Codes, National Building Code and as indicated in the structural design basis report.

Signature of the Owner

Signature of Structural Engineer  
on Record

Date

Date

Name in block letters:

Name in block letters:

Address: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_