

MANGALORE CITY BUILDING BYELAWS 2006

(Technical Committee Report)

Constituted by

**THE DEPUTY COMMISSIONER
DAKSHINA KANNADA DISTRICT
MANGALORE 575001**

November, 2006

6 November 2006

The Deputy Commissioner
Dakshina Kannada District
Mangalore 575001

Dear Sir,

Last year, the Deputy Commissioner of Dakshina Kannada District constituted a Committee (*vide Office Order No.V.koni.CR.8/05-06 dated January 5, 2006*) for suggesting measures to revise the existing Building Byelaws of Mangalore City Corporation and the Mangalore Urban Development Authority.

Accordingly, the Committee carried out detailed studies of all the relevant documents, prepared a draft report and then again revised it based on the extensive feedback, received from the stakeholders, general public and the experts.

Herewith I enclose the finalized report for further action.

On behalf of the members of the committee, I thank you for providing us an opportunity to work on the very important issue of "Building Byelaws and Zoning regulations" and to contribute towards the systematic & sustainable development of the region.

Yours faithfully



(Prof Katta Venkataramana)
Chairperson, Technical Committee

Technical Committee

Members

- Prof. Katta Venkataramana, Professor of Civil Engineering, NITK, Surathkal
(Chairperson)
- Town Planning Officer, Mangalore City Corporation (Secretary)
- Additional Superintendent of Police, D.K, Mangalore
- Joint Commissioner, Mangalore City Corporation
- Commissioner, Mangalore Urban Development Authority
- Executive Engineer, Mangalore City Corporation
- Town Planning Member, Mangalore Urban Development Authority
- Executive Engineer, P.W.D, Mangalore
- Divisional Fire Officer, D.K, Mangalore
- District Health Officer, D.K, Mangalore
- District Geologist, D.K, Mangalore
- President, Builders Association of India, Mangalore
- President, Kanara Builders Association
- President, Kanara Chamber of Commerce
- Shri.Premanand Shenoy, Roy & Shenoy Structural Engineers, Mangalore
- Shri.Gururaj Budhya, Urban Research Centre, Mangalore

Special Invitees:

- Superintendent of Police, D.K. Mangalore
- Commissioner, Mangalore City Corporation
- Mr Sanjeev Santhosh, UNDP-UVERP Project Officer, Mangalore

Preface

The Technical Committee, constituted by the Deputy Commissioner, Dakshina Kannada District, submitted the first Report on July 14, 2006. The Report was uploaded on the website of the District Administration seeking public opinion and also feed back from all the stake holders.

Subsequently, the committee members participated in several seminars and public meetings, and explained in detail about the contents of the Report. Several interactive sessions and consultative workshops were held. Further, on invitation from the District Administration, Prof A S Arya, National Seismic Advisor, Ministry of Home Affairs, Government of India, visited Mangalore during September 19-20, 2006 and gave his valuable input on the report. He also participated in discussions with officials of District Administration, Corporators of Mangalore City Corporation, public/private sector organizations, technical committee members, academicians, builders and developers, engineers, architects, NGOs and general public. The feed back was also received from several people and organizations including those from government and private sectors. The Committee gratefully acknowledges the efforts by all of them who went through the Report in detail, and gave their comments & constructive criticisms.

Based on the input and feedback, the Report has now been finalized. The Report has been prepared keeping in view that the basic requirements of building byelaws i.e., “i) to provide safe habitat (safety from accidents and natural disasters), ii) to provide good health, iii) to provide peace of mind” are included in an effective manner. It is the sincere hope of the Technical Committee that the report will be useful in streamlining the development activities of the urban areas of Dakshina Kannada District in a systematic manner.

There is a misconception, even among some professionals, that if safety against natural disasters is to be included in the design, the construction cost may escalate unreasonably. Prof Arya, in his email communication dated 15th June 2006, has clarified that the extra cost in providing earthquake resistance in our region (which falls in Zone III, as per the latest Map of Seismic Zone of India) is as low as 1.5% to 2% for masonry construction and 2.6% to 3.2% for RCC framed buildings of 4 to 8 storey height. Therefore, it is quite easy, by obeying the provisions of the Building Byelaws, for common house holder to build a hazard safe house at economical cost. It is the duty and responsibility of our builders, engineers, architects and other professionals not to mislead their clients but to provide proper advice and correct information which will help in instilling confidence among the people, for safety with economy.

Finally, the committee members are thankful to the District Administration for providing an opportunity to work on the very important issue of “Building Byelaws and Zoning regulations”, considering the vulnerability and disaster risk mitigation issues, for achieving the systematic & sustainable development of the region.

Mr B Balakrishna Gowda
Secretary, Technical Committee
&
Town Planning Officer
Mangalore City Corporation

Prof Katta Venkataramana
Chairperson, Technical Committee
&
Professor of Civil Engineering
National Institute of Technology Karnataka

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1.0 GENERAL

1.1 Preamble

- 1.1.1 A major part of our country is vulnerable to multiple natural hazards including cyclones, floods, earthquakes and landslides. There has been a large scale loss of lives and property due to these disasters in the recent past. It has also been established that disasters are essentially developmental problems and therefore, the Ministry of Home Affairs, Government of India, in conjunction with the State Governments is working for "safe development" at all levels. To reduce disaster risk, we have to put in place appropriate institutional framework, to review and amend Town and Country Planning Acts, land use zoning regulations and building byelaws, to undertake awareness generation campaigns, training and capacity building programmes.
- 1.1.2 One of the major concerns has been that the existing development control regulations, building byelaws and land use zoning regulations do not adequately provide for 'multi-hazard safety' provisions. Wherever these provisions exist, they are not strictly enforced by the concerned authorities. The Ministry of Home Affairs constituted an Expert Committee, chaired by Prof A S Arya, to develop Model Building Byelaws and to Review Town and Country Planning Act, and to develop the Zoning Regulations, *vide Govt. Order No. 31/35/2003-NDM-II dated January 20, 2004*, on the recommendation of the National Core Group on Earthquake Mitigation set up by the Ministry. The National Expert Committee, after a detailed study of the various related documents, submitted a comprehensive report in two volumes. In the report, detailed recommendations are made for additional provisions to be incorporated in development control regulations for safety in natural hazard prone areas, and the building byelaws for structural safety. Also, a detailed Structural Design Basis Report format has been prepared for ensuring the compliance of essential elements of various IS codes by the concerned professional. The qualifications, duties, responsibilities and supervisory mechanism are detailed out in the report with relevant forms. A copy of the report of the expert committee was sent along with the letter to the Chief Secretary, Government of Karnataka with a request to set up a committee to go through the recommendations made in the report and adapt them to the requirements of the State (*D.O.No.31-1/2004-NDM-III dated September 13, 2004*).
- 1.1.3 Mangalore City is one of the 38 cities in the country where, under the joint initiative between the Government of India and United Nations Development Programme, the Urban Earthquake Vulnerability Reduction Project is under implementation. It is a sub-component of the Disaster Risk Management Programme. Several workshops, seminars, training programmes have been conducted to increase the awareness among the general public about the need for systematic development of the city as well as to build the capacity of the architects and engineers of the region.

1.2 Formation of the Technical Committee

1.2.1 As part of the Disaster Risk Management Programme and to ensure systematic development and construction activities in the region, the Deputy Commissioner of Dakshina Kannada District constituted a Committee (*vide Office Order No.V.koni.CR.8/05-06 dated January 5, 2006*) for suggesting measures to revise the existing Building Byelaws of Mangalore City Corporation and the Mangalore Urban Development Authority.

1.2.2 As per the notification, the Committee consisted of the following members:

- Prof. Katta Venkataramana, Professor of Civil Engineering, NITK, Surathkal
(Chairperson)
- Town Planning Officer, Mangalore City Corporation(Secretary)
- Additional Superintendent of Police, D.K, Mangalore
- Joint Commissioner, Mangalore City Corporation
- Commissioner, Mangalore Urban Development Authority
- Executive Engineer, Mangalore City Corporation
- Town Planning Member, Mangalore Urban Development Authority
- Executive Engineer, P.W.D, Mangalore
- Divisional Fire Officer, D.K, Mangalore
- District Health Officer, D.K, Mangalore
- District Geologist, D.K, Mangalore
- President, Builders Association of India, Mangalore
- President, Kanara Builders Association
- President, Kanara Chamber of Commerce
- Shri.Premanand Shenoy, Roy & Shenoy Structural Engineers, Mangalore
- Shri.Gururaj Budhya, Urban Research Centre, Mangalore

1.3 The Terms of Reference

1.3.1 The following were the Terms of Reference for the Committee as per the order cited above.

- The Committee should study the 'Model Amendment in Town and Country Planning Legislations, Regulation for Land Use Zoning and Building Byelaws for Structural Safety, Volume I and II, prepared by the Ministry of Home Affairs, Government of India'.
- The Committee should study the existing and in-force Town and Country Planning Legislations, Regulation of Land Use Zoning, and the Building Byelaws of Mangalore City Corporation and Mangalore Urban Development Authority.
- The Committee should suggest/recommend measures to revise the existing Town and Country Planning Legislations, Regulation of Land Use Zoning and the Building Byelaws of the Mangalore City Corporation and Mangalore Urban Development Authority.
- The Committee should also recommend the action to be taken for retrofitting of existing structures.

1.4 Details of the Meetings

- 1.4.1 The Technical Committee held its first meeting at the Meeting Hall of the Deputy Commissioner (DK District) on February 8, 2006 where the broad outlines of the action plan were discussed. The Additional District Magistrate & Secretary District Disaster Management Committee, in his introductory remarks, stressed on the need for revising the byelaws for Mangalore City in view of rapid urbanization and changes in codal provisions. He also requested all the members to work with a commitment to reduce the vulnerability of the city and contribute to the preparation of the revised regulations for the systematic development of the region. The Committee approved the formation of a core group which met regularly at the conference hall of MUDA and studied the relevant documents and finalized the contents of this report.

1.5 Documents Referred

- 1.5.1 Following are the documents referred while preparing the draft of the Mangalore City Building Byelaws 2006.

(a) Legislation(s)

- (i) The Karnataka Municipal Corporations Act 1976
- (ii) The Karnataka Town & Country Planning Act, 1961
- (iii) Model Town & Country Planning Act 1960

(b) National Building Code of India 2005

(c) GoI-MHA Expert Committee Report (Vol. I & II)

- (i) Proposed Amendment in Town & Country Planning Legislations
- (ii) Regulations for land use Zoning
- (iii) Additional Provisions in Development Control Regulations for safety in Natural Hazard Prone Areas
- (iv) Additional Provisions in Building regulations/Byelaws for Structural Safety in Natural Hazard prone Areas

(d) Development Control/Building Byelaws

- (i) Development Control Regulations of **Ahmadabad** 2002
- (ii) **Kerala** Municipality Building Rules, 1999 (3rd Edition 2004)
- (iii) **Hyderabad** Revised Building Rules 2006
- (iv) Building Byelaws , **Patna** Regional Development Authority
- (v) **Chennai** City Corporation Building Rules 2005
- (vi) Revised Development Control Regulations 2005, Jharkhand Mineral Area Development Authority, **Dhanbad**
- (vii) The **Delhi** Corporation Building Byelaws 2005
- (viii) The **Bangalore** Mahanagara Palike Building Byelaws 2003
- (ix) Zoning Regulations, 1992, **Mangalore** Urban Development Authority
- (x) Corporation of the City of **Mangalore**, Building Byelaws 1991

(e) Earthquake Safe Construction of Masonry Buildings: Simplified Guideline for all new buildings in the Seismic Zones V, IV & III of India

1.6 Applicability

1.6.1 These byelaws, when notified by the competent authority, shall apply to:

- (i) Any public and private building as described below, namely,
 - (a) where a building is newly erected, these rules shall apply to the designs and construction of the building;
 - (b) where the building is newly altered, these rules shall apply to the altered portion of the building;
 - (c) where the occupancy or use of a building is changed, these rules shall apply to all parts of the building affected by the change;
 - (d) where addition or extension is made to a building, the rules shall apply to the addition or extension only, but for calculation of floor area ratio and coverage permissible and for calculation of requirement of parking area to be provided, the whole building (existing and the proposed) shall be taken into account.
- (ii) All lands which are proposed to be developed or redeveloped for construction of building.

2.0 DEFINITIONS

In these byelaws, unless the context otherwise requires, the expressions given below shall have the meaning indicated against each of them.

The terms and expressions not defined in these byelaws shall have the same meaning as in the Karnataka Town and Country Planning Act, 1961 and/or the Karnataka Municipal Corporations Act, 1976, and/or Local Acts framed there under, and/or as mentioned in the National Building Code (NBC) 2005 as the case may be, unless the context otherwise requires.

2.1 Abbreviations

1)	AR	- Architect on Record
2)	BIS	- Bureau of Indian Standards
3)	B.O.D.	- Biochemical Oxygen Demand
4)	CER	- Construction Engineer on Record
5)	CMAR	- Construction Management Agency on Record
6)	CPHEEO	- Central Public Health and Environmental Engineering Organisation
7)	CRZ	- Coastal Regulation Zone
8)	DAC	- Development Affairs Committee
9)	DR	- Developer on Record
10)	ER	- Engineer on Record
11)	EER	- Electrical Engineer on Record
12)	FAR	- Floor Area Ratio
13)	GER	- Geotechnical Engineer on Record
14)	IS	- Indian Standard
15)	KMC Act	- the Karnataka Municipal Corporations Act, 1976
16)	KSPCB	- Karnataka State Pollution Control Board
17)	KPTCL	- Karnataka Power Transmission Corporation Limited
18)	KUWS & DB	- Karnataka Urban Water Supply & Drainage Board
19)	KTCP Act	- Karnataka Town and Country Planning Act, 1961
20)	MCC	- Mangalore City Corporation
21)	MESCOM	- Mangalore Electricity Supply Company Ltd
22)	MUDA	- Mangalore Urban Development Authority
23)	NBC	- National Building Code
24)	NOC or N.O.C.	- No Objection Certificate
25)	O.C.	- Occupancy Certificate
26)	QAR	- Quality Auditor on Record
27)	QAAR	- Quality Audit Agency on Record
28)	RA	- Registered Architect
29)	RCE	- Registered Construction Engineer
30)	RCMA	- Registered Construction Management Agency
31)	RD	- Registered Developer
32)	REE	- Registered Electrical Engineer
33)	RGA	- Registered Geotechnical Agency
34)	RGE	- Registered Geotechnical Engineer
35)	RQA	- Registered Quality Auditor
36)	RQAA	- Registered Quality Audit Agency
37)	RSDA	- Registered Structural Design Agency

38)	RSE	- Registered Structural Engineer
39)	RTP	- Registered Town Planner
40)	SDAR	- Structural Design Agency on Record
41)	SDBR	- Structural Design Basis Report
42)	SDRP	- Structural Design Review Panel
43)	SER	- Structural Engineer on Record
44)	TDR	- Transferable Development Rights
45)	TPR	- Town Planner on Record

2.2 Terminology

- 1) **Act or Act, KTCP** means the Karnataka Town and Country Planning Act, 1961 (and amendments, if any) .
- 2) **Act, KMC** means the Karnataka Municipal Corporations Act, 1976 (and amendments, if any).
- 3) **Addition and/or Alteration** means a structural change including an addition to the area or change in height or the removal of part of building, or any change to the structure, such as the construction or removal or cutting of any wall or part of a wall, partition, column, beam, joist, floor including a mezzanine floor or other support, or a change to or closing of any required means of ingress or egress.
- 4) **Agriculture** includes horticulture, farming, growing of crops, fruits, vegetables, flowers, grass, fodder, trees of any kind or cultivation of soil, breeding and keeping of live stock including cattle, horses, donkeys, mules, pigs, fish, poultry and bees, the use of land which is ancillary to the farming of land or any purpose aforesaid but shall not include the use of any land attached to a building for the purpose of garden to be used along with such building; and agriculture shall be construed accordingly.
- 5) **Amenity** includes roads, street, open spaces, parks, recreational grounds, playgrounds, gardens, water supply, electric supply, street lighting, sewerage, drainage, public works and other utilities, services and conveniences.
- 6) **Apartment / Flat** refers to any residential building constructed in a detached or semi-detached manner, being designed as ground floor plus more upper floors and constructed as separate dwelling unit with common staircase.
- 7) **Authority or Local Authority** means:
 - (i) The Commissioner of the Mangalore City Corporation or an Officer to whom the powers are delegated by the Commissioner.
 - (ii) Executive authority of Gram Panchayat in case of areas outside the MCC limits.
- 8) **Authority, Development** refers to the Commissioner of the Mangalore Urban Development Authority or an Officer to whom the powers are delegated by the Commissioner.
- 9) **Automatic Fire Detection System and Alarm System** refers to a fire alarm system comprising of components for automatically detecting a fire, initiating an alarm of fire and initiating other actions that may be appropriate. *The system may also include manual fire alarm call points.*

- 10) **Automatic Sprinkler System** means a system of water pipes fitted with sprinkler heads at suitable intervals and heights and designed to actuate automatically, control and extinguish a fire by the discharge of water.
- 11) **Backwater** refer to a rise of the water level in a stream caused by a natural or artificial obstruction.
- 12) **Balcony** means a horizontal projection open on the exterior side, with a handrail or balustrade to serve as passage or sit out place.
- 13) **Basement/Cellar** means any storey, which is partly/wholly below the ground level.
- 14) **Biochemical Oxygen Demand** (abbreviated as B.O.D.) means the quantity of oxygen utilized in the biochemical oxidation of organic matter in five days at 20° C expressed in milligrams per liter, as determined by procedures outlined in standard methods.
- 15) **Building** means any structure for whatsoever purpose and of whatsoever materials constructed and every part thereof whether used as human habitation or not and includes foundation, plinth, walls, floors, roofs, chimneys, plumbing and building services, fixed platforms, verandah, balcony, cornice or projection, part of a building or anything affixed thereto or any wall enclosing or intended to enclose any land or space and signs and outdoor display structures. Tents, Shamianahs, tarpaulin shelters, etc, erected for temporary and ceremonial occasions with the permission of the authority shall not be considered as building. All buildings, whether existing or erected, are classified according to the use or the character of occupancy into one of the following categories (as per NBC 2005, Part 4 : Fire & Life Safety).
 - Category 1 - Assembly Building** refers to a building or part thereof where the building can accommodate groups of people not less than 50 to congregate, and used for amusement, recreation, social, religious, patriotic, civil, travel and similar purposes. For example, theatres, motion picture houses, assembly halls, auditoria, exhibition halls, museums, skating rinks, gymnasium, restaurant, places of worship, dance halls, club rooms, passenger stations and terminals of air, surface and marine public transportation services, recreation piers and stadia etc.
 - Category 2 - Business Building** refers to a building or part thereof which is used for transaction of business (other than those categorized as Mercantile Buildings); for keeping of accounts and records and similar purposes, professional establishments, service facilities, etc. City halls, town halls, courthouses and libraries shall come in this group so far as the principal function of these is transaction of public business and keeping of books and records. Offices, banks, professional establishments like offices of architects, engineers, doctors, lawyers and police stations, laboratories, research establishments, libraries and test houses, computer installations, telephone exchanges, broadcasting stations and TV stations are all classified as business buildings.
 - Category 3 - Educational Building** includes any building used for school, college, and other training institutions for day-care purposes involving assembly for instruction, education or recreation. *If residential accommodation is provided in the schools/ institutions that portion of occupancy shall be classified as a Residential Building.*
 - Category 4 - Hazardous Building** includes any building or part thereof which is used for the storage, handling, manufacture or processing of highly combustible or explosive materials or products which are liable to burn with extreme rapidity and or which may produce poisonous fumes or explosions for storage, handling, manufacturing or processing which involve highly corrosive, toxic or noxious alkalis, acids or other

liquids, or chemicals producing flame, fumes and explosive, poisonous, irritant or corrosive gases; and for the storage handling or processing of any material producing explosive mixtures of dust which results in the division of matter into fine particles subject to spontaneous ignition. All facilities handling hazardous gases, highly flammable liquids, liquefiable gases, rocket propellants, highly flammable and explosive materials, manufacturing facilities for artificial flowers, synthetic leather, ammunition, explosives and fireworks are categorized as Hazardous Buildings.

Category 5 - Industrial Building will include any building or part of a building or structure in which products or materials of all kinds and properties are fabricated, assembled, manufactured or processed. Assembly plants, industrial laboratories, dry cleaning plants, power plants, pumping stations, fumigation chambers, laundries, buildings or structures in gas plants, refineries, dairies, factories, workshops and saw-mills etc. shall be placed in this category.

Category 6 - Institutional Building will include any building or part thereof, which is used for purposes such as medical or other treatment or care of persons suffering from disease or infirmity, care of infants, convalescents or aged persons including the differently abled (both physically & mentally challenged) and for penal or correctional detention in which the liberty of the inmates is restricted. Institutional buildings ordinarily provide sleeping accommodation for the occupants. Hospitals, nursing homes, sanatoria etc., custodial and penal & mental institutions shall be placed in this category.

Category 7 - Mercantile Building refers to any building or part of a building which is used as shops, stores, market, for display and sale of merchandise, either wholesale or retail. This includes underground shopping centers, departmental stores etc. *Storage and service facilities incidental to the sale of merchandise and located in the same building shall be included under this group too.*

Category 8 - Residential Building refers to any building in which sleeping accommodation is provided for normal residential purposes with or without cooking or dining or both facilities except any building classified as Institutional Building. Lodging or rooming houses, one or two-family private dwellings, dormitories, apartment houses (flats) and hotels (including starred hotels) shall be placed in this category.

Category 9 - Storage Building refers to any building or part of a building used primarily for the storage or sheltering (including servicing, processing or repairs incidental to storage) of goods, ware or merchandise (except those that involve highly combustible or explosive products or materials) vehicles or animals. warehouses, godowns, cold storage, freight depots, transit sheds, storehouses, truck and marine terminals, garages, hangers, grain elevators, barns, and stables. *Minor occupancy incidental to operations in another type of occupancy shall be considered as part of the main occupancy and shall be classified under the relevant category for the main occupancy.*

In addition following definitions are also used for easy classification of buildings:

Commercial Building (refer Mercantile Building above)

Detached Building refers to a building detached on all sides. The walls and roof of this building are independent of any other building with open spaces on all sides, except the portion covered by the garage.

High rise Building means a building with ground plus four or more floors (excluding the basement) or a building with a height of 15m or above.

Low rise Building means a building with ground plus three or less floors (excluding the basement) or a building with a height of less than 15m.

Lifeline Building refers to those buildings which are of post disaster importance such as hospital buildings, power house buildings, telephone exchange buildings, emergency shelters and the like.

Public and Semi-Public Building means a building used or intended to be used either ordinarily or occasionally by the public such as offices of State or Central Government or Local authorities, a church, temple, chapel, mosque or any place of public worship, dharmashala, college, school, library, theatre for cultural activities, public concert room, public hall, hospital run by public institutions, kalyana mantapa and multi-purpose hall, public exhibition hall, lecture room or any other place of public assembly.

Public Utility Building refers to water supply installations, overhead tanks, water treatment plants and disposal works, electric power plants, fire stations, milk dairies and other similar buildings.

Row Housing/ Row-type Building means a row of buildings, with only front; rear and interior open spaces where applicable.

Semi-Detached Building refers to a building that is detached on three sides. It may be located on one or two plots of land. A common or adjacent wall attaches the buildings to each other, with open spaces (set-backs) on three sides.

Special Building refers to those buildings which house large gatherings at a time such as cinema halls, theatres, meeting halls, assembly halls, lecture halls, town halls and the like.

Traffic & Transportation Building refers to central bus stands, railway stations, airport buildings and similar buildings related to traffic & transportation facilities.

Unsafe Buildings refers to a building that

Is structurally unsafe

Is unsanitary

Is not provided with adequate means of egress

Constitutes a fire hazard

Is dangerous to human life in relation to its existing use

Constitutes a hazard to safety or health or public welfare by reasons of inadequate maintenance, dilapidation or abandonment.

- 16) **Building Codes/Byelaws** refers to the ordinances and regulations controlling the design, construction, materials, alteration and occupancy of any structure for human safety and welfare. Building codes/Byelaws include both technical and functional standards.
- 17) **Building Envelope** means the horizontal spatial limits in a plot up to which the construction of a building may be permitted.
- 18) **Building Line** means the line up to which the plinth of a building adjoining a street or an extension of a street or on a future street may lawfully extend. The building line may change from time-to-time as decided by the Development Authority.
- 19) **Cabin** means a non-residential enclosure constructed of non-load bearing partition.
- 20) **Canopy** means a projection over any entrance.

- 21) **Capacity** means a combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. *Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability.*
- 22) **Carpet Area** means the covered area of the usable rooms at any floor level (excluding the area of the walls).
- 23) **Chajja** means a sloping or horizontal structural overhang usually provided over openings on external walls to provide protection from sun and rain.
- 24) **Chimney** means an upright shaft containing one or more flues provided for the conveyance to the outer air of any product of combustion resulting from the operation of heat producing appliance or equipment employing solid, liquid or gaseous fuel.
- 25) **Civic Amenity** means a market, a post office, a bank, a bus stand or a bus depot, a fair price shop, a milk booth, a school, a dispensary, a maternity home, a child care centre, a library, a gymnasium, a recreation centre run by the Government or local authority, a centre for educational, religious, social or cultural activities or philanthropic service run by a co-operative society or society registered under the Karnataka Societies Registration Act, 1960 (Karnataka Act 17 of 1960) or by a trust created wholly for charitable, educational or religious purposes, a police station, an area office or a service station of the local authority or the Mangalore Electricity Supply Company Limited and such other amenity as the Government may, by notification, specify.
- 26) **Combustible Material** refers to that material which either burns itself or adds heat to a fire, when tested for non-combustibility in accordance with the IS:3808-1966 Method of Test for Combustibility of Building Material of the National Building Code.
- 27) **Common Wall** means a wall built on land belonging to two adjoining owners, the wall being the joint property of both owners. If two adjoining owners build a dividing wall on their property, they are not common walls and no part of the footings of either wall shall project on to the land of the adjoining owner's property except by legal agreement between the owners. Any common or dividing wall shall be considered for the purpose of these byelaws, as being equivalent to an external wall as far as the thickness and height are concerned.
- 28) **Common Plot** means a common open space exclusive of margins and approaches, at a height equal to or higher than ground level of the building unit. The owner shall have to give an undertaking that the common plot shall be for the common use of all the resident or occupants of the building unit, free of cost. On sanction of the licence, the common plot shall deem to have vested in the society/association of the residents/occupants. In case such society or Association is to be formed, the possession/custody of common plot shall remain with Competent Authority until such association/society is formed. The common plot shall not be sold to any other person and it shall not be put to any other use except for the common use of the resident/occupants.
- 29) **Compliance** refers to the verification of the properties of construction materials based on test data and verification of the strength and structural adequacy for various components of buildings and structures.

- 30) **Control Manhole** means the manhole so designated for the express purpose of collecting waste effluent samples and facilitating observation and measurement of waste as necessary from a property. It shall be the manhole at the junction of the building sewer with the public sewer, or it shall be the nearest manhole on the public sewer down stream of the junction of the building sewer with the public sewer, as may be decided by the Authority.
- 31) **Coping Capacity** means the manner in which people or organizations use existing resources and abilities to face adverse consequences. *In general, this involves managing resources, both in normal times, as well as during adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and other disasters.*
- 32) **Corner Plot** means a plot at the junctions of, and fronting on, two or more intersecting streets.
- 33) **Corporation** means the Mangalore City Corporation.
- 34) **Counter Measures** means all measures taken to counter and reduce disaster risk. They most commonly refer to engineering (structural) measures but can also include non-structural measures and tools designed and employed to avoid or limit the adverse impact of natural disasters and related environmental and technological disasters.
- 35) **Courtyard** means a space permanently open to the sky, enclosed fully or partially enclosed by building and may be at ground level or any other level within or adjacent to a building.
- 36) **Covered Area** means area covered by building / buildings immediately above the plinth level, but does not include the space covered by;
- i. Garden, rocky area, well and well structures, plant, nursery, water pool, swimming pool (if uncovered) platform around a tree, tank, fountain, bench with open top and unenclosed sides by walls and the like;
 - ii. Drainage, culvert, conduit, catch-pit, gully-pit, chamber gutter and the like;
 - iii. Compound or boundary wall, gate, un-storied porch and portico, Chajja, slide, swing, uncovered staircase, watchman booth, pump house. The area covered by watchman booth / pump house shall not exceed three square meters;
 - iv. Sump tank and electric transformer.
- 37) **Cross Wall** means an internal wall within the building up to the roof level or lintel level.
- 38) **Damage Classification** refers to the evaluation and recording of damage to structures, facilities, or objects according to three categories: **Severe Damage** which precludes further use of the structure, facility, or object for its intended purpose; **Moderate Damage** or the moderate degree of damage to principal members, which precludes effective use of the structure, facility, or object for its intended purpose, unless major repairs are done; **Light Damage** which refers to slight damage to roofing and siding, interior partitions blown down, and cracked walls; the damage is not severe enough to preclude use of the structure/facility for the purpose for which it was intended.

- 39) **Density** means concentration of population expressed in terms of number of persons per hectare in a particular area.
- 40) **Depth of Plot** means the horizontal distance between the front and rear plot (site) boundaries.
- 41) **Design Earthquake** refers to the earthquake parameters selected for designing an earthquake resistant structure according to byelaws/code requirements.
- 42) **Developer** or **Builder** means the person who is legally empowered to construct or to execute work on a building unit, building or structure, or where no person is empowered, the owner of the building unit, building or structure.
- 43) **Development**, with its grammatical variations, means the carrying out of building, engineering, mining or other operations in, or over or under land or water, on the making of any material change in any building or land, or in the use of any building, land. Development also includes redevelopment and layout and sub-division of any land.
- 44) **Development Plan/Master Plan** means the Outline Development Plan or Comprehensive Development Plan or Revised Comprehensive Development Plan or Master Plan prepared for the local planning area of the City of Mangalore approved by the Government under the Karnataka Town and Country Planning Act, 1961 (and amendments thereof).
- 45) **Disaster Legislation** refers to the body of laws and regulations that govern and designate responsibility for disaster management concerning the various phases of disaster.
- 46) **Disaster Management** means the body of policy and administrative decisions and operational activities that pertain to the various stages of a disaster at all levels.
- 47) **Disaster, Natural** - A natural disaster is the occurrence of an abnormal or infrequent hazard (example: earthquake, flood, cyclone, landslide etc) that impacts on vulnerable communities or geographical areas, causing substantial damage, disruption and possible casualties and leaving the affected communities unable to function normally. (A natural disaster results in the disruption of the functioning of a society, causing widespread human, material and environmental losses, which exceeds the ability of the affected society to cope using only its own resources). From an economic perspective a disaster implies some combination of losses in terms of human, physical and financial capital, and a reduction in economic activity, such as income and investment, consumption, production and employment in the 'real' economy. There may also be severe impacts in terms of financial flows, such as revenue and expenditure of public and private bodies. *A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.*
- 48) **Disaster Risk Management** means the systematic management of administrative decisions, organization, operational skills and abilities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural disasters and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of disasters.

- 49) **Disaster Risk Reduction (Disaster Reduction)** refers to the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.
- 50) **Drain** means a conduit, channel or pipe for carrying of storm water, sewage, wastewater or other water borne wastes in a building drainage system.
- 51) **Drainage** means the removal of any liquid by a system constructed for the purpose.
- 52) **Dwelling Unit/Tenement** means an independent housing unit with separate facility for living, cooking and sanitary requirements.
- 53) **Early Warning** refers to the provision of timely and effective information, through identified institutions, that allow individuals exposed to a hazard, to take action to avoid or reduce their risk and prepare for effective response. *Early warning systems include of three primary elements (i) forecasting of impending events, (ii) processing and dissemination of warnings to political authorities and population, and (iii) undertaking appropriate and timely actions.*
- 54) **Earthquake** refers to a sudden break within the upper layers of the earth, sometimes breaking the surface, resulting in the vibration of the ground, which, where strong enough will cause the collapse of buildings and destruction of life and property.
- 55) **Emergency Lighting System** refers to a complete but discrete emergency lighting installation from the standby power source to the emergency lighting lamp(s).
- 56) **Emergency Management** refers to the organization and management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation. *Emergency management involves plans, structures and arrangements established to engage the normal endeavors of government, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs.*
- 57) **Environmental Impact Assessment (EIA)** refers to the study undertaken in order to assess the effect on a specified environment of the introduction of any new factor, which may upset the ecological balance.
- 58) **Environmental Degradation** means unfavourable modification of the ecological state and environment through natural processes and/or human activities. *Potential effects are varied and may contribute to an increase in vulnerability and the frequency and intensity of natural hazards. Some examples: land degradation, deforestation, forest fires, loss of biodiversity, land, water and air pollution, climate change, sea level rise, ozone depletion.*
- 59) **Escalator** means a power driven, inclined, continuous stairway used for raising or lowering passengers.
- 60) **Escape Lighting** refers to that part of the emergency lighting, which is provided to ensure that the escape route is illuminated at all times.

- 61) **Exit** means a passage, channel or means of egress from any building, storey or floor area to a street or other open space of safety.
- 62) **External Wall** means an outer wall of the building not being a partition wall even though adjoining a wall of another building, and also a wall abutting on an interior open space of any building.
- 63) **Filling Station** is a place of retail business engaged in supplying and dispensing of petrol, diesel, motor-oil etc., essential for the normal operation of automobiles.
- 64) **Filling cum Service station** is a place of retail business engaged in supplying goods and services essential for the normal operation of automobiles. These include dispensing petrol, diesel, motor-oil, the sales and services of tires, batteries and other automobiles accessories and replacement item and washing and lubrication. They do not include the body of tender work, painting or other major motors repairs and over hauling.
- 65) **Fire Exit** refers to a way put leading to an escape route having panic bar hardware provided on the door.
- 66) **Fire Lift** refers to the lift installed to enable fire services personnel to reach different floors with minimum delay.
- 67) **Fire Load** refers to the calorific energy of the contents contained in a space, including the facings of the walls, partitions, floors and ceilings.
- 68) **Fire Load Density** refers to the fire load divided by the floor area.
- 69) **Fire Separators** means the distance in metres measured from the external wall of any other building on the site, or from other site, or from the opposite side of a street or other public space for the purpose of preventing the spread of fire.
- 70) **Floodplain Zoning** refers to a plan that defines the main zones of a potential flood area, usually accompanied by housing restrictions or other recommendations to prevent flood.
- 71) **Floor** means the lower surface in a storey on which one normally walks in a building. The general term 'floor', unless specifically mentioned otherwise, shall not refer to a 'mezzanine floor'.
- 72) **Floor Area Ratio (FAR)** means the ratio of the combined gross floor area of the floors including areas of all walls, except areas specifically exempted under these byelaws, to the total area of the plot.

$$\text{FAR} = \frac{\text{Total floor area including walls of all floors}}{\text{Plot area}}$$

- 73) **Floor Area** means built up area including area of walls.
- 74) **Footing** means the projection courses at the base of a wall to spread the weight over a large area.

- 75) **Foundation** means that part of the structure which is below the lowest floor and which provides support for the superstructure and which transmits the load of the superstructure to the bearing strata.
- 76) **Frontage** means the measurement of the side of any site abutting the road.
- 77) **Gallery** means an intermediate floor or platform projection from a wall of an auditorium or a hall providing extra floor area, additional seating accommodation, etc. It shall also include the structures provided for seating in stadia.
- 78) **Garage or Private Garage** means a building or a portion thereof designed and used for parking of private owned motor driven or other vehicles. **Public Garage** means a building or portion thereof, other than a private garage, designed or used for repairing, servicing, hiring, selling or storing or parking motor driven or other vehicles.
- 79) **Garbage** means solid wastes from the domestic and commercial preparation, cooking and dispensing of food and from the handling storage, and sale of produce.
- 80) **Garbage, Properly Shredded** means the waste from the preparation, cooking and dispensing of food that have been shredded to such a degree that all particles will be of 1cm carried freely under the flow conditions normally prevailing in sewers with no particle greater than 1cm in any dimension.
- 81) **Geological Hazard** refers to the natural earth processes or phenomena, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. *Geological hazard includes internal earth processes of tectonic origin, such as earthquakes, geological fault activity, tsunamis, volcanic activity and emissions as well as external processes such as mass movements: landslides, rockslides, rock falls or avalanches, surfaces collapses, and debris and mud flows. Geological hazards can be single, sequential or combined in their origin and effects.*
- 82) **Geographic Information Systems (GIS)** refer to the analysis that combines relational databases with spatial interpretation and outputs often in form of maps. A more elaborate definition is that of computer programs for capturing, storing, checking, integrating, analyzing and displaying data about the earth that is spatially referenced. *Geographical information systems are increasingly being utilized for hazard and vulnerability mapping and analysis, as well as for the application of disaster risk management measures.*
- 83) **Government, State** means the Government of Karnataka.
- 84) **Government, Urban Local** means the City Corporation and or City Municipality and/ or Town Municipality and /or Town Panchayat as the case may be.
- 85) **Government, Rural Local** means the Grama Panchayat.
- 86) **Ground Floor** means the floor immediately above the level of the adjoining ground level on all sides or above the basement floor.
- 87) **Ground Level** means the level of the crown of the existing nearest constructed road or existing ground level, whichever is higher.

- 88) **Group Housing** means housing for more than one dwelling unit, where land is owned jointly (as in the case of cooperative societies or the public agencies, such as local authorities or housing boards, etc.) and the construction is undertaken by one Agency.
- 89) **Habitable Room** means a room occupied or designed for occupancy by one or more persons for study, living, sleeping, eating, and kitchen - if it is used as a living room, but not including bathrooms, water-closet compartments, laundries, serving and store pantries, corridors, cellars, attics, and spaces that are not used frequently or during extended periods.
- 90) **Hazard** refers to a potentially damaging physical event, phenomenon and/or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. *Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydrometeorological and biological) and/or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency and probability.*
- 91) **Hazard Analysis** means the Identification, study and monitoring of any hazard to determine its potential, origin, characteristics and behavior.
- 92) **Head Room** where a finished ceiling is not provided; the lower side of the joists or beams or the tie-beams shall determine the clear head room.
- 93) **Heavy Industry** means an industry employing more than 500 workers. These industries are permissible only in accordance with the land use as per the Revised Comprehensive Development Plan or Master Plan approved by the Government.
- 94) **Height of Building** means the vertical distance measured in the case of flat roofs from the average ground level/plot level to the top of the roof, and in the case of pitched roofs, up to the point where the external surface of the outer wall intersects a finished surface of the sloping roof; and in the case of gable facing the road, the mid-point between the eave-level and the ridge. Architectural features serving no other function except that of decoration shall be excluded for the purpose of measuring heights. Water tank, chimneys, lift room, stair case room and parapet are also excluded for the purpose of measuring the height of a building.
- 95) **Induced Seismicity** refers to earthquake activity resulting from man-made activities such as mining, large explosions, or forcing large quantities of liquid deep into the ground.
- 96) **Industrial waters** means the liquid wastes from industrial manufacturing process, trade, business or form of any development, recovery or processing operation, as distinct from sanitary sewage.
- 97) **Landslide Stabilisation** refers to the measures taken to prevent a landslide.
- 98) **Land Use** includes the purpose for which the site or part of the site or the building or part of the building is in use or permitted to be used by the Authority. Land use includes zoning of land use as stipulated in the Master Plan and the Zoning Regulations.

- 99) **Land-Use Planning** refers to that branch of physical planning that determines the means and assesses the values or limitations of various options in which land is to be utilized, with the corresponding effects on different segments of the population or interests of a community taken into account in resulting decisions. *Land-use planning can help to mitigate disasters and reduce risks by discouraging settlements and construction of key installations in hazard prone areas, control of population density and expansion, and in the sitting of service routes for transport, power, water, sewage and other critical facilities.*
- 100) **Licence** means a permission or authorisation in writing by the Authority/Development Authority to carry out work regulated by the byelaws and/or Zoning Regulations.
- 101) **Lifelines** means the public facilities and systems that provide basic life support services such as water, energy, sanitation, communications and transportation.
- 102) **Lift** means an appliance designed to transport persons or materials between two or more levels in a vertical or substantially vertical direction by means of a guided car or platform. The word 'elevator' is also synonymously used for 'lift'.
- 103) **Light Industry** means an industry employing not more than 50 workers with power or without power, aggregate installed power not exceeding 25 HP, and which conforms to performance standards as given in Schedule II not causing excessive, injurious or obnoxious fumes, odour, dust, effluent or other objectionable conditions.
- 104) **Loft** means a residual space above normal floor level, which may be constructed or adopted for storage purposes.
- 105) **Master Plan** (refer Development Plan).
- 106) **Medium Industry** means an industry which employs not more than 500 workers and conforming to performance standards as given in Schedule III.
- 107) **Mezzanine Floor** means an intermediate floor between two floors of any storey forming an integral part of the floor below.
- 108) **Mitigation** refers to the measures taken in advance of a disaster aimed at decreasing or eliminating its impact on a society and on environment including preparedness and prevention.
- 109) **Natural Hazard** means probability of occurrence, within a specified period of time in a given area, of a potentially damaging natural phenomenon.
- 110) **Natural Hazard Prone Areas** means areas likely to have (i) moderate to very high damage risk zone of earthquakes, OR (ii) moderate to very high damage risk of cycles OR (iii) significant flow or inundation, OR (iv) landslide potential or proneness, OR (v) one or more of these hazards.
- 111) **Natural Outlet** means a channel in which a flow of ground water occurs continuously.
- 112) **Non-Combustible Materials** means a material that neither burns nor gives off inflammable vapours in sufficient quantity to ignite a pilot flame.

- 113) **Occupancy or Use Group** means the principal occupancy for which a building or part of the building is used or intended to be used. For the purpose of classification of a building according to occupancy, occupancy shall be deemed to include subsidiary occupancies which are contingent upon it.
Note: The building use classification and land use classification shall be based on the provisions of Zoning Regulations approved under the KTCP Act, 1961.
- 114) **Occupancy mixed** means the occupancy where more than one type of occupancy are present in different portions of the building.
- 115) **Open space** means an area, forming an integral part of the plot, left open to the sky. The open space shall be the minimum distance measured between the front, rear and side of the building and the respective plot boundaries.
- 116) **Owner** means a person or body having a legal interest in land and/or building thereon. This includes free holders, leaseholders or those holding a sub-lease that both bestows a legal right to occupation and gives rise to liabilities in respect of safety or building condition. In case of lease or sub-lease holders, as far as ownership with respect to the structure is concerned, the structure of a flat or structure on a plot belongs to the allottee/lessee till the allotment/lease subsists.
- 117) **Parapet** means a low wall or railing built along the edge of a roof or floor.
- 118) **Parking Space** means an area enclosed or unenclosed, covered or open, sufficient in size to park vehicles, together with a drive-way connecting the parking space with a street or alley and permitting ingress/way in and egress/way out for vehicles.
- 119) **Partition** means an interior non-load bearing barrier, one storey or part-storey in height.
- 120) **Penthouse** means a covered space not exceeding 10 square meters on the roof of a building that shall have at least one side completely open without any partition.
- 121) **Person** includes any individual or body of individuals corporate or incorporate (including individual firm, company, association, society, corporation or group).
- 122) **Plinth** means the portion of a structure between the surface of the surrounding ground and surface of the floor, immediately above the ground.
- 123) **Plinth Area** means the built up covered area of the building/buildings immediately above plinth level.
- 124) **Plinth Level** means the level of the floor of a building immediately above the surrounding ground.
- 125) **Plot or Site** means a parcel (piece) of land enclosed by definite boundaries.
- 126) **Porch or Portico** means a roof cover supported on pillars or cantilevered projection for the purpose of pedestrian or vehicular approach to a building.

- 127) **Preparedness** refers to the activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary removal of people and property from a threatened location and facility.
- 128) **Prevention** refers to the activities undertaken to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters. *Depending on social and technical feasibility and cost/benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In the context of public awareness and education related to disaster risk reduction, changing attitudes and behavior contribute to promoting a “culture of prevention”.*
- 129) **Public Awareness** refers to the process of informing the general population, increasing levels of consciousness about risks and how people can act to reduce their exposure to hazards. This is particularly important for public officials in fulfilling their responsibilities to save lives and property in the event of a disaster. *Public awareness activities support changes in behavior leading towards a culture of prevention. This involves public information, dissemination, education, radio or television broadcasts and the use of printed media, as well as, the establishment of information centers and networks.*
- 130) **Quality Assurance** refers to all planned and systematic actions necessary to ensure that the final product i.e. structure or structural elements will perform satisfactorily in service life.
- 131) **Quality Audit** refers to a requirement for an independent (third party) assessment of the quality and seismic and cyclone resistant features of the buildings. The quality audit report shall consist of conformance or non-conformance of structures with the technical specifications for earthquake and cyclone resistance and to suggest remedies/rectification, if any.
- 132) **Quality Control** refers to construction quality and control of variation in the material properties and structural adequacy. In case of concrete, it is the control of accuracy of all operations that affect the consistency and strength of concrete, batching, mixing, transporting, placing, curing and testing.
- 133) **Rain Water Harvesting** in a building site means storage or recharging into ground of rainwater falling on the terrace or on any paved or unpaved surface within the building site. Rain Water Harvesting is a method of utilizing rain water for domestic and agricultural use.
- 134) **Recovery** refers to the decisions and actions taken after a disaster with a view to restoring the living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. *Recovery (rehabilitation and reconstruction) is an opportunity to develop and apply disaster risk reduction measures.*

- 135) **Registered Town Planner (RTP), Registered Architect (RA), Registered Engineer (RE), Registered Structural Engineer (RSE), Registered Structural Design Agency (RSDA), Registered Geotechnical Engineer (RGE), Registered Construction Engineer (RCE), Registered Construction Management Agency (RCMA), Registered Quality Auditor (RQA), Registered Quality Audit Agency (RQAA), Registered Electrical Engineer (REE)** means respectively the person(s)/firm registered with the competent authority for the purpose of this act as a town planner, architect, engineer, structural engineer, structural design agency, geo-technical engineer, construction engineer, construction management agency, quality auditor, quality audit agency, electrical engineer under these byelaws or any other act prevailing for the area.
- 136) **Town Planner on Record (TPR), Architect on Record (AR), Engineer on Record (ER), Structural Engineer on Record (SER), Structural Design Agency on Record (SDAR), Geotechnical Engineer on Record (GER), Construction Engineer on Record (CER), Construction Management Agency on record (CMAR), Quality Auditor on record (QAR), Quality Audit Agency on record (QAAR), Electrical Engineer on Record** means respectively the person(s)/firm employed by the owner, developer for a particular development/construction who is competent and having a valid registration to perform duties and responsibilities under these byelaws or any other act prevailing for the area.
- 137) **Relief / Response** means the provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.
- 138) **Resilience / Resilient** refers to the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and improve prevention measures.
- 139) **Retrofitting (or upgrading)** refers to the enhancement of strength of structures in order to be more resistant to the forces of natural hazards. It also includes upgrading the strength of unsafe building by using suitable engineering techniques.
- 140) **Risk** refers to the probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation $Risk = Hazards \times Vulnerability$.
- 141) **Risk Assessment/Analysis** refers to a process undertaken to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend. *The process of conducting a risk assessment is based in a review of both the technical features of hazards such as their location, intensity, frequency and probability; and also the analysis of the physical, social, economic and environmental dimensions of vulnerability, while taking particular account of the coping capabilities pertinent to the risk scenarios.*

- 142) **Risk Management** means the process of identifying, analyzing and quantifying the probability of losses in order to undertake preventive or corrective actions. This involves planning actions to reduce vulnerability in areas where risk can be controlled, and establishing protective mechanisms against the potential economic losses from uncontrollable factors of natural hazards.
- 143) **Road (Street)** means any means of access namely, highway, street, lane, pathway, alley, stairway, passageway, carriageway, footway or bridge, whether a thoroughfare or not, over which the public have a right of passage or have passed and had access uninterruptedly for a specified period, whether existing or proposed in any scheme, and includes all bunds, channels, ditches, storm-water drains, culverts, sidewalks, traffic islands, roadside trees and hedges, retaining walls, fences, barriers and railings within the street lines.
- 144) **Road (Street) Level or Grade** means the officially established elevation of grade of the central line of the road upon which a plot fronts and if there is no officially established grade, the existing grade of the street at its mid-point.
- 145) **Road (Street) Line** means the line defining the side limits of a road (street).
- 146) **Road Width** means the distance between the boundaries of a road including footways and drains measured at right angles to the center of the plot. In case of roads having service roads in addition to the main roads, the width of road shall be the aggregate width of service roads and main roads for determining Floor Area Ratio (FAR) and number of floors.
- 147) **Roof Exits** refers to a means of escape on to the roof of a building, where the roof has access to it from the ground. The exit shall have adequate cut-off within the building from the staircase below.
- 148) **Room Height** means the vertical distance measured from the finished floor surface to the finished ceiling surface. Where finished ceiling is not provided, the underside of the joists or beams or the tie beams shall determine the upper point of measurement.
- 149) **Secondary Hazards** mean those hazards that occur as a result of another hazard or disaster, i.e., fires or landslides following earthquakes, epidemics following famines, food shortages following drought or floods.
- 150) **Seismicity** refers to the distribution of earthquakes in space and time.
- 151) **Service Apartments** means fully furnished room or suite or rooms with kitchen, which are intended to be rented out on daily/weekly/monthly basis.
- 152) **Service Industry** means an industry where services are offered with or without power. If power is used, aggregate installed capacity shall not exceed 5 HP or the site area shall not exceed 240 square meters. Service industries shall be permitted in the light industries zone of the development plan as given in Schedule I.
- 153) **Service Road/Lane** means a road/lane provided adjacent to a plot(s) for access or service purposes as the case may be.
- 154) **Set back** means the open space prescribed under these byelaws between the plot boundary and the plinth of the building.

- 155) **Set-back Line** means a line prescribed under these byelaws beyond which nothing can be constructed towards the plot boundaries except those not included under the definition of covered area.
- 156) **Site** see **Plot**.
- 157) **Sewage** means a combination of the waters carried from residences, business buildings, institutions and industrial establishments.
- 158) **Sewage Treatment Plant** means any arrangement or devices and structures used for treating sewage.
- 159) **Sewer** means a pipe, or conduct or other construction provided for carrying sewage.
- a) **Building Sewer** means the sewer under the control of the property owner and extending from the building to the first inspection chamber/intercepting trap or manhole.
 - b) **Public sewer** means a sewer in which all owners of abutting properties may discharge, and which is controlled by the public body.
 - c) **Sanitary Sewer** means a sewer, which carries sewage, and to which storm, surface and ground water are not admitted.
 - d) **Storm Sewer** means sewer, which carries storm and surface water and drainage but excludes sewage and industrial wastes, other than unpolluted cooling water.
 - e) **Combined Sewer** means a sewer receiving both sewage and surface run off.
- 160) **Sewer System** means the sewage disposal system.
- 161) **Sewerage works** mean all facilities for collecting, pumping, treating and dispensing of sewage.
- 162) **Sludge** means any discharge of water sewage industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any duration longer than 15 minutes, five times the average 24 hour concentration of flow during normal operation.
- 163) **Staircase Room** means a room accommodating the stair and for purpose of providing protection from weather and not used for human habitation.
- 164) **Standard Methods** shall means the examination and analytical procedures set forth in the most recent edition of Standard Methods' for the examination of water, sewage and Industrial wastes published jointly by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation. However, the use of identical analytical procedure outlined by the World Health Organisation or the Indian Standards Institution of the Government of India, or CPHEEO, from time to time, whenever such procedures exist will be permitted.
- 165) **Storey** means the portion of a building included between the surface of any floor and the surface of the floor next above it, or if there be no floor above it, then the space between any floor and the ceiling next above it.
- 166) **Storey, Topmost** means the uppermost storey in a building whether constructed wholly or partly on the roof.

- 167) **Structural Measures** refers to the engineering measures and construction of hazard-resistant and/or protective structures and infrastructure.
- 168) **Suspended Solids** means solids that either float on the surface or are in suspension in water, sewage or other liquids, which are removable by a laboratory filtering device, quantitative determination of which shall be done in accordance with standard methods.
- 169) **Sustainable Development** means the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of “needs”, in particular the essential needs of the poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and the future needs. *Sustainable development is based on socio-cultural development, political stability and decorum, economic growth and ecosystem protection, which all relate to disaster risk reduction.*
- 170) **To Abut** means to abut on a road (street) boundary such that any portion of the building is on the road (Street) boundary.
- 171) **To Erect** means to erect a new building on any site whether previously built upon or not; and To re-erect any building of which portions above the plinth level have been pulled down, burnt or destroyed.
- 172) **Travel Distance** is the distance to be traveled from any point in a building to a protected escape route, external escape route or final exit.
- 173) **Uncertainty** refers to situations in which there are insufficient data to estimate ‘risk’ in terms of mathematical probability.
- 174) **Ventilation** refers to the supply of outside air into or the removal of inside air from an enclosed space.
- 175) **Verandah** means a covered area with at least one side open to the outside with the exception of 1 m high parapet on the upper floors to be provided on the open side.
- 176) **Volume to Plot Area Ratio (VPR)** is the ratio of volume of building measured in cubic meters to the area of the plot measured in square meters and expressed in meters.
- 177) **Vulnerability** refers to a set of conditions and processes resulting from physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impact of hazards. *Positive factors, those increase the ability of people and the society they live in, to cope effectively with hazards and can reduce their susceptibility, are often designated as capacities.*
- 178) **Water Closet** refers to a water flushed plumbing fixture designed to receive human excrement directly from the user of the fixture. The term is used sometimes to designate the room or compartment in which the fixture is placed.
- 179) **Water Course** means a channel in which a flow of water occurs either continuously or intermittently.

- 180) **Width of Plot** means the horizontal distance between the left and right plot (site) boundaries.
- 181) **Window** refers to an opening to the outside other than a door, which provides all or part of the required natural light or ventilation or both to an interior space.
- 182) **Zonation** or **Zoning** in general means the subdivision of a geographical entity (country, region, etc.) into homogenous sectors with respect to certain criteria (for example, intensity of the hazard, degree of risk, same overall protection against a given hazard, etc.)
- 183) **Zoning Regulations** means the regulations/byelaws governing the zoning of land use under the Development Plan/Master Plan of Mangalore City, prepared under the Karnataka Town and Country Planning Act, 1961 prescribing the uses permissible in different land use zones, building lines, standards for roads, standards for civic amenities etc.

3.0 ZONING REGULATIONS (Land Use Classification & Uses Permitted)

3.1 Preamble

- 3.1.1 In order to promote public health, safety and the general social welfare of the community, it is necessary to apply control and reasonable limitation on the development of land and buildings. This is to ensure that most appropriate, economical and healthy development of the city takes place in accordance with its coping capacity, land use plan, and its continued maintenance over the years. For this purpose, the planning area is divided into a number of use zones, such as residential, commercial, industrial, public and semi public etc. Each zone has its own regulations, as the same set of regulations cannot be applied to the entire area.
- 3.1.2 Zoning Regulations protect residential areas from the harmful invasions of commercial and industrial uses, reducing environmental degradation and at the same time promoting the orderly and sustainable development of industrial and commercial areas, by suitable regulations on spacing of buildings to provide adequate light, air, protection from fire, etc. It prevents over crowding in buildings and on land to ensure adequate facilities and services. Zoning is not retrospective. It does not prohibit the uses of land and buildings that are lawfully established prior to the coming into effect of these regulations. If these uses are contrary to the newly proposed uses, they are termed non-conforming uses and are gradually eliminated over years without inflicting unreasonable hardship upon the property owner. The Zoning Regulations and its enforcement ensure proper land use and development and form an integral part of the Master Plan. It also ensures solutions to problems of development under local conditions.
- 3.1.3 The Zoning Regulations for Mangalore Local Planning Area prepared under the Clause (iii) of sub-section (2) of section 12 of the Karnataka Town and Country Planning Act, 1961 are detailed in this chapter. Where there is uncertainty as regards the boundary of the zones in the approved maps, it shall be referred to the Development Authority and the decision of the Development Authority in this regard shall be final. Also for any doubt that may arise in interpretation of the provisions of the Zonal Regulations, the Director of Town Planning shall be consulted by the Development Authority.

3.2 Classification of Land Use Zone and Establishment of Zoning Maps

- 3.2.1 For the purpose of these regulations, the entire area within the local planning area is divided into following use zones (under the section 12 of the Karnataka Town and Country Planning Act, 1961).
- a) Residential
 - a) Commercial (Retail and Wholesale)
 - b) Industrial (Light, Medium, Heavy & Service)
 - c) Public and Semi-Public
 - d) Public Utilities
 - e) Parks & Open Spaces and Playgrounds
 - f) Transport and Communication
 - g) Agricultural

- 3.2.2 Uses of land that are permitted and those that may be permitted under special circumstances by the Development Authority in different zones of the local planning area shall be as given in the Byelaws 3.3 to 3.11 and 3.13 (Byelaw 3.13 gives the illustrative list of permissible service industries in various zones, and building lines).
- 3.2.3 The zoning maps as approved by the Government shall be identified by the seal of the Government. Any changes in the map that may be permitted by the Development Authority or the Government as the case may be from time to time shall be similarly attested. The maps as approved by the Government shall be kept in the office of the Development Authority and those shall be the authoritative maps of reference.
- 3.2.4 The copies of the maps shall be supplied to the local authorities viz., main office and branch offices of Mangalore City Corporation, and all mandal/grama panchayats coming within the territorial jurisdiction of the Development Authority. The changes as approved by the Government shall also be intimated to all these local authorities having jurisdiction over the area.
- 3.2.5 The maps shall be made available to the public by the Development Authority, Authority and the local Authorities in the office for inspection during the prescribed hours on all working days. The maps shall also be made available on the home page of MUDA and MCC, and also in the form of CDs and printed books for purchase at nominal price.
- 3.2.6 The regulations governing minimum size of plot, maximum plot coverage, minimum setbacks on four sides of the building, minimum road widths, maximum number of floors and maximum height of structures that could be permitted in various zones shall be as described in the relevant chapters of this set of building byelaws.
- 3.2.7 In case of change of land use from the approved master plan to other use is approved by the Development Authority, the setbacks shall be the higher of the two uses.
- 3.2.8 **Application of land use:**
- (a) Where the nomenclature of a road differs from the one mentioned in the maps of the master plan, the location of the site may be considered to determine the land use.
 - (b) In case of permitted land use, the regulations shall be applied to a building keeping in view the use of the proposed building without reference to the use of the Zone. However, the front set back shall be the higher of the one prescribed for that particular zone or the one prescribed for the use permitted in the zone.
Example: If residential use is granted in a commercial zone, the regulations applicable to residential use only be adopted except maintaining the higher of the front set back applicable either to commercial or residential use.
 - (c) The proposed land use indicated towards the roadside of a property shall be the land use for the entire property (one property depth) without identifying it for different uses by measuring as per the scale of the maps. This is applicable only to the built-up area as shown in the existing land use map.
 - (d) Different uses permitted in a given zone may be allowed in different floors of the building. In such cases, the regulations applicable to the use of the ground floor of the building shall apply to the entire building. When mixed land uses are permitted in the ground floor, the predominant use among them shall be considered as the use of the ground floor.

3.2.9 Generators: Diesel/Kerosene/Petrol Generators equivalent to the quantity of power supplied by the MESCOM may be permitted as substitute to power cut and power failures in any zone after obtaining information on the quantity of power supplied to a premises and the capacity of generators required from the MESCOM. However, in residential zone, installation of generators be discouraged and shall be given in exceptional cases after spot verification and obtaining N.O.C. from the people living within a distances of 100m from the location point of the generators.

3.3 Residential Zone

(a) Uses permitted:

Dwellings, hostels including working women and gents hostels, old age homes, orphanages, places of public worship, schools offering higher primary school courses, (with a minimum site area of 500sqm for nursery schools, 1000sqm for lower primary schools and 2000sqm for higher primary schools) public libraries, post and telegraph offices, telephone exchange, MESCOM counters, milk booths, local vegetable/fruit growers & vendors, HOPCOM centres, STD booths, mobile phone service centres, computer institutes.

(b) Uses that are permitted under special circumstances:

Municipal, state and central government offices, public utility buildings, cemeteries, golf clubs, banks, nursing homes, hospitals for human care and veterinary care, (with a minimum site area of 750sqm and the site is abutting a road of minimum 12m width), philanthropic uses, fuel storage depots & filling stations (only if the site is abutting a road of minimum 12m width), service industries with power up to 10 HP (for all the above industries and those as per the list given in Schedule-I, power required for air conditioning, lifts and computers are excluded from HP specified above. The Noise and the effluent generated shall be within the prescribed limits as specified by MOEF and KSPCB), power loom for silk twisting (up to 10 HP) provided the noise generated shall be within the limit prescribed by the MOEF and KSPCB, gas cylinder storage provided it satisfies all required norms of safety, neighbourhood or convenience shops limited to 20sqm., hard and software computer offices and information technology related activities provided the site is abutting a road of minimum 12m width, chat/café centres, doctors consulting room, office of advocates, other profession in public interest not exceeding 20sqm provided the applicant himself is a professional, pay & use toilets and service apartments, vehicle parking including multilevel car parking.

3.4 Commercial Zone

3.4.1 Retail Business Zone

(a) Uses permitted:

Offices, shops, commercial complexes and service establishments like hair dressing saloons, laundries, dry cleaning and tailoring shops, hotels, clubs, hostels, newspaper or job printing, all type of offices, banks, places of amusement or assembly, restaurants microwave towers and stations, advertising signs conforming to relevant building byelaws, church, temple and other places of worship. Educational, medical/engineering/technical and research institutions on the sites having minimum 2ha with a minimum of 12m wide approach road). libraries, any

retail business or services not specifically restricted or prohibited therein, filling stations, neighbourhood shops, nursing homes, service industries listed in Schedule – I (power upto 10HP). Residential buildings including orphanages and old age homes, warehouses, and kalyana mantapas, cinema theatres, multiplexes, auditoriums, community centres, hardware and software computer offices and Information Technology related activities (Power required for air conditioners, lifts and computers are excluded from the HP specified above) and all uses permitted and permissible under special circumstances in residential zone.

(b) Uses that are permitted under special circumstances:

Automobile workshops, manufacturing establishments employing not more than ten labourers and manufacturing goods to be sold by the manufacturer in retail with not more than 20 HP in district shopping centres (major business area) and uses permitted or permissible on appeal in the residential zone other than those specifically prohibited therein.

3.4.2 Wholesale Business Zone

(a) Uses permitted:

As in the case of retail business zone and service industries, with power up to 20 HP.

(b) Uses that are permitted under special circumstances:

Same as in the case of retail business zone with power up to 50HP (except for residences & nursing homes), storage of inflammable materials (subject to strict compliance of safety regulations), junkyard, truck terminals weigh bridges, cold storage, fruit and vegetable markets, meat and fish markets, Wholesale business.

Note: Commercial complexes / office complexes/ neighbourhood shops should have sufficient toilet for visitors in each floor and should be shown on plan. It shall have waste disposal arrangements.

3.5 Industrial Zone

3.5.1 Light Industrial Zone

(a) Uses permitted:

All industries, conforming to performance standard and those given in illustrative list in schedule-II which would not cause excessive injurious or obnoxious fume, odour, dust, or any other objectionable effluents, etc. and employing not more than 50 workers with or without power (total aggregate installed power not exceeding 25 HP), covered storage for industry, public utilities and related buildings, dairy and poultry farms, Information Technology & Bio Technology industries, Sports and recreational uses. Bus and truck terminals, filling stations, taxi and scooter stands, canteen, all uses permissible in the commercial use zone except residential uses, and recreational facilities for employees, dwellings for manager's essential staff like foreman and watch and ward area not exceeding of 240sqm or 10% of the total area whichever is less.

(b) Uses that are permitted under special circumstances:

Junkyards, ice & freezing plants with power not exceeding 50HP. Where Information Technology & Bio Technology industries are permitted in an area of 5.0ha and above, 30% of the area may be permitted for residential apartment for the benefit of the employees.

3.5.2 Medium Industrial Zone

a) Uses permitted:

All uses and industries permitted in light industrial zone and those employing not more than 500 workers, with aggregate installed power not exceeding 100 HP. Industries conforming to performance standards as given in Schedule-III, warehousing and storage, public utilities buildings, parking, loading and unloading requirements to be provided in all cases, essential staff, watch and ward and manager quarters not exceeding 300 sqm area or 5% of the total area whichever is lower.

b) Uses that are permitted under special circumstances:

All uses permitted and permissible under special circumstances in light industrial zone, power up to 300 HP conforming performance standards.

3.5.3 Heavy Industrial Zone

a) Uses permitted:

All industries, all uses permitted under light and medium industrial zone and those employing more than 500 workers. Watch and ward, manger's quarters not exceeding 1000sqm or 5% of the total area whichever is lower. The industry shall be classified as heavy if the labour force or the power exceeds the quantum prescribed for medium industry.

b) Uses that are permitted under special circumstances:

Uses permitted under special circumstances under light and medium industrial zones, slaughterhouses and burial ground, crematoria, obnoxious and hazardous industries away from predominant wind directions.

Note:

- 1) All medium and heavy industries are to be cleared by the Karnataka State Pollution Control Board.
- 2) Industry permitted is subject to performance characteristics viz. air, water and noise pollution, vibration and sound pollution, dust, odour, effluent and general nuisance.

3.6 Public and Semi-Public Zone

a) Uses permitted:

All Central, State and Quasi Government offices and centres and institutional office, educational, college campus including hostel facilities for students, cultural and religious institutions including libraries, reading rooms and clubs, medical and health institutions, cultural institutions like community halls, opera houses, of predominantly non commercial nature, utilities and services, water supply installations including disposal works, electric power plants, high tension and low tension transmission lines, sub stations, gas installation and gas works, fire fighting stations, filling stations, banks, and quarters for essential staff and all uses permitted under parks and playgrounds.

Note: Retail shops, restaurants, filling stations, clubs, banks, canteens, dwellings required for proper maintenance and functioning of public and semi-public uses in the

zone may be permitted when they are run on noncommercial basis in their own premises and ancillary to the respective institutions.

b) Uses that are permitted under special circumstances:

Parking lots, repair shops, parks, playgrounds and recreational uses, stadium, cemeteries, crematorium, clubs, canteen, libraries, aquarium, planetarium, museum, horticultural, nursery and swimming pool, orphanages and old age homes.

3.7 Public Utilities

a) Uses permitted:

Water supply installations including treatment plants, storage reservoirs, Overhead tanks, drainage and sanitary installations including treatment plants and disposal works, drying beds, dumping yards, electric power plants, high and low tension transmission lines, sub-stations, gas installations and gas works, fire stations, milk dairies and such other public utilities.

b) Uses that are permitted under special circumstances:

Shops, canteens, offices, banking counter, dwellings required for proper maintenance and functioning of public utility and other ancillary users, in their own premises as an ancillary to the respective institutions not exceeding 5% of the total area.

3.8 Parks & Open Spaces and Playgrounds (including Public Recreational Area)

a) Uses permitted:

Parks, play grounds, children's play land inclusive of amusement parks such as Disney land type, toy trains, parkways, boulevards, cemeteries and crematoria, lakes and water bodies, spots of scenic beauty, streams/waterfalls, water fronts, spots of historical significance.

b) Uses that are permitted under special circumstances

Clubs, (non commercial nature) canteens, libraries, aquarium, planetarium, museum, balabhavan, art gallery, horticulture/nursery, transportation terminals and swimming pool, milk booths, local vegetable/fruit growers & vendors/Hopcom centres. Public toilets, parking and public use ancillary to park and open space and playground. The area of such ancillary use shall not exceed 5% of total area.

3.9 Transportation and Communication Zone

a) Uses permitted:

Railway lines, railway yards, railway stations, railway workshops, roads, road transport depot, bus stations and bus shelter, parking areas, truck terminals, dock yards, jetties, piers, airports, post offices, telegraph offices, telephones and telephone exchanges, television telecasting and radio broadcasting stations, microwave stations and offices in their own premises and residential quarters for watch and ward. filling stations.

b) Uses that are permitted under special circumstances:

Clubs, godowns and indoor recreational uses, shops, canteens, restaurants, banks, dwellings required for proper maintenance of the transport and communication services in their own premises as an ancillary to the respective institutions not exceeding 5% of the total area.

3.10 Agricultural Zone

a) Uses Permitted:

Agriculture, horticulture, children's play land inclusive of amusement spots such as Disney land type, toy trains, dairy and poultry farming, milk, chilling centres, farm houses and their accessory building and uses not exceeding 200 sqm of plinth area within the plot area limitation of 1.20 hectares. Uses specifically shown as stated in the land use plan like urban village, brick kilns, quarrying and removal of clay and stone up to 3m depth, rice mills, sugar mills, jaggery mills gardens, orchards, nurseries and other stable crops, grazing pastures, forest lands, marshy land, barren land and water sheet, Highway amenities viz., filling stations, weigh bridges and check posts.

b) Uses that are permitted under special circumstances:

Places of worship, helipads, schools, hospitals, libraries, sports clubs, stadiums, playgrounds, water sports, golf centres, cultural buildings, exhibition centres, park and open spaces, graveyards/burial grounds, ashraha houses for economically weaker section, Rehabilitated schemes of government, Institutions relating to agriculture, research centres, storage and sale of farm products, where it is produced, service and repairs of farm machinery and agricultural supplies, old age and orphanage homes, Highway amenities (Truck terminals, weigh bridge, check posts, filling stations). Residential developments within the area reserved for natural expansion of villages may be permitted by the Development Authority under special circumstances, and buildings in such areas should not exceed two floors (Ground + one); and the setbacks and the plot coverage shall be as indicated in Tables 5.1 and 5.3.

3.11 Regulations for Development of New Areas

3.11.1 The purpose of these regulations is to guide the development of new areas in accordance with the land use plan. As long as this is done on sound planning principles with adequate space standards, the future of the City is assured. This will not necessitate costly corrective measures, which would be come necessary, if sub-standard growth is allowed to take place.

3.11.2 In sanctioning the sub-division of a plot under section 17 of the Karnataka Town and Country Planning Act, 1961, the Development Authority shall among other things see that the following planning standards are followed for sub-division of plot.

3.11.3 The developer who intends to develop a land by subdividing it, has to submit his proposal, including the proposed location of roads with its road width, to the Development Authority while applying for conversion.

3.11.4 Once the proposal is approved, the developer shall submit the approved copy to sub-registrar's office during registration of subdivided plots.

3.11.5 **Size of plot:** No building plot resulting from a sub-division after these regulations come into force is smaller in size than 54sqm in residential zone. In specific cases of sites for housing schemes for economically weaker sections, low income groups, slum clearance and Ashraya housing, the Development Authority may relax the above condition.

3.11.6 **Standards for roads:** These shall be as given in Table 3.1. Cul-de-sacs, when provided, shall have a minimum turn around area of 9m x 9m at the closed end.

**Table 3.1 Standards for Roads
(Byelaw 3.11.6)**

Sl. No.	Category of roads	Minimum width (m)
1	Cul-de-sac	7.5 m (maximum length 183 m with sufficient turning radius)
2	Loop street	7.5 m (maximum length 183 m)
3	Service road	9 m
4	Residential roads:	
	a) Up to length of 200 m	7.5 m
	b) Above 200 m up to 300 m	9 m
	c) Above 300 m	12 m
5	Minor roads (collector streets)	15 m
6	Major roads (feeder streets)	18 m
7	Arterial roads	24 m
8	Commercial roads	12m
9	Industrial roads	12 m

3.11.7 Areas for Open Spaces and Civil Amenities

3.11.7.1 The minimum requirements based on population shall be as given in Tables 3.2 and 3.3.

3.11.7.2 **Approval of Residential Layouts:** The areas for open space and Civic Amenities, while sanctioning of layout for residential purpose, shall be subject to the following conditions:

- a) The area earmarked for residential sites shall be a maximum of 55% of the total extent.
- b) Balance area shall be earmarked for roads, parks, and playgrounds and civic Amenities and the area under parks and playgrounds shall not be less than 10% of the total extent.

- c) If by incorporating major roads proposed in the Master Plan, the area under roads exceeds 45%, in such case the reservation under parks and civic amenities may be relaxed.
- d) A maximum of 3% of the total area from out of the residential area may be earmarked for convenient shops on the request of the owner.
- e) The area reserved for parks and open spaces, civic amenities and roads shall be handed over to the Development Authority, free of cost through a registered relinquishment deed before taking up development of the layout.

**Table 3.2 Civic Amenities
(Byelaw 3.11.7)**

Particulars	Population per unit	Minimum Area in ha.
a) Educational Facilities: -		
i) Nursery School (age group 3 to 6 years)	1,000	0.20
ii) Lower Primary and Higher Primary school (age group 6 to 14 years)	3,500 to 4,500	1.00 (Including play ground)
iii) High School (age group 14 to 17 years)	15,000	2.00 (including play ground)
iv) College	50,000	3.0 to 4.0 (including play ground)
b) Medical Facilities:		
i) Dispensary	5,000	0.10
ii) Health Centre	20,000	0.40 (including staff quarters)
c) Other facilities:		
i) Post and Telegraph	10,000	0.15 (including staff quarters)
ii) Police Station	10,000	0.20
iii) Religious Building	3,000	0.10
iv) Filling Station	15,000	0.50

**Table 3.3 Parks & open spaces and play grounds
(Byelaw 3.11.7)**

Sl. No.	Category	Population per unit	Minimum Area in hectares
1.	Tot-lot	500	0.05
2.	Children park	2,000	0.20
3.	Neighbourhood play ground	1,000	0.20
4.	Neighbourhood park	5,000	0.80

3.11.7.3 Exemption for open space and civic amenities in sub-division of land

- a) Subject to the provisions of Master Plan in respect of land use, proposed roads and minimum road width, whenever the total extent of land of the private residential layout for approval by the Development Authority is 4000sqm (0.40 hectares) and below, reservation of open space and civic amenities areas as per the Zoning Regulations may be dispensed with.
- b) In lieu of this, the Development Authority may collect the market value of converted equivalent land as fixed by the Sub-Registrar.
- c) The value to be recovered from the land owner in lieu of open space and civic amenities shall be in addition to the fee to be collected under Section 18 of the KTCP Act, development charges and any other fees/charges prescribed by the Government from time to time.
- d) The Development Authority shall deposit the amount so collected under a separate Head of Account and the amount shall be utilised only for acquisition of areas reserved as parks and open spaces in the approved Master Plan. The Development Authority shall, under no circumstances divert this amount for any other purposes.
- e) In case the land owner refuses to pay the market value of the equivalent land in lieu of open space and civic amenity to be reserved, the Development Authority shall approve the Sub-Division, reserving equivalent land separately and shall take possession of such an extent of equivalent land free of cost from the land owner and the Development Authority may dispose the same through auction for the purpose decided by the Development Authority.

3.11.7.4 Approval of non-residential private layouts

- (1) If the private non-residential layout for approval consists of only one single unit, approval shall be given subject to the following conditions:
 - a) 5% of the total extent of land shall be reserved for vehicle parking and this shall be in addition to the parking space prescribed in the byelaws as per the total floor area of the building.
 - b) 10% of the total extent shall be earmarked as open space.
 - c) The area reserved for vehicle parking and open space shall be maintained by the land owner and this land shall not be used for any other purpose by the land owner.
 - d) The Development Authority shall collect the fee under section 18 of KTCP Act and development charges applicable and any other fees and charges prescribed by the Government from time to time.
- (2) If the private non-residential layout for approval consists of two or more number of plots, the following conditions shall apply:
 - a) 5% of the total extent of land shall be reserved for vehicle parking and this shall be in addition to the parking space prescribed in the byelaws as per the total floor area of the building.
 - b) 10% of the total extent of land shall be earmarked as open space.
 - c) The area earmarked for parking and open space and roads shall be handed over to the local authority at free of cost for maintenance.

- d) The Development Authority shall collect the fee under section 18 of KTCP Act and development charges and any other fees and charges prescribed by the Government from time to time.

3.11.7.5 Approval of single plot for residential purpose

Any extent of land can be approved as single plot subject to the following conditions.

- (a) The land in question shall be converted for non-agricultural purpose.
- (b) The land shall have access from the public road and the use of land shall be in accordance with the Zoning Regulations of the Master Plan.
- (c) The necessary development charges shall be paid to the Development Authority. This fee is in addition to recovery of fee under section 18 of KTCP Act and other fees/charges prescribed by the Government from time to time.
- (d) If the owner of Single plot desires to sub-divide the plot at subsequent dates, he shall obtain approval by the Development Authority treating it as sub-division of land and the norms apply accordingly as prescribed in these regulations/byelaws.

3.11.7.6 Transferable Development Rights (T.D.R.)

- (1) Whenever private land has to be acquired by the Development Authority for road widening or any other purpose, the land owner shall be compensated by Government Guideline value or Registration value whichever is high, or by the Transferable Development Rights. These Development Rights can be legally transferred to any other person for development of property in any location.
- (2) The Development Authority shall identify the proposed road width of all major roads. Sign boards shall be erected by the Development Authority in each road, mentioning the proposed road width. This will help a prospective buyer of the site of that locality to understand how much land has to be left for road margin.
- (3) Presently, the City is divided into three types:
 - A: Intensely developed area
 - B: Moderately developed area
 - C: Sparsely developed area.Development Rights of area 'A' can be utilized in A, B and C areas.
Development Rights of area 'B' can be utilized only in B and C areas.
Development Rights of area 'C' can be utilized only in C areas.
- (4) Commercial Development Rights can be utilized for commercial and residential purpose, but residential Development Rights can only be utilized for residential purpose.

3.12 General Recommendations for Planned Development of the City

- 3.12.1 Mangalore City is a rapidly developing city and a is major port along the south-west coast of India. Many industries are coming up in the city and nearby areas. Consequently, the traffic through the city roads is going to increase exponentially. Proper traffic studies must be carried out to estimate the traffic volume during the next 20 to 30 years, and the roads must be redesigned and widened accordingly.

- 3.12.2 Along all major roads, pedestrian pathways must be developed.
- 3.12.3 Whenever high-rise buildings are proposed in any site, the Authority must insist on surrender of land by the applicant for widening the roads and adequate parking. Entry and exit from such buildings must be designed with consideration of safety and unhindered movements of traffic.
- 3.12.4 To preserve the skyline in designated parts of the city, height restriction must be imposed in those areas.
- 3.12.5 No new government offices must be allowed to be established in the city main area. The Zilla Panchayat has jurisdiction on the areas outside the Mangalore City limits. The Zilla Panchayat office may be shifted to a central place of the District, outside the City limits.
- 3.12.6 Vacant government lands must be developed as parks & gardens, open spaces, green belt areas and open parking areas. No new constructions must be allowed on this land.
- 3.12.7 Satellite townships must be developed on all the three directions – North (Surathkal-Pavanje-Mulki), East (Vamnjoor, Padil & Bantwal) and South (Ullal-Kotekar) areas. These areas may be developed into residential zones with good road, drainage and other facilities.
- 3.12.8 Special Economic Zones must NOT be permitted without proper environmental impact assessment and other related issues. The projected economic benefits often are at the cost of irreversible environmental damage and permanent hardship to the original inhabitants of the area and in the neighbouring areas. Therefore utmost care shall be taken before identifying a locality for Special Economic Zone.
- 3.12.9 The new court building proposed for construction on the light house hill may be shifted outside the main city centre.
- 3.12.10 An elevated rail system or the sky bus system may be proposed for Mangalore to Mulki, and Mangalore to Bantwal for improving the transportation facilities.
- 3.12.11 A Number of small passenger trains may be run on the Konkan railway between Udupi & Mangalore, and Mangalore & Puttur so as to reduce the number of bus services/motor vehicles plying on these routes.
- 3.12.12 The skills of technical personnel at the government offices such as Mangalore City Corporation must be regularly upgraded through short term courses and training programmes.
- 3.12.13 The number of qualified technical staff, with bachelor and master's degree in Engineering/technology disciplines (masters in structural engineering, geotechnical engineering, environmental engineering, transportation engineering, hydraulics and water supply engineering etc.) , must be increased at all government offices. This is required for the proper and quick scrutiny/processing of applications.

3.13 Schedules

The Illustrative list of industries/service industries in various zones as well as the building lines from the centre line of important roads of Mangalore City are provided in this section.

SCHEDULE – I

Illustrative list of service industries permissible in Residential Zone (under special circumstances by the Development Authority) as well as in Retail Business Zone

Sl. No.	Description
1	Bread and bakeries
2	Confectionery, candies and sweets
3	Biscuit making
4	Ice cream
5	Cold storage (small scale)
6	Aerated water and fruit beverages
7	Flour mills with 5 HP in residential zone and 10 HP in retail business zone
8	Automobile two wheelers and cycle servicing and repairs
9	Furniture (wooden and steel)
10	Printing, book binding, embossing, etc.
11	Laundry, dry cleaning and dyeing facilities
12	Photograph, printing (including sign board printing)
13	Tailoring
14	Handlooms (small scale)
15	Velvet embroidery shops
16	Art weavers and silk screen printing and batik work
17	Jewellery, gold ornaments and silver wares
18	Mirrors and photo frames
19	Umbrella assembly
20	Bamboo and cane products
21	Sports goods and its repair shops
22	Musical instruments repair shops
23	Optical lens grinding, watch and pen repairing
24	Radio repair shop
25	Rubber stamps
26	Card board box and paper products including paper (manual only)
27	Cotton and silk printing/ screen printing
28	Webbing (narrow, fabrics, embroidery, lace manufacturing)
29	Coffee curing units
30	Candles and wax products
31	Household kitchen appliances
32	Washing soaps small scale only
33	Fruit canning and preservation

34	Electric lamp fitting / Assembly of Bakelite switches.
35	Shoe making, repairing
36	Power looms (silk reeling unit up to 10 HP)
37	Areca nut processing unit
38	Beedi rolling
39	Agarbathi rolling
40	Assembly and repair of measuring instruments(excluding handling of mercury and hazardous materials)
41	Clay & modelling with plaster of Paris.
42	Dairy products e.g. cream, ghee, paneer, etc.
43	Enameling vitreous (without use of coal)
44	Milk cream separation
45	Manufacture of jute products
46	Manufacture of Bindi
47	Photo copying of drawings including enlargement of drawings and designs.
48	Packaging of shampoos
49	Packaging of hair oil
50	Utensil washing powder (only mixing and packaging)

SCHEDULE – II

Illustrative list of industries permitted in Light Industrial Zone

Sl. No.	Description
1	Bread and bakeries
2	Confectionery, candies and sweets
3	Biscuit making
4	Ice, ice cream
5	Cold storage (small scale)
6	Aerated water and fruit beverages
7	Flour mills with power up to 20HP
8	Hats, caps, turbans including garments
9	Hosiery including knitted garments
10	Gold and silver thread
11	Shoe lace making
12	Toy making (earthen paper, wooden plastic metal and tin)
13	Cotton and silk cordage's, twine thread and thread ball making
14	Velvet embroidered shoes
15	Art wares and silk screen printing and batik works
16	Jewellery, gold ornaments and silver wares
17	Ivory, wood carving and small stone carving
18	Electroplating, mica plating, engraving, spray painting
19	Photographs, printing (including sign board and printing)
20	Welding (electric/gas) workshops

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21	Stone carving
22	Mirrors and photo frames
23	Umbrella assembly
24	Bamboo and cane products
25	Sports goods
26	Card board box and paper products including paper
27	Stationery items including educational and school drawing instruments
28	Furniture making (wooden and steel)
29	Musical instruments
30	Printing, book binding, embossing, photograph, etc.
31	Optical lens grinding, watch and pen repairing
32	Steel wire products
33	Sheet metal works
34	Metal polishing
35	Laboratory porcelain wares
36	Radio assembly and parts, televisions, mobile phones, air conditioners, fridge assembly parts (small scale)
37	Electric lamps, fittings, shades, fixtures, etc.
38	Automobiles, scooters, cycle service and repair workshop
39	Laundry and dry cleaners
40	General jobs and machine shops
41	Iron foundries (only when related to other industries using electricity)
42	Biscuit making
43	Brushes (household, sanitary and toilet)
44	Shoe making and repairing
45	Leather goods
46	Black smithy
47	Household utensils, repair, welding, soldering, patching, and polish (kalai)
48	Vulcanising and tyre re-treading
49	Cement products
50	Chalk, crayon, artist's colour
51	Tobacco products (cigarettes and beedies)
52	Cosmetics and hair oils
53	Cutlery
54	Cycle parts and accessories
55	Door and window fittings
56	Drugs and medicines
57	Lantern, torches and flash lights
58	Aluminum wires, cake and pastry moulds
59	Padlocks and pressed locks
60	Rope making (vegetable fibre)
61	Mathematical instruments

62	Builder's hard wares
63	Tin products
64	Optical frames
65	Button clips
66	Wax polishing
67	Upholstery springs and other springs
68	Precision instrument of all kinds
69	Safety pins
70	Screws, bolts, nuts, pulleys, chains, gears
71	Conduit pipes fabrication (not exceeding 2" diameter)
72	Buckets and metal containers, plastic jugs and fixtures metal embossing
73	Oil stoves and pressure lamps
74	Paper mill (small scale) hand made
75	Washing soaps
76	Hand tools
77	Electric industries, computer and software
78	ice and freezing plants
79	Information Technology & Bio Technology

SCHEDULE – III

Illustrative list of industries permitted in the Medium Industrial Zone.

Sl. No.	Description
1	Small domestic appliances and gadgets (room heaters, coolers, hot plates, iron lamps, etc.)
2	Manufacturing of trunks and metal boxes, suit cases, small containers
3	Scientific, educational and industrial precision instruments.
4	Clocks and watches, photographic equipments
5	Typewriters, radios, televisions, air conditioners, fridges, STD/mobile sets.
6	Electrical instruments (including transistors)
7	Calculating machines (small machines only)
8	Copper wired and utensils
9	Sewing machines
10	Sanitary fittings (excluding sanitary wares)
11	Electrical appliances (room heaters, iron and room air coolers, small transformers, electric fans, fractional HP motors, cooking ranges, water heaters, etc.) computers and electric goods.
12	Electrical fans and industries permitted in light industrial zone.

Schedule IV Building Line from the centre line of the road

(Building lines are prescribed for some important roads in Mangalore city. Front setback is prescribed separately for various types of buildings in byelaw 5.3. The maximum of the front setback / building line shall be provided in the front.)

Sl.No.	Name of the Road	Building line from the centre line of road (m)
1.	Hampankatta junction to P.V.S. via K.S.Rao Road, Navabharath circle	13.50
2.	M.G.Road from P.V.S. to Lady Hill via Lalbagh.	17.00
3.	Kulur Ferry Road from Balaji to Lady Hill via Mannagudda,	13.50
4.	Kudmul Ranga Rao Road from P.V.S. to Nanthoor via Bunts Hostel, kadri market.	17.00
5.	Bejai Bondel road from Lalbagh to K.P.T. via Bejai Church.	13.50
6.	Bondel Road from N.H. 17 to Bajpe via Yeyadi, Padavinangadi, Bondel, Kavoor junction, Malavur, Bajpe Permude.	14.00
7.	Bajpi Kavoor Road from Kavoor cross to Kavoor junction.	13.50
8.	Kottara cross road from Kottara cross to infosis junction.	13.50
9.	Balmatta road from Hampankatta circle to Kankanady old circle	13.50
10.	New Kankanady bye pass road from New Kankanady to Pumpwell	13.50
11.	Kankanady old bye pass road (fathers muller's road)	7.50
12.	Hampankatta junction to St.Agnes, via Jyothi, Balmatta, upper & lower Bendoor, and Tagore Park Road	13.50
13.	Jeppu Seminary Road from Kankanady circle to Morgan's gate	13.50
14.	Cycle road from N.H. 17 to Morgan's gate	13.50
15.	Bolar main road from Morgan's gate to Bhagini Samaja junction	13.50
16.	Jeppu Market road from Morgan's gate to Marnamikatte junction	13.50
17.	Hampankatta circle to cascia via Pandeshwara, Mangaladevi	13.50
18.	All roads around Nehru Maidan	13.50
19.	Nellikai road from State bank up to Sulthan Battery via Bunder, Alape, Kudroli, Bokka Patna	13.50
20.	Sulthan battery road from lady hill to Sulthan battery	13.50
21.	Car street from Yonepoya junction to lower car street road via temple square Kalikamba	10.50
22.	Ajjjuddin road from Bunder station to car street road	10.50
23.	Bunder road from D.C. office junction to Dakke	10.50
24.	Rosario Church road from State bank circle up to level cross	10.50
25.	Kulur bridge junction to Sulthan Battery road along Gurupur river	10.50
26.	Ashok Nagar road from Urva Store to Dhambel Urva Marigudi road from Urva market to Ashok nagar via Dyvajna Kalyana Hall	7.50
27.	Kodical road from Urva Store to Karavali junction via Dommic church, Kodical	7.50
28.	Alape-Bajal road from N.H 17 to N.H. 48 junction	10.50
29.	Padil road from kulshekara to N.H. 48	13.50
30.	STPI road from Derebail church to Canara wire	13.50
31.	Pachanady road from Bondel church to N.H.13	10.50
32.	Mudushedde road from Vamajur junction to Bondel junction via Pilikula, Mudushedde Jara	13.50

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33.	Neermarga road from N.H. 13 to Neermarga junction	13.50
34.	Kuloor Kavoor road from Kuloor junction to Kavoor junction	13.50
35.	Jokatte road from N.H.17 Poorkodi via industrial area, Jokatte poorkodi temple	10.50
36.	Honakatte road from N.H. 17 to Kana	13.50
37.	Suratkal Bajpe road from Suratkal junction to BASF (Ring road junction)	25.00
38.	Mangal Pete road from Ring road junction to Bajpe via Permude, Kalavar	13.50
39.	Krishnapura road from railway station to Katipalla junction	13.50
40.	Ganesh gudi	13.50
41.	Karnad bye pass road from junction to N.H.17	13.50
42.	Kateel Pakshikere road from Mulky junction to up to LPA boundary	13.50
43.	Vijaya College Road	7.50
44.	University road from N.H. 17(Thokottu to LPA and via Munnur, Kuttar, Derelekatte, Belma Konaje	17.00
45.	Beeri road from Beeri junction to Derelakatte junction	25.00
46.	K.C. road from N.H. 17 to LPA boundary	13.50
47.	Kumpala road from N.H.17 to YMK college	7.50
48.	Ullal Someshwara road from N.H. 17 to Kotepura via Rani Abbakka circle	13.50
49.	Ullal Main road from N.H.17 to Abbakka circle	17.00

4.0 ADMINISTRATION

4.1 Building Licence

4.1.1 Every person who intends to:

- a. erect a building or a part of a building
- b. re-erect, repair or make any material alteration of any building
- c. demolish a building or part of a building
- d. convert or alienate any land or piece of land
- e. develop or redevelop any land or piece of land
- f. change the land use under special circumstances

within the jurisdiction area of Mangalore City Corporation is required to obtain a licence in writing from the Authority. If any clearance is required from the Development Authority, the Authority will refer such applications to the Development Authority.

4.1.2 Such licence will also be necessary in the case of a Department of Central or State Government or other governmental agencies to carry out any development and operational construction.

4.1.3 Nothing in these byelaws shall require the removal, alteration or abandonment of a building existing prior to the enforcement of these byelaws unless it was in contravention of any provision of law then applicable and also unless in the opinion of the Authority such building constitutes hazard to the safety of the property/neighbouring property or the occupants of the building itself or occupants of neighbouring buildings.

4.1.4 Where Land is to be developed, or re-developed into subdivisions, plots or land use zone, the byelaws apply to all the modifications to the land layout.

4.2 Application for Building Licence

Any person desiring licence, under Byelaw 4.1.1, shall give an application in writing to the Authority in the **Form 1 (or Form 6 or form 27)** prescribed in this Byelaws. Depending on the necessity, **the following particulars and documents shall also be submitted:**

- (1) **Undertaking for Hazard Safety Requirement** as prescribed in **Form 2**.
- (2) **Certificate of Undertaking** as prescribed in **Form 3** by the “Architect on Record”/ “Engineer on Record”;
- (3) **Certificate of Undertaking** as prescribed in **Form 4** by the “Structural Engineer on Record; and Structural Design Basis Report as cited in **Form 12** (12a (i.e., Part I) and 12b or 12c or 12d as applicable) duly certified by Structural Engineer on Record.
- (4) **Certificate of Undertaking** as prescribed in **Form 5** by the “Construction Engineer on Record” who shall be undertaking the construction supervision.
Note: The term Construction Engineer also includes Site Supervisor.

- (5) **Title deed/possession certificate:** A copy of the title deed or possession certificate of the property, issued by a competent authority.
- (6) **Property Book/Khata Certificate and Latest Assessment Book Extract** - A copy of the property card and along with the sketch issued by the Department of survey and settlement, and Land Records (city survey) and latest assessment book extract issued by the competent authority indicating the measurements of the property.
- (7) **Survey Sketch** – Attested copy of the Survey Sketch shall be enclosed.
- (8) **Land Conversion/Alienation Certificate and Sketch** – Attested copies of land conversion/alienation certificate and sketch shall be enclosed.
- (9) **Up-to Date Tax Paid Receipt (certified copies)** - The receipt for having paid up to date property tax to the corporation shall be enclosed.
- (10) **Previously Sanctioned Plan** – Attested copy of the previously sanctioned plan if the application is for addition/ alteration/modification to the existing building. If the applicant for any reason cannot produce the previously sanctioned plan of the existing building, then in such cases the plan of the existing building along with site plan, etc., will have to be submitted.
- (11) **Drawings** – The following drawings in ammonia prints One drawing on tracing paper/polyester-tracing print shall be enclosed in addition to ammonia prints.
- (11.1) **Key Plan** – A key plan (need not be to scale), showing the boundary locations of the site with respect to neighbourhood landmarks.
- (11.2) **Site Plan** – Site Plan drawn to a scale of 1:500 for site of area up to one hectare and 1:1000 for sites of area more than one hectare. The site plan shall indicate the following:
- a) Title of drawing consisting of the property number of the site, name of the block, street or road in which the site is situated, number of the site if situated in an approved layout, and reference number of such approval with the use of the building
 - b) The boundaries of the site and of any contiguous land belonging to the owner thereof
 - c) The north direction relative to the plan of the building
 - d) The name and the description of the adjacent roads, street, or lanes, if any, with the width thereof
 - e) The road boundaries considering proposed road widening as per Master Plan, if applicable
 - f) The position of the adjacent plots whether vacant or built up
 - g) The area to be occupied by the proposed building and the setbacks proposed for proper air and ventilation
 - h) The nature of the ground on which the proposed building is to be erected, whether natural like, rocky, gravelly, clayey, sandy etc., or made up ground. In the case of made up ground, the time when it was so made up and the materials used in making it up shall be indicated. In case of sloping ground where the gradient exceeds 5% (1:20) block levels have to be furnished in the site plan
 - i) Any physical features such as wells, drains, transmission lines, etc.
 - j) Natural features like existing trees, valleys etc.
 - k) Block levels in cases where basement/cellar floor are proposed below ground level

- l) Such other particulars, as may be specified by the Authority.
- (11.3) Building Plan** – Building Plan drawn to a scale of not more than 1:100 showing the following particulars:
- a) Floor plans of all floors indicating the north line and various parts of the building, sizes of rooms, position of stair-cases and lifts, machine rooms, ramps etc., in detail along with street elevation
 - b) Use or occupancy of all parts of the building
 - c) Exact location of essential services viz., water closets, baths, sinks etc
 - d) Sectional drawing showing size of footing, thickness of walls, spacing of columns, thickness of roof slab, height of rooms, height of parapet, drainage and slope of the terrace roof, details of staircase showing tread, rise and landing width, railing, etc
 - e) Details of ventilation of all rooms
 - f) Open spaces or yards inside or surrounding the buildings
 - g) Sewerage arrangements
 - h) The schedule of all doors, windows, and ventilators showing sizes and numbers
 - i) Dimensions of projected portions beyond the walls like chajja, balcony, canopy, etc
 - j) In case of basement floor, position of the ramp with respect to the entrance, ground level and building with a slope not exceeding 1 to 8, the drainage arrangement in the basement floor, etc.
 - k) Such other particulars like site area & plinth area of all buildings, area of each floor and total floor area, building coverage, total height of building etc shall be indicated
 - l) The drawing must be fully dimensioned so as to have easy, quick and accurate measurements.
- (11.4) Plan of Parking Area** – In the case of commercial buildings, multi-storey buildings, hospitals, auditoria, kalyana mantapas, cinema theatres and multiplex theatres, stadia and exhibition centres and other similar buildings, separate detailed drawings of parking areas showing the arrangement for vehicular parking as per standards laid down in Byelaws 5.10 indicating the entry, exit of vehicles, drive way, etc. shall be submitted.
- (12) Detailed Floor-wise area calculation** with sketches (colour index)
- (13) Licence Fee/Scrutiny Receipt** – Receipt for having paid to the Authority licence fee/scrutiny fee as prescribed in Byelaws 4.6 (certified copies)
- (14) Indemnity Bond on stamp paper** as prescribed by the Authority (in case of high-rise buildings).
- (15) Schedule II of the National Building Organization** duly filled in duplicate as per **Form 22**.
- (16) Foundation Certificate** – A Foundation Certificate, issued by a Registered Geotechnical Engineer as in **Form 23**, which certifies:
- a) the fitness of the foundation to bear the additional building load in respect of old buildings (above which new floors are proposed to be added)
 - b) the expected depth of excavation/filling and the requirement of prior approval from the Authority.

- c) The suitability of the site for building construction in the case of low-lying/water logging area, hilly regions and terrains with steep slope.
- d) The overall fitness of the site for construction, in respect of high-rise buildings

(17) Sewage Disposal Arrangements: If the underground drainage is not feasible/not available, and if the proposed building is for more than 3 tenements, detailed drawings and information regarding sewage and waste water disposal arrangements (such as septic tank/soak pit/soak well) shall be enclosed to the application for building licence.

(18) Other Certificates, as applicable, from the following authorities:

	Agency	In respect of
(18.1)	Karnataka Fire & Emergency Services	N.O.C. in case of high rise building
(18.2)	Airports Authority of India	N.O.C. in case of high rise building in the vicinity of the Airport. (Byelaw 5.9)
(18.3)	Karnataka Slum Clearance and Improvement Board	N.O.C. with regard to non-interference with improvement schemes, in respect of areas notified under section 3 of the Karnataka slum Clearance and Improvement Board Act.
(18.4)	District Magistrate/Deputy Commissioner	N.O.C. in case of permanent and/or semi permanent cinema theatres including drive-in-theaters, and petrol pumps.
(18.5)	Directorate of Factories and Boilers	N.O.C. in case of industrial buildings
(18.6)	Controller of Explosives	N.O.C. in case buildings proposed for storage or sale of combustible articles.
(18.7)	Railways	N.O.C. in case of buildings abutting railway margin.
(18.8)	National Highway	N.O.C. in case of buildings to be located within 75m from the National Highways.
(18.9)	Coastal Regulation Zone Authorities	N.O.C. in case of construction/development in coastal areas within 500m of high tide line and also along back waters and river banks
(18.10)	Karnataka State Pollution Control Board	N.O.C. in case of industries/factories N.O.C. in case of mega projects
(18.11)	Ministry of Environment & Forests	N.O.C. in case of mega projects

Note: Form 27 shall be used for application for permission to demolish a building or part of it and only scrutiny fee has to be paid. No other supporting documents, except item No.(5), (6) and (9) above, are needed to be enclosed with the application.

4.3 Size of Drawing Sheets

The following sizes shall be adopted for the drawing to be submitted.

Table 4.1 Sizes Of Drawing Sheets (Byelaw 4.3)

Sl.No.	Standards	Trimmed size(mm)	Untrimmed size(min) in mm
1	A0	841x 1189	880 x 1230
2	A1	594 x 841	625 x 880
3	A2	420 x 594	450 x 625
4	A3	297 x 420	330 x 450
5	A4	210 x 297	240 x 330
6	A5	148 x 210	165 x 240

Any of the above convenient standards sizes may be adopted considering the details to be shown.

4.4 Colouring of Plans

All the plans should be coloured as specified in Table 4.2 and folded to A4 size.

Table 4.2 Colouring of Plans (Byelaw 4.4)

Sl. No	Item	Site Plan			Building Plan		
		White Plan	Blue Plan	Ammonia Plan	White Plan	Blue Plan	Ammonia Plan
1	Plot lines	Thick Black	Thick Black	Thick Black	Thick Black	Thick Black	Thick Black
2	Existing Street	Green	Green	Green	-	-	-
3	Future street if any	Green dotted	Green dotted	Green dotted	-	-	-
4	Permissible building line	Thick dotted	Thick dotted	Thick dotted	-	-	-
5	Open Space	No Colour	No Colour	No Colour	No Colour	No Colour	No Colour
6	Existing Work	Black outline	White	Blue	Black	White	Blue
7	Work proposed to be demolished	Yellow hatched	Yellow hatched	Yellow hatched	Yellow hatched	Yellow hatched	Yellow hatched
8	Proposed work (see Note 1)	Red filled in	Red filled in	Red	Red	Red	Red
9	Drainage & Sewerage work	Red dotted	Red dotted	Red dotted	Red dotted	Red dotted	Red dotted
10	Water Supply work	Black dotted thin	Black dotted thin	Black dotted thin	Black dotted thin	Black dotted thin	Black dotted thin

Note:

1. Item No. 8 does not apply, in case of an entirely new construction on the site.
2. For land development, sub-division, layout, suitable colouring notations shall be used which shall be indexed.

4.5 Registration of Professionals

The authority shall register professionals referred to under these byelaws. The details are given in Byelaw 8.0.

4.6 Building Licence Fee

- 4.6.1 Every person applying for licence to construct or reconstruct or alter any building under sections 299, 304, 312 and 313, of the KMC Act, develop or alienate any piece of land shall pay to the Authority, the licence fee and other applicable fees as in 4.6.2, provided that no fee shall be payable by the Central and the State Government or governmental agencies for the construction of buildings by them on their lands. Scrutiny fees shall be paid along with application and all other fees only after receipt of demand notice.

Note: The fixation of licence fee shall be governed by the following:

- a) For re-erection of existing buildings, the fees chargeable shall be the same as for the erection of new buildings.
- b) For additions and alterations in the existing buildings the fees shall be chargeable on the added portions only at the same rate applicable to the new building.
- c) The licence fee and site inspection fee shall be as notified by the Authority from time to time, with atleast one month advance notification in case of fee revisions.

4.6.2 Other fees (as fixed by the Authority) to be paid are:

- 1) The slum improvement cess, the betterment fees and the development fees, as prescribed by the authority from time to time.
- 2) The Drainage Development Fees (towards improving drainage)
- 3) Greenery fees (for maintaining the greenery of the City)
- 4) Scrutiny fees (for scrutiny of application)
- 5) Application fee (to be paid while collecting the application forms from the office of the Authority)

4.7 Ground Rent

- 4.7.1 The ground rent for stocking of building materials on public land shall be done as prescribed by the Authority, without causing any obstruction to the movement of vehicles and pedestrians, subject to the permission of the Authority.

Note: (i) The ground rent fees shall be based on the total area required for stocking of building materials. The ground rent is valid for a period of two years only. If the building is not completed and the Occupancy Certificate is not obtained within the period of two years, further rent should be paid at half the rate per annum or part thereof till the building is completed. (ii) The ground rent applies only for the storing of building materials and no other purpose. (iii) If public land is utilised for storing of excavated material and debris, separate charges shall have to be paid at four times the rate fixed as ground rent.

4.7.2 **Ground Rent for High-rise Buildings** – High rise buildings are not exempted from payment of ground rent irrespective of the setbacks and coverage.

4.7.3 **Exemptions for Ground Rent** – Ground rent may be exempted in the following cases, namely

- (1) Individual residential bungalows with front setback of 6 meters and more, with coverage of not more than 55 percent.
- (2) Schools, colleges and other educational/research institutions with a front set back of 8 meters and more, with coverage of not more than 33.33 per cent.
- (3) Religious and cultural buildings with a front set back of 8 meters and more, with coverage of not more than 45 percent.
- (4) Heavy industries and government buildings with large extents of land, capable of storing the building materials within the periphery of the property.

Note: Exemption shall be granted only on production of undertaking from the applicant on a stamped paper that the government land, footpath and road will not be used for stocking building materials as well as depositing debris. In the event of violation of this undertaking by the applicant, the licence shall be suspended.

4.8 Temporary Structures/Sheds

4.8.1 **Construction of Temporary Shed** – Temporary shed, to be used as construction shed, may be permitted in that plot (excluding public land) along with the sanction to a building and may be put up not earlier than a month before the commencement of the work and shall be removed immediately after the completion of the work. Occupancy certificate for the building shall be issued only after the removal of the temporary shed.

4.8.2 **Temporary Structures** – Temporary structures used for running establishments of commercial in nature, Religious and Cultural Programmes etc., shall be permitted according to the purpose for which these are used by the special permission of the authority for a limited period and subject to such conditions as may be imposed in the permission. Such structures shall be constructed satisfying the criteria of fire and safety services, and shall have adequate provision for mass exit during emergency situations. Such temporary structures shall be completely removed on the expiry of period specified in it.

4.8.3 Temporary structures such as exhibition malls, circus and other pendals, where public are likely to assemble, shall have sufficient emergency exit facilities. Fire safety measures have to be verified, by the Fire & Safety Services and the Authority, before issuing the licence.

4.9 Demand Notice

The Authority shall send the demand notice to the applicant, for payment of licence fee, ground rent and other applicable fees for the issue of building licence, after the scrutiny of the application. The demand notice will be valid for a period of forty five days only from the date of dispatch of the notice or forty days from the receipt of notice by the applicant. After the expiry of the above period, fees shall be paid as per the revalidated demand notice. The revalidation shall be subject to the byelaws and fees in force at the time of such revalidation.

4.10 Revision of Licence Fee, Other Fees and Ground Rent

The licence fee, other fees and ground rent are subject to revision from time to time by the Authority, with a minimum of thirty days notice.

4.11 Grant of Licence

4.11.1 Subject to sections 303 and 304 of the KMC Act, the Authority after having examined the application for licence, may either grant the licence as per the proposal or with such modification or condition as it may deem necessary or refuse licence and thereupon shall communicate its decision to the applicant within 30 days as per KMC Act in the proforma given in **Form 7, Form 8 or Form 9**, as given in the Appendix A.

Note: The Authority shall inspect the site for physical verification before granting the licence. The details of the site inspection shall be recorded in writing.

4.11.2 For every application received, application number shall be given to the applicant along with acknowledgement and the application shall be processed on “first come first serve” basis.

4.11.3 If the Authority has not within the said period of thirty days passed any order, the applicant may address a letter to the Authority by name, requesting him to pass necessary orders and communicate the decision. The Authority, within a further period of thirty days from the date of receipt of such letter, shall respond to the application as indicated in Byelaw 4.11.1.

Note: If the application is for demolition of a building or part of it, the applicant may go ahead with the demolition, if the Authority has not passed any order within fourteen days of receiving the Application.

4.11.4 In spite of the letter by the Applicant as in Byelaw 4.11.3, if the Authority neither gives licence nor refuses licence, such approval/licence shall be deemed to have been given and the applicant may proceed to execute the work, but not as to contravene any of the provisions of the byelaws.

4.11.5 While granting licence, the Authority shall impose a condition that: (i) the plants and trees within the site should not be disturbed as much as possible; (ii) at least two trees shall be grown in the sites where the site area exceeds 200sqm, and for every additional 200sqm, additional two trees shall be planted in the interest of improving the environment of the area. The positions of the trees to be planted shall be shown in plan. If the tree dies a new tree shall be planted as replacement.

4.11.6 The owner, developer/builder, or any other person, responsible for construction of a building, shall erect and maintain during construction such barricading as considered necessary to prevent dust, debris and other materials endangering the safety of people / structures, etc. in and around the site.

4.11.7 Revised Plans

(1) Where plans have been scrutinized and the Authority has pointed out modifications or objections, the applicant shall modify the plans to comply with the modifications or objections raised and resubmit the plans. The plans submitted for approval shall not contain superimposed corrections.

- (2) A plan once sanctioned may be revised or modified by the Applicant and may be scrutinized and sanctioned by the Authority on payment of additional scrutiny charges and additional fee if any due to the increase in the floor area. This sanction will be as per the rules prevailing at the time of revision. If the modified plan is sanctioned after the commencement of work, the applicant shall pay penalty at the rates prescribed by the Authority.

4.11.8 Special Power of the Authority

The Authority may direct the owner (i) to change the location of the proposed building, (ii) to provide open space or ventilation, (iii) to use specified materials for construction, if such measures are considered necessary keeping in view the existing or proposed power lines, water and sewage lines passing through the site, or due to any proposed widening of the road or formation of new roads passing through the site; which shall not be inconsistent with the Act and the master plan.

4.11.9 Suspension of Licence

The Licence granted shall be deemed to be suspended in cases of resignation by any professional such as Architect on Record, Engineer on Record, Structural Engineer on Record, Construction Engineer on Record, Geotechnical engineer on record till the new appointments are made. During this period construction shall not be carried out at the site. Any work at site during this time shall be treated as unauthorized construction without any due permission.

Note: In case of resignation by any professional, he has to give 30-day's prior notice in writing to the owner with a copy to the Authority, citing the reasons clearly, so that alternate arrangements can be made by the owner.

4.11.10 Withdrawal of application by the owner

The owner may withdraw the application and plans at any time prior to the sanction and such withdrawal shall terminate all proceedings with respect to such application; but the fees paid shall in no case be refunded.

4.11.11 Cancellation of Licence

The licence if secured by any person by any misrepresentation or by producing false documents, such licence will be treated as cancelled/revoked and any work done there under shall be deemed to have been done without licence.

4.11.12 Structural Deviations during Course of Construction

Notwithstanding anything stated in the above byelaws, it shall be incumbent on every person whose plans have been approved to submit the revised (amended) plans for any structural deviations he proposes to make during the course of construction of his building work. The procedure laid down for plans or other documents so far shall apply to all such revised (amended) plans also.

4.11.13 Liability

- (1) The granting of licence, approval of the plan and specifications, or inspections made by the Authority shall not in any way relieve the owner of a building from full responsibility for carrying out the work in accordance with the byelaws and the requirements of the sanctioned building plan along with such conditions as have been imposed while sanctioning the licence.

- (2) Notwithstanding any licence granted under the Act and these byelaws, any person undertaking any development work shall continue to be completely

liable for any injury or damage or loss whatsoever that may be caused to anyone in or around the area during such construction and no liability whatsoever in this regard shall be cast on the Authority.

- (3) Approval of drawings and acceptance of any statement, documents, structural report, structural drawings, progress certificate, or building completion certificates shall not discharge the Engineer on Record, Architect on Record, Construction Engineer on Record, Structural Engineer on Record, Builder, Developer and Owner from their responsibilities imposed under the Act, the local acts and the byelaws.
- (4) The landowner or power of attorney holder or builder/developer shall be jointly and severally shall be held responsible for any unauthorized construction, and if addition or alteration is done without prior permission from the competent Authority.
- (5) **Professional Misconduct:** In the event of suspected professional misconduct by the Builder/Developer and other concerned persons (such as AR, CR, CER, CMAR, ER, GER, QAR, QAAR, SDAR, SER, TPR etc.), the Authority shall initiate appropriate investigation and issue a show cause notice to the concerned. If there is sufficient proof of professional misconduct and if the explanations provided to the show cause notice are not satisfactory, the Authority may initiate disciplinary action, if necessary, which may range from imposing heavy penalty of fees to suspension or cancellation of registration of one or more of concerned persons within the jurisdiction.
Further, depending on the severity of case and, wherein the professional misconduct has clearly:
 - (i) affected the safety and stability of the neighbouring land & structures;
 - (ii) violated the building byelaws;
 - (iii) resulted in loss of lifethe Authority shall initiate criminal proceedings/legal action against the concerned as per the law of the Land for violation of statutory obligations.

4.12 Procedure after Grant of Licence

4.12.1 Commencement of work –

- (1) The construction or reconstruction of a building shall be commenced within a period of two years from the date of issue of licence. Before the expiry of two years, the owner shall give intimation to the Authority of the intention to start work in the form (**Form 10**) prescribed in Appendix A.
- (2) After the expiry of two years from the date of licence, construction or reconstruction of a building shall not be commenced without obtaining a fresh licence from the Authority.

4.12.2 Inspection –

- (1) Generally all construction and work for which a licence is required shall be subject to inspection by the Authority and certain types of construction involving hazards or requiring constant inspection, shall have continuous inspections by the Authority.
- (2) Within 15 days from the date of the receipt of intimation under Byelaw 4.12.1, the Authority shall inspect the site to verify the line out marked for the building according to the sanctioned plan. The owner shall commence the work after the grant of commencement certificate in the form (**Form 11**) prescribed in Appendix A.

- (3) If the commencement certificate is not issued within a period of 15 days from the date of intimation by the owner, the construction may proceed according to the sanctioned plan, provided there are no deviations from the approved plan.
- (4) **Inspection at various stages** - The Competent Authority at any time during erection of a building or the execution of any work or development, make an inspection thereof without giving prior notice of his intention do so.
- (5) **Inspection by Fire & Emergency Services Department** - For all apartments, multi-storied, high-rise, special building, assembly building, business building, educational building, hazardous building, industrial building, institutional building, public building, office building and storage building, the work may also be subject to inspection by the Local Fire & Emergency Services Department.
- (6) **Quality Control** – All the construction for high-rise buildings, higher than seven storeys shall be carried out under quality inspection program prepared and implemented under the Quality Auditor on record (QAR) or Quality Auditor Agency on Record (QAAR). Quality inspection programme to be carried out on the site shall be worked out by QAR/QAAR in consultation with the Owner, builder, CER. QAR or QAAR shall give a certificate of quality control as per proforma given in **Form 25**.

4.12.3 Document at Sites – Where tests of any materials are required to be conformed with the requirement of these byelaws, or conditions of licence, records of the test data shall at all times be kept for inspection during the construction of the building and for such period thereafter as may be required by the Authority.

4.12.4 Display of Sanctioned Plan and Licence at the Construction Site.

- (1) The owner/developer/builder shall, during the construction, display the following documents in a conspicuous place of the premises:
 - (i) A copy of the building licence
 - (ii) A copy of the approved plans of the property for which the licence was issued and the specifications of the building to be constructed.
 - (iii) Names of owner, developer, all professionals on record, contractor with their phone numbers
- (2) The building licence and the copies of sanctioned plans with specifications shall be made available during inspections.

4.13 Procedure during Construction

4.13.1 Recognised stages for progress certificate and checking :

- (1) Following shall be the recognised stages in the erection of every building or the execution of every work :-
 - (i) Plinth, in case of basement before the casting of basement slab.
 - (ii) First storey.
 - (iii) Middle storey in case of High-rise building.
 - (iv) Last storey.

- (2) At each of the above stages, the owner / developer under these byelaws shall submit to the designated officer of the Authority a progress certificate in the given formats (**Form 13, Form 14, Form 15 and Form 16**).
- (3) The progress certificate shall not be necessary in the following cases :
 - (i) Alteration in building not involving the structural part of the building.
 - (ii) Extension of existing residential building on the ground floor up to maximum 15 sqm. in area.

4.13.2 On receipt of the progress certificate from the owner/developer, it shall be the duty of the Authority, if found necessary, to check any deviation from the approved plan and convey decision within 15 days to the owner/developer accordingly for compliance.

4.14 Occupancy Certificate

4.14.1 Every person shall before the date of expiry of licence (which is five years from the date of issue of licence) shall complete the construction or reconstruction of a building for which the licence was obtained. Within one month after the completion of the erection of a building shall send intimation to the Authority in writing of such completion, accompanied by certificates (**Forms 17-20**, given in Appendix A) and shall apply for permission to occupy the building. The Authority shall decide after due physical inspection of the building (including whether the owner had obtained commencement certificate and compliance regarding production of all required documents including clearance from the Fire & Emergency Services Department in the case of high rise building at the time of submitting application). The Authority shall intimate the applicant within thirty days of receipt of the intimation whether the application for occupancy certificate is accepted or rejected. In case, the application is accepted, the occupancy certificate shall be issued in the format (**Form 21**) given in Appendix A, provided the building is in according with the sanctioned plan.

4.14.2 Physical inspection means the Authority shall find out whether the building has been constructed in all respects as per the sanctioned plan and requirement of Byelaws, and includes inspections by the Fire & Emergency Services Department wherever necessary. **For all high-rise buildings**, the work completed shall also be subject to inspection by the officers of the Fire & Emergency Services Department and the occupancy certificate shall be issued only after a clearance certificate is obtained.

4.14.3 If the construction or reconstruction of a building is not completed within five years from the date of issue of licence for such a construction, the owner shall intimate the Authority; the stage of work at expiry of five years. The work shall not be continued after the expiry of five years without obtaining prior permission from the Authority. Such continuation shall be permitted if the construction or reconstruction is carried out according to the licence plan and if the Authority is satisfied that at least 75 percent of the permitted floor area of the building is completed before the expiry of five years. If not, the work shall be continued according to a fresh licence to be obtained from the Authority.

4.14.4 **Occupancy or Letting out of the New Building** – No person shall occupy or allow any other person to occupy any new building or part a new building for any purpose whatsoever until occupancy certificate to such building or part thereof has been granted by an officer, authorized to give such certificate if in his opinion in every

respect the building is complete according to the sanctioned plans and fit for use for which it is erected. The Authority may in exceptional cases and excluding high-rise buildings, and multi stored commercial buildings, (after recording reasons) allow partial occupancy for different floors of a building.

4.15 Deviations during Constructions

- 4.15.1 Wherever any construction is in violation/deviation of the sanctioned plan, the Authority may, if he considers that the violations / deviations are within 5% of (a) the set back to be provided around the building, (b) plot coverage (c) floor area ratio and (d) height of the building and also that the demolition under Chapter XV of the KMC Act is not feasible without affecting structural stability, he may regularize such violation/deviations after recording detailed reasons for the same.
- 4.15.2 Violation/deviation as at byelaw 4.15.1 above may be regularized only after sanctioning the modified plan, recording thereon the violations/deviations and after the levy of fee prescribed by the Authority from time to time. However if the violations/deviations are more than 5% of the items specified above, the building shall be demolished.
- 4.15.3 Regularisation of violation / deviations under this provision are not applicable to the buildings which are constructed without obtaining any sanctioned plan whatsoever and also the violations / deviations which are made in spite of the same being specifically deleted or rejected in the sanctioned plan.

4.16 Unauthorized Buildings and Developments

- 4.16.1 In case of unauthorised buildings & developments, the Authority shall
- (a) take suitable action which shall include demolition of unauthorised works when such works are not in accordance with the provisions of the Byelaws.
 - (b) take suitable action against the owner, developer, registered architect/engineer others who are involved, including the disqualification of the registered professionals.
- 4.16.2 The setbacks, parking spaces, open spaces and other open land, minimum or excess, shown as provided in the sanctioned plan and the area of land used for the FAR calculation of a building shall remain so in the respective usage till the existence of such building. If any other construction/development is done in such open spaces without permission from the Authority, such constructions will be considered unauthorized and Byelaw 4.16.1 shall be applicable.

4.17 Unsafe Building

4.17.1 Examination of Unsafe Building

The Authority shall examine, or arrange for the examination by an expert committee, of every building suspected to be unsafe or damaged, and shall make a written record of such examination.

4.17.2 Notice to Owner, Occupier of Unsafe Building for Repair and Improvement

Whenever the Authority finds any building or portion thereof to be unsafe, he/she shall give written notice, to the owner and occupier of such building, stating the defects thereof. This notice shall require the owner or the occupier within a stated

time either to complete specified repairs or improvements or to demolish and remove the building or portion thereof and shall ensure the structural safety and service in accordance with the structural safety clauses of the Byelaws. The Authority shall also report to the competent authority concerned with the safety of public such as police department, and fire and emergency services department.

4.17.3 Notice to Owner, Occupier of Unsafe Building to vacate

The Authority may direct in writing that the building which in his opinion is dangerous, or has no provision for exit if there is a fire, shall be vacated or improved or altered to make it safe and free from danger immediately or within the period specified for the purpose; provided that the Authority concerned shall keep a record of the reasons for such action with him. If any person does not comply with the orders of vacating a building, the Authority may direct the Police to remove the person from the building.

4.17.4 Disregard of Notice by Owner, Occupier of Unsafe Building.

In case the owner or occupier fails, neglects or refuses to comply with the notice to repair or to demolish the said building or portion thereof, the Authority shall cause the danger to be removed whether by demolition or repair of the building, or portion thereof or otherwise and realize the cost from the owner/occupier.

4.18 Prohibition/Control of Construction Activities in Specified Areas

4.18.1 Graveyards, Burial Grounds etc.

The land occupied by the graveyards, burial grounds, cremation and allied actions shall not be allowed to be built upon and shall be kept permanently open.

4.18.2 Improvement Scheme

No Licence shall be issued for development of area designated for improvement scheme until such scheme is prepared and finalised by the Competent/Appropriate Authority.

4.18.3 Co-Owners Consent

In cases where the building construction is as per Byelaws but the co-owners are not giving consent either at the time of Building Licence or at the time of Occupation Certificate, the Authority may issue Licence after giving opportunity of hearing to the co-owners and considering the merits and demerits of individual case.

4.19 Prohibition of Construction Activities around Historical Monuments

4.19.1 The historical monuments in any city reflect the past glory of the city, as they attract tourists both from inside and outside the country. While permitting developments around historical monuments, care has to be taken to see that their aesthetic environs are not affected. The Authority shall identify and notify the historical monuments within the Mangalore City limits. In order to preserve aesthetic environments around these monuments, the areas surrounding these monuments are declared as zones of special control. Only buildings with two floors (Ground + First) or less are permissible within a distance of 100 m distance from the boundaries of these monuments.

4.20 Prohibition of Construction on Public Property

4.20.1 Erection on drains – No building or part of a building shall be erected over drains, sewer lines, water mains or underground electric mains or on any such other public property.

4.20.2 Projection of doors windows, etc.:

(a) No one shall build any wall or erect any fence or other obstruction or projection or make any encroachment in or over any public street, foot path, drain or margin land.

(b) No door, gate, bar, windows or projections shall be hung, or placed so as to open outwards or project upon any street or public utility or into any public property.

4.21 Prohibition of Construction near Prisons

4.21.1 No building or part of a building shall be erected within 100m from the boundaries of prisons and remand homes of any kind.

4.22 Prohibition of Construction near Dumping Yards

4.22.1 No building or part of a building shall be erected within 500m from the boundaries of dumping yards / garbage disposal areas of any kind, identified by the Authority.

4.23 Inspection, Repair, Strengthening and Retrofitting of Aged Buildings

4.23.1 In case of residential low-rise buildings older than fifty years, it shall be the duty of the owner, to get his building inspected by a Registered Structural Engineer (RSE) within two years from the date of coming into force of these Byelaws. The Structural Inspection Report (**Form 24**) shall be produced by the Owner to the Authority. If any action, for ensuring the structural safety and stability of the building is to be taken, as recommended by SER, it may be completed within five years. Thereafter, the building shall be inspected once in 10 years.

4.23.2 For other buildings, the owner shall get his building inspected after the age of the building has crossed forty years. The procedure shall be followed as per byelaw 4.23.1.

4.23.3 The owner of all such buildings will produce the structural stability certificates by a RSE, once in every five years or at the expiry of a safe period as stated in the structural inspection report.

4.23.4 The Authority shall maintain proper record of such inspections and recommendations.

4.24 Building Works that do not require a Licence

4.24.1 No Licence is required for undertaking the following alterations, repairs and minor works in all buildings except those buildings which are classified as Heritage Buildings by the competent Authority such as the Heritage Conservation Committee.

- 1) Plastering and patch repair
- 2) Construction of non-load bearing false ceilings, in a manner that complies with the building byelaws
- 3) Flooring and re-flooring
- 4) Opening and closing windows, ventilators and doors not opening directly onto adjoining plots in a manner that complies with the building byelaws.
- 5) Replacing and repairing fallen bricks, stones, pillars, beams etc.
- 6) Repair of weather-shades/sunshades not more than 75cm in width within the plot and not projecting onto a public street.
- 7) Repair of parapets, in a manner that complies with the building byelaws.
- 8) Repair of boundary walls, in a manner that complies with the building byelaws.
- 9) White-washing, painting and coating of building surfaces.
- 10) Construction of internal partitions, in a manner that complies with the building byelaws.

4.25 Simplified Procedure for Small Buildings

4.25.1 The Authority shall grant exemption for submission of working drawing, structural drawing and soil investigation report in case the Authority is satisfied that in the area where the proposed construction is to be taken, similar types of structure and soil investigation reports are already available on record and such request is from an individual owner/developer, having plot of not more than 500sqm in size and for a maximum ground plus 2 storeyed building.

4.25.2 If the local site conditions do not require any soil testing or if a soil testing indicates that no special structural design is required, a small building having up to ground + 2 floors, having load bearing structure, may be constructed including relevant seismic safety measures as per IS code. If the proposed small house is to be constructed with load bearing type masonry construction technique, where no structural design is involved, no certificate from a Structural Engineer on Record will be required. However, a Structural Design Basis Report (**Form 12**) has to be submitted, duly filled in.

4.26 Appeal Procedure

4.26.1 Any applicant or person aggrieved by any notice issued, action taken or proposed to be taken by the Authority may appeal to the District Court and the decision of the District Court shall be final (as per KMC Act, Section 443-A).

5.0 GENERAL BUILDING REQUIREMENTS

5.1 Requirements of Building Sites

5.1.1 No piece of land shall be used as a site for the construction of buildings under the following circumstances :

- a) if the site is not drained properly or is incapable of being well drained;
- b) if the Authority considers that the site is unsanitary or it is dangerous to construct a building on it;
- c) if the building is proposed on any area filled up with filthy and offensive matter without a certificate from the Health Officer and Corporation Engineer to the effect that it is fit to be built upon from health and sanitary point of view;
- d) if the proposed development is likely to involve damage to or have negative impact on urban aesthetic environment or ecology.
- e) If the site is found to be liable to liquefaction by the Competent Authority under the earthquake intensity of the area, except where appropriate protection measures are taken to prevent the liquefaction;
- f) If the site is found to be in low lying area and liable to flooding, except where protection measures are adopted to prevent the possibility of damage due to flood water;
- g) if the site is within a distance of nine meters from the water spread area of a tank at full tank level;
- h) if the owner of the building has not shown to the satisfaction of the Authority that all the measures required to safeguard the construction from constantly getting damp are being taken;
- i) if the site is over a municipal drain, sewer line, water mains or under electric supply lines;
- j) if the building is for an office or building including school, theatre or assembly on a site which has not been previously approved by the Authority;
- k) if the construction of the building thereon is for public worship which in the opinion of the Authority may offend the religious feelings of any class of persons in the vicinity thereof; or which may cause obstruction to the traffic.
- l) If the use of the said site is for the purpose of establishing a factory, warehouse, or work place which in the opinion of the Authority, will be source of annoyance to the health and comfort of the inhabitants of the neighbourhood;
- m) if it violates any provisions of master plan and zoning regulations;
- n) if the plot is a revenue site for which permission under the Karnataka Land Revenue Act, 1964 is not obtained under section 95 thereof.

Note: i) Every application for a factory, workshop or work place, if it is proposed to use power, shall also satisfy the conditions of section 354 of the KMC Act and specific permission there under shall be obtained.

5.1.2 If an active fault trace is identified by Geological Survey of India, a structure for human occupancy should not be placed over the fault trace and must be set back by a minimum of 15m on either side of fault trace.

- 5.1.3 No plan shall be sanctioned for a residential detached building on a plot measuring less than 54sqm or having width less than 6m. In specific cases of sites for housing schemes for Economically Weaker Sections, Low Income groups, slum clearance and improvement schemes as well as reconstruction in case of densely populated area, and plot sub-divided due to partitions, the Authority may relax the above conditions. (Refer Byelaw 5.20).
- 5.1.4 The proposal for the subdivision of plots shall be made in accordance with the section 17 of the Karnataka Town and Country Planning Act, 1961.
- 5.1.5 Where cutting of hill slope in an area causes ecological damage and slope instability in adjacent areas, such cuttings shall not be undertaken unless appropriate measures are taken to avoid or prevent such damages.
- 5.1.6 Excavation in any site (including wells), for more than 3.00m depth, and filling in any site for more than 3.00m height (1.00m height in sites of low-lying or water logging areas and open fields) requires written permission from the Authority before taking up such work. The Authority decision will be based on the geotechnical report issued by a Registered Geotechnical Engineer.

5.2 Means of Access

- 5.2.1 The means of exclusive access other than through public roads and streets, shall not be of more than 30m in length from a public road or street. The minimum width of such access shall be 3.5m. FAR and height of buildings coming up on such plots connected by means of exclusive access shall be regulated according to the width of public street or road. If the means of access exceeds 30m in length, FAR shall be regulated with reference to the width of such access road. Construction of buildings on plots with common access roads/lanes, the public road /street shall be regulated according to the width of such common access roads/lanes.
- 5.2.2 No building shall be erected so as to obstruct the means of access of any other building.
- 5.2.3 No person shall erect a building so as to encroach upon the means of access.
- 5.2.4 The means of access shall be clearly shown in the plans submitted indicating the width, distance from the public road, width of the public road from which the access is taken etc.
- 5.2.5 Every such means of access shall be drained and lighted to the satisfaction of the Authority and manhole covers or other drainage, water or any other fittings, laid in such means of access shall flush with the finished surface level so as not to obstruct the safe movement.
- 5.2.6 The existing width of the means of access shall not be reduced in any case.
- 5.2.7 Construction of residential buildings up to 150sqm of built up area (1 tenement) may be permitted only under special circumstances, even if the width of the means of access is less than 3.5m.

5.3 Open Spaces (within a plot), Coverage and FAR

5.3.1 General

- (1) Every room intended for human habitation shall abut on an interior or exterior open space or open verandah open to such interior or exterior open space.
- (2) The open spaces inside and around a building have essentially to cater for lighting and ventilation requirements of the rooms abutting such open spaces, and in the case of buildings abutting on roads in the front, rear or sides, the open spaces provided shall be sufficient for the future widening of such roads.
- (3) **Open spaces separate for each building or wing:** The open spaces shall be separate or distinct for each building and where a building has two or more wings, each wing shall have separate or distinct open spaces for the purpose of lighting and ventilation of the wings. However, separation between accessory and main buildings more than 7m in height shall not be less than 1.5m; for buildings up to 7m in height no such separation shall be required.
- (4) The open space shall be the minimum distance measured between the front, rear and side of the building and the respective plot boundaries. The front, rear and side of the building shall be the points of the building nearest to the boundary.

5.3.2 Exterior open spaces/ set backs, coverage, floor area ratio, number of floors and heights – The minimum set backs required on all sides of building(s), maximum plot coverage, maximum FAR, maximum number of floors, maximum height of buildings that are permissible for different dimensioned sites and widths of roads are set out in Tables 5.1, 5.2 and 5.3 given below. Table 5.4 gives the constructions excluded from FAR computations (Also refer Byelaw 5.3.7.3 (c) & (f)).

Note: For residential sites up to 120sqm.

- (a) Open staircase shall be permitted in the side setbacks, but there shall be a minimum open space of 0.50 m from the side boundary and 1.0 m from the front and rear boundary of the site.
- (b) Toilets minimum of 1 m x 1.5 m and not exceeding 1.4 percent of the plot area permissible in rear set back only;
- (c) When minimum set back of 1.5 m is left on the right side, a scooter garage may be permitted at the back side limiting the depth of the garage to 3.0 m.

Table 5.1 Exterior open spaces / setbacks in metres (minimum) for residential, commercial/mercantile, public and semi-public, traffic and transportation, public utility buildings up to 10m in height. (Byelaw 5.3)

Depth of site (m)	Residential Minimum (m)		Commercial /Mercantile Minimum (m)		T& T, P.U & public & semi Public Minimum (m)		Width of site (m)	Residential Minimum (m)		Commercial /Mercantile Minimum (m)		T& T, P.U & public & semi Public Minimum (m)	
	Front	Rear	Front	Rear	Front	Rear		Left	Right	Left	Right	Left	Right
Upto 6	1.00	-	1.00	-	1.50	-	Upto 6	-	1.00	-	-	-	1.50
Over 6 upto 9	1.00	1.00	1.50	-	1.50	1.50	Over 6 upto 9	1.00	1.00	-	1.50	1.50	1.50
Over 9 upto 12	1.50	1.50	1.50	1.50	3.00	1.50	Over 9 upto 12	1.50	1.50	1.50	1.50	1.75	1.50
Over 12 upto 18	3.00	1.50	3.00	1.50	3.00	1.50	Over 12 upto 18	1.50	3.00	1.50	3.00	2.00	3.00
Over 18 upto 24	4.00	3.00	3.50	3.00	4.50	2.00	Over 18 upto 24	2.50	3.50	2.50	4.00	3.00	3.00
Over 24	5.00	3.50	4.50	3.00	6.00	3.00	Over 24	3.00	4.00	3.00	4.50	3.50	4.50

Note: T&T: Traffic and Transportation, P.U: Public Utility

Table 5.2 Exterior open spaces/set backs for residential, commercial/mercantile, public and semi- public, traffic & transportation, public utility buildings of above 10m in height (Byelaw 5.3)

Sl.No.	Height of building (m)	Exterior open spaces / set-backs to be left on all sides (Front, rear & and sides) (m)
1	Above 10 upto 12	4.5
2	Above 12 upto 15	5.0
3	Above 15 upto 18	6.0
4	Above 18 upto 21	7.0
5	Above 21 upto 24	8.0
6	Above 24 upto 27	9.0
7	Above 27 upto 30	10.0
8	Above 30 upto 35	11.0
9	Above 35 upto 40	12.0
10	Above 40 upto 45	13.0
11	Above 45 upto 50	14.0
12	Above 50	16.0

Note 1: The exterior open spaces shall be the higher of the values given in Table 5.1 and Table 5.2, depending on the width & depth of the site.

Note 2: Minimum depth or width of a site for high rise building shall be 21m.

Note 3: Minimum road width facing a high rise building shall be 12m.

Note 4: In case of high-rise buildings, 50% of open space may be utilized for parking in the setback after leaving a minimum setback of 6m around the building.

Table 5.3 Maximum Plot Coverage, FAR and road widths for residential, commercial/mercantile, public and semi-public, traffic & transportation, and public utility buildings (Byelaw 5.3)

Plot area in sq m	Residential Building			Commercial/Mercantile Building			Public & semi public, Traffic & Transportation, Public utility building		
	Max. plot coverage	FAR	Minimum road width (m)	Max. plot coverage	FAR	Minimum road width (m)	Max. plot coverage	FAR	Minimum road width (m)
1	2	3	4		2	3		2	3
A: Intensely developed area									
Up to 120	70%	1.00	Up to 6	80%	1.20	Up to 6	70%	1.20	Up to 6
Over 120 Up to 240	65%	1.00	6	75%	1.20	Over 6	65%	1.20	6
Over 240 Up to 500	60%	1.20	6	70%	1.30	Over 6	60%	1.30	6
Over 500 Up to 750	60%	1.30	9	65%	1.40	Over 9	55%	1.40	9
Over 750 Up to 1000	55%	1.50	12	65%	1.50	Over 12	50%	1.50	9
Over 1000	50%	1.75	12	60%	1.75	Over 12	50%	1.75	12
B: Moderately Developed Area									
Up to 120	70%	1.20	Up to 6	70%	1.20	Up to 6	65%	1.30	6
Over 120 Up to 240	65%	1.30	6	65%	1.30	Over 6	60%	1.30	6
Over 240 Up to 500	60%	1.50	6	65%	1.50	Over 9	55%	1.50	9
Over 500 Up to 750	60%	1.75	9	60%	1.75	Over 9	55%	1.75	9
Over 750 Up to 1000	55%	2.00	12	60%	2.00	Over 9	50%	2.00	9
Over 1000	50%	2.50	12	55%	2.50	Over 9	50%	2.50	12
C: Sparsely Developed Area									
Up to 120	70%	1.25	Up to 6	70%	1.25	Up to 6	65%	1.30	Up to 6
Over 120 Up to 240	65%	1.25	6	65%	1.50	9	60%	1.40	6
Over 240 Up to 500	60%	1.50	9	60%	1.75	9	55%	1.50	9
Over 500 Up to 750	60%	2.00	12	60%	2.00	9	55%	1.75	9
Over 750 Up to 1000	55%	2.50	12	55%	2.50	9	50%	2.25	12
Over 1000	50%	2.75	12	50%	2.75	12	50%	2.75	12

Note 1: Floor Area Ratio and number of floors are with reference to road widths when the site does not face the roads of required width, noted against each, the FAR applicable to corresponding width of roads is applicable.

Note 2: Building lines have been prescribed to certain roads and are given in Schedule IV of the Byelaw 3.13. In such cases, the front set back or the building line, which is higher of the two, shall be provided.

Note 3: The front set back mentioned above are minimum. The building shall be shifted back to the building lines, if any declared by any competent Authority.

Note 4: For plots more than 750sqm bell mouth entrance shall be provided.

**Table 5.4 Constructions excluded from FAR computation
(Byelaw 5.3.2 & 5.3.7.3)**

- b) Staircase floor area in all the floors
 - c) Lift floor area in all the floors
 - d) Architectural features
 - e) Chimneys
 - f) Overhead tanks with its headroom not exceeding 1.5 m
 - g) Fire escape staircase
 - h) Garbage shaft/ ducts
 - i) Meter room
 - j) Air-conditioning plant
 - k) Electric sub-station
 - l) Pump room
 - m) Service ducts
 - n) Generator room
 - o) Watchman's booth
 - p) Lumber room
 - q) One Penthouse
 - r) Swimming Pool in any floor
 - s) Effluent treatment plant, car parking under a building on stilts or in a basement floor.
 - t) Escalators, main sanitary duct, open balcony, machine rooms.
 - u) The entire covered parking area
-

5.3.3 General rules while enforcing the set backs for all types of buildings

- a) The front and rear set backs shall be with reference to depth of the site.
- b) Left and right set backs shall be with reference to width of the site.
- c) No side set backs shall be insisted upon in the case of reconstruction of existing building where traditional row housing type of development exists and in areas specifically provided under the Zoning Regulations.
- d) The provision of set backs should be read with tables prescribed for floor area ratio, coverage etc., for different type of buildings.
- e) When the building lines are fixed, the front set back shall not be less than the building line fixed or the minimum front set back prescribed whichever is higher.
- f) In the case of corner sites both the sides facing the road shall be treated as front side and byelaws applied accordingly to maintain the building line on these two roads, so as not to impair clear visibility to road traffic.
- g) In the case of sites facing roads both in front and rear, both the sides facing roads shall be treated as front, and other two sides not facing roads shall be treated as right sides and the setbacks be applied accordingly.
- h) In case where the building line is not parallel to the property line, the front and rear set backs shall not be less than the specified set backs at any point.
- i) In case of building sanctioned prior to coming into force of these rules which are abutting other properties on one, two or more sides, upper floors may be permitted, to utilise the available FAR, by obtaining no objection certificates from the adjoining property owners or even without no objection certificates if the adjoining owner himself has put up such abutting floors, provided that not less than $\frac{1}{4}$ of the area is left as vacant space, open to sky, if the existing building is retained.
- j) In case of irregular plots set backs are to be calculated according to the depth or width at the points where the depth or width is the least. In such cases, average set backs should not be fixed, as they may effect minimum set back at any point.
- k) The left and right set-backs may be interchanged by the authority in exceptional cases due to existing site conditions such as open well, presence of trees and also considering the topography of the land.
- l) In case of two or more buildings proposed on a single site, the set-backs shall be applied by considering them as a common building. In such cases, the distance between the two buildings shall be minimum of half the height of the taller building.
- m) Public open space or conservancy lanes adjoining the plot should not be considered as setbacks.

5.3.4 Plots facing the road proposed for widening

- (a) Where upper floors are permitted over the existing building, which were sanctioned prior to the coming into force of these byelaws and facing the roads proposed for widening in the master plan, the upper floors shall be limited to the proposed line of road widening or building line, if any prescribed.
- (b) In case of a plot facing the road proposed for widening, the required land as indicated in the development plan for road widening shall be handed over to the Authority, before sanction is accorded to his plan. The Authority shall pay compensation to the land owner at Government Guideline Value or Registration Value whichever is high, or by Transfer of Development Rights (refer Byelaw 3.11.7.6).
- (c) Ramp or parking is not allowed in the land required for road widening;
- (d) The FAR shall be allowed as applicable to the total area of the site without deducting the area to be taken over for road widening, provided at least 60% of the site area is available for use as a building site after the proposed road widening; and set back shall be determined for the remaining portion of the plot.

- (e) Existing road width along the site shall be considered for calculating the FAR and the proposed road width shall not be the factor for this purpose.

5.3.5 Additions, alterations and modifications

- (a) Any additions, alterations & modifications to existing buildings shall be permitted in accordance with these byelaws.
- (b) In case of the buildings which were existing prior to coming into force of these byelaws, upper floors may be permitted according to the existing set backs only, but limiting the FAR and the number of floors according to the present byelaws, subject to production of the foundation certificate.

5.3.6 Interior open spaces

- (a) The whole or one side of one or more rooms intended for human habitation but not abutting on any of the front, rear or side open spaces shall abut onto an interior open space of minimum width of 3m.

5.3.7 Limitations of floor area and covered area

5.3.7.1 The coverage and FAR, for different sizes of plot with reference to the existing road width as limiting factor are given in the Table 5.3 for various types of building like residential, commercial, public and semi-public, etc. The local planning area of Mangalore City is divided into A, B & C areas by the MUDA for the purpose of regulating building constructions as under:

- A: Intensely developed area.
- B: Moderately developed area.
- C: Sparsely developed area.

Note 1: Maps showing the details of A,B and C areas are available in the office of the MUDA. The soft copies of maps shall also be made available on the home page of MUDA and MCC, and also in the form of CDs and printed books for purchase at nominal price.

Note 2: When two sides of the same road are included in two different area like: A and B or A and C, then both the sides shall be treated as intensively developed area ('A' area) up to one property depth.

Note 3: When two sides of the same road are included in two different areas like: B and C, then both the sides shall be treated as moderately developed area ('B' area) up to one property depth.

5.3.7.2 In respect of the following buildings, the maximum coverage shall be as prescribed below.

Building	Permissible maximum coverage
a. Hospital	25%
b. Health centre/nursing home	33.33%
c. Nursery school/primary school	33.33%
d. Secondary school	30%
e. College	25%

5.3.7.3 Floor Area Ratio details

- (a) The floor area of a building shall be the aggregate area of the floors of all parts of the building including thickness of walls, parking area, staircase rooms, lift rooms, ramps, escalators, machine rooms, balconies, ducts including sanitary ducts, water tanks, lobbies, corridors, foyers and such other parts provided for common service.
- (b) The floor area ratio shall exempt the floor area used for the purposes as stated in Table 5.4.
- (c) The area covered by the following structures on the roof are exempted from the floor area up to fifteen percent of the area of the roof over which they are erected, namely :- (i) staircase rooms (ii) lift machine rooms (iii) pent house (iv) water tanks (v) equipment for ventilation, air conditioning and similar services.
- (d) Lobbies, corridors provided in the plan shall be considered for FAR.
- (e) The nomenclature of certain roads may differ with those mentioned in the Maps of the Master Plan. In such cases, the location of the site may be considered to determine the land use.
- (f) One penthouse only is permissible for a building. The area of the penthouse with staircase room shall be limited to 19sqm. If this limit is exceeded, the structure shall be considered for reckoning the FAR.

5.3.7.4 When sites face roads of lesser width than the one noted against them, floor area ratio and maximum number of floor applicable to corresponding widths of roads only shall apply.

5.3.7.5 When a site faces a wider road than the one prescribed against it, the FAR shall be restricted only to the limit prescribed for the area of that particular site.

5.3.7.6 When coverage is less than the maximum prescribed in Table 5.3, floors and heights beyond the limits indicated in table 5.2 may be permitted to utilize the full FAR subject to the provision of minimum set backs prescribed in Tables 5.1 and 5.2, whichever is applicable.

5.3.7.7 Buildings for cinemas – Setbacks and other requirements for permanent or other cinema buildings shall be in accordance with the Karnataka Cinemas (Regulation) Act 1964 and the rules made there under. No buildings other than a cinema theatre shall be permitted on the sites of cinema theatres unless such buildings are permissible under the above said Act.

5.3.7.8 Minimum Road width for Kalyana Mantapas & Community Halls

Site Area	Minimum Road width
a) Up to 250 sqm.	9m
b) Over 250 & up to 500 sqm	12m
c) Over 500 & up to 1000 sqm	15m
d) Over 1000 sqm	18m

5.4 Group Housing

- 5.4.1 The boundary roads if any must have a minimum width of 12m.
- 5.4.2 The approach road to a group housing project must have a minimum width of 12 m.
- 5.4.3 The minimum area for group housing shall be 0.40 Ha.
- 5.4.4 The layout plan showing the general arrangement of residential building blocks, and dimensions of the plots earmarked for each building block, access roads, parks, open spaces and civic amenity areas, shall be obtained prior to according approval to the building plan.
- 5.4.5 Set backs shall be provided with reference to the depth and width of total plot area;
- 5.4.6 The floor area ratio (FAR) shall be with reference to the width of the public road abutting the property and the FAR shall be calculated for the net area of the plot as prescribed in Table 5.5 after deducting the area reserved for the parks, open spaces and civic amenities in the plot.
- 5.4.7 The coverage shall be with reference to the total area of the layout.
- 5.4.8 The distance between any two buildings shall not be less than half the height of the taller building.
- 5.4.9 25% of the total area shall be reserved for civic amenity, parks and open spaces, subject to a minimum of 15% for parks and open spaces.
- 5.4.10 The means of access to the building blocks in the area of group housing shall be as follows:

Access length	Min. width
a) Less than 100m.	6m.
b) 100 to 200m.	9m
c) More than 200m	12m.

Table 5.5 Maximum plot coverage, FAR, minimum setbacks and minimum road width for group housing. (Byelaw 5.4)

Plot area	Minimum road width in m	Maximum Plot coverage	Maximum FAR	Minimum setbacks in meters			
				Front	Rear	Left	Right
Between 0.40 and 0.80 ha	12	60%	2.25	8.0	6.0	6.0	6.0
Above 0.80 ha	15	60%	2.50	9.0	8.0	8.0	8.0

Note 1: Group housing means more than two buildings on a plot with one or more floors and with one or more dwelling units in each floor. They are connected by an access of not less than 3.5m in width, if they are not approachable directly from the existing roads.

Note 2: Where the site area of group housing exceeds 4000 sqm, approval of layout showing the general arrangement of residential building blocks, and dimensions of plot earmarked for each building blocks, means of access roads and civic amenity areas, should precede the approval to building plan.

Note 3: In case, the height of group housing building exceeds 10m, then the setback all-round the premises shall be as per Table 5.2.

Note 4: Parking requirement shall be as per Table 5.10. In addition, 20% of the total area shall be reserved for visitors parking separately.

Note 5: Internal roads, park and open space area may be maintained by the owner / developer himself for the specified purpose only.

5.5 Semi-Detached Houses

5.5.1 Setbacks, coverage, FAR and road width in respect of semi-detached houses (back to back or side to side) shall be as indicated in Table 5.6.

**Table 5.6 Semi-detached houses (back to back or side to side)
(Byelaw 5.5)**

1.	Min. combined area of the neighbouring plots	140 sq.m
2.	Building Coverage	As applicable for individual plots
3.	Floor area ratio	
4.	Maximum number of floors	
5.	Minimum road width	
6.	Front setbacks for back to back plots	
7.	Side set back for plots joined at the side	On a plot on which a semi detached building is proposed, the left and the right side setbacks shall be the same as required for the total width of the combined plot treating it is an individual site

5.6 Row Housing

5.6.1 Row housing shall have a minimum of three dwelling units and maximum of 12 dwelling units on site. Other stipulations are prescribed in Table 5.7

**Table 5.7 Row housing
(Byelaw 5.6)**

1.	Min. combined area of plot	210sq.m	
2.	Max.area of each plot	108sq.m	
3.	Coverage	As applicable to Individual pots	
4.	Floor area ratio		
5.	Number of floors		
6.	Minimum road width		
7.	Setbacks minimum	Front	2.00m
		Rear	1.50m
		Side	2.00m only for end units

5.7 Industrial Buildings

5.7.1 Exterior setbacks, coverage and FAR for industrial buildings with reference to different road widths shall be as indicated in Table 5.8.

5.7.2 The minimum plot area, maximum plot coverage, maximum FAR and minimum setbacks for flatted factories shall be as specified in Table 5.9.

5.7.3 The minimum height of rooms shall be as provided in the Factory Act, 1948 and rules made there under.

Table 5.8 Coverage, FAR and Open space for Industrial buildings (Byelaws 5.7)

Plot area in sq m	Industry	Max. plot coverage	FAR	Minimum Frontage (m)	Minimum Front Setback (m)	Minimum side setback & rear setback (m)	Minimum road width (m)
Up to 240	Service	75%	1.00	3.0	1.00	1.00	4.5
241 to 1000	Service & Light	60%	0.75	12.0	4.50	4.50	6
1001 to 2000	Service & Light	50%	0.75	24.0	6.00	5.00	9
2001 to 3000	Service, Light & Medium	40%	0.75	28.0	8.00	6.00	12
3001 to 4000	Service, Light & Medium	40%	0.50	28.0	10.00	8.00	12
4001 to 8000	Service, Light & Medium	35%	0.50	32.0	15.00	12.00	15
Above 8000	Service, Light, Medium & Heavy	30%	0.50	42.0	15.00	15.00	15

Note: whenever the minimum plot area is less than the one specified in the particular category the byelaws prescribed for the previous category shall be adopted.

Table 5.9 Byelaws for Flatted Factories (Byelaw 5.7)

1. Minimum Plot Area	: 1000 sqm
2. Maximum plot coverage	: 40%
3. FAR	: 1.50 (up to 9m road width) 1.75 (above 9m road width)
4. Minimum setbacks	: Front 8.00m; Rear 4.50m; Sides 4.50m

Note: If the height of the building exceeds 10m, the minimum set back shall be the greater of the two in Tables 5.2 and 5.9.

5.8 Exemptions in Open Space

5.8.1 Projections:

- (a) Every open space provided either on the interior or on the exterior shall be kept free from any structure thereon and shall be open to sky. No cornice, roof or weather shade or chajja more than 0.75m wide or 1/3 of open space whichever is less shall over-hang or project over the said open space. These projections shall be permitted within one's own plot boundaries.
- (b) No projection shall over hang or project over the minimum setback area either in the basement floor or at the lower level of the ground floor.

5.8.2 Cantilever Portico: A cantilever portico of 3m width (maximum) and 4.5m length (maximum) may be permitted in the ground floor. No access is permitted to the top of the portico for using it as a sit out. Height of the portico shall be not less than 2 metres from the plinth level. The terrace of the portico shall be open to sky. The portico when allowed shall have a clear open space of one meter from the boundary of the property.

5.8.3 Balcony: The projection of the balcony shall be measured perpendicular to the building up to the outermost edge of the balcony. Cantilever projection of the balcony shall be permitted not exceeding 1/3 of the setback subject to a maximum of 1.1 m in the first floor and 1.75 m in and above the second floor. No balcony is allowed at the ground floor level. The length of the balcony shall be limited to 1/3 of the length of each side of the building.

5.8.4 Cross wall: A cross wall connecting the building and the boundary wall may be permitted limiting the height of such wall of 1.5m.

5.9 Height Limitation

5.9.1 The height of the building shall be governed by the limitation of the FAR, coverage, setbacks and the width of the street facing the plot as stipulated in the respective tables.

5.9.2 If a building abuts two or more streets of different widths, then the height of the building shall be regulated according to the width of the wider road.

5.9.3 Height exception for the structures on roof: The following appurtenant structures shall not be included while reckoning the height of the building.

- i) Water tanks and their supports, equipments for ventilation, air-conditioning and similar serves, lift rooms, roof structures like, stair-case room, pent house, chimneys, parapet walls and other architectural features.
- ii) The height of parapet wall and architectural features shall not exceed 1.0m and the height of other structures shall not exceed 4.50 meters for claiming the height exemption.
- iii) The aggregate area of such structures shall be limited to the extent prescribed in Byelaws 5.9.3(ii) above. If this limit is exceeded, the structures shall be considered for reckoning the height of the building.

5.9.4 For buildings within the landing and take off zones of air craft in the vicinity of aerodromes, the maximum height of the building shall be as permissible in byelaw 5.3.7.3 (c) or Byelaw 5.9.3 or as shown in Table 5.10 whichever is lower. These shall be regulated by the relevant rules for the construction of buildings in the vicinity of aerodromes by the competent Aerodrome Authority.

**Table 5.10 Height restrictions near Aerodromes
(Byelaw 5.9)**

Sl. No.	Limits of distance from the Aerodromes point measured horizontally to building structures of installations.	Difference between the elevation of the top of the building structure or installations and the elevation of the Aerodromes (Aerodrome reference point)
A. International Civil Airports and their alternates:		
1	Between 8534 m and 22224 m	Less than 152 m
2	Between 7315 m and 8534 m	Less than 122 m
3	Between 6095 m and 7315 m	Less than 91 m
4	Between 4877 m and 6095 m	Less than 61 m
5	Between 4267 m and 4877 m	Less than 49 m
6	Between 3658 m and 4267 m	Less than 37 m
7	Between 3048 m and 3658 m	Less than 24 m
8	Between 2438 m and 3048 m	Less than 12 m
9	Below 2438 m*	--
B. Other Civil Airports and Civil Aerodromes:		
1	Between 7925 m and 22324 m	Less than 152 m
2	Between 6706 m and 7925 m	Less than 122 m
3	Between 5486 m and 6706 m	Less than 91 m
4	Between 4267 m and 5486 m	Less than 61 m
5	Between 3658 m and 4267 m	Less than 49 m
6	Between 3048 m and 3658 m	Less than 37 m
7	Between 2438 m and 3048 m	Less than 24 m
8	Between 1829 m and 2438 m	Less than 12 m
9	Below 1829 m*	--

* Nil except with the prior concurrence of the local Aerodrome authorities.

Note1: The elevation of Aerodrome Reference Point (ARP) of Mangalore Airport is 102m.

Note2: For Sl.No.7, 8 and 9, no trees shall be planted within the limits of the distance indicated thereto.

Note 3: Irrespective of their distance from the Aerodromes (that is behind 22224m of the Aerodrome /Aerodrome reference point) no radio masts or similar type of line installations exceeding 152 m in height should be erected without prior permission of the concerned Civil aviation authority.

Note 4: No buildings, structures or installations exceeding the height indicated in (A) and (B) should be permitted without prior consultation with the local Aerodrome authority.

Note 5: The location of the slaughter houses and other areas of activities, like garbage dump which would attract high flying birds, like eagles, hawks, etc. shall not be permitted within a radius of 10 km from the Aerodrome reference point.

5.10 Parking Space

5.10.1 For building of different uses, off-street parking spaces for vehicles shall be provided as stipulated below.

**Table 5.11 Off-street parking spaces
(Byelaw 5.10.1)**

Sl. No.	Occupancy	Minimum one car parking space for every
1.	Multi-family residential	a. 2 tenements each having a built-up area of 50 to 99 sq m b. Tenement exceeding 100 sq m built-up areas
2	Lodging establishments, tourist homes,	4 guest rooms
3	Educational	70 sqm built-up area or fraction there of, of the administrative office area and public service areas
4	a. Hospitals b. Nursing homes	a. 10 beds subject to minimum of 195 sq m b. 7 beds subject to a minimum of car parking space of 195 sq m
5	a. Assembly/Auditorium/Cinema theatre b. multiplex theatres	a. 10 seats b. 5 seats
6	Stadium and exhibition centre	50 sq m built-up area or fraction thereof
7	Government or Semi public buildings	70 sq m built-up area or fraction thereof
8	Retail business	50 sq m built-up area or fraction thereof
9	Industrial	200 sq m built-up area or fraction thereof
10	Storage	100 sq m up to 500 sq m built-up area and every 200 sq m thereafter.
11	Kalyana Mantapa, community halls	30 sq m of built-up area
12	Office building	100 sq m of built-up area
13	Restaurant serving food and beverage	10 seats
14	Hostels	15 rooms

5.10.2 For car, the minimum parking space to be 3m x 6m when individual parking space is provided and 2.75m x 5m when common parking space is provided.

5.10.3 Space for scooter/two wheeler and bicycle to be not less than 1.25sqm and 1.00sqm respectively.

5.10.4 Area for each equivalent car space inclusive of circulation area is 23sqm for open parking, 28sqm for ground floor covered parking and 32sqm for basement.

5.10.5 For plots up to 50sqm, as in the case of shops, parking spaces need not be insisted.

- 5.10.6** No parking space shall be insisted upon in the intensely developed area of the floor space up to 100 sqm.
- 5.10.7** Off- street parking space shall be provided with adequate vehicular access to a street, and the area of drive aisles and such other provision required for adequate maneuvering of vehicles shall be exclusive of the parking spaces stipulated in these Byelaws.
- 5.10.8** For buildings of different occupancies, off-street parking space for vehicles shall be provided as stipulated below:
- a) Motor vehicles: space shall be provided as specified in Table 5.11 for parking motor vehicles (cars).
 - b) Other types of vehicles: For non-residential building, in addition to the parking areas provided in (a) above, 25 to 50% additional parking space shall be provided for parking other types of vehicles and the additional space required for other vehicles shall be as decided by the authority, keeping in view the nature of traffic generated in the city.
 - c) All buildings, except single-family residential, shall have 20% additional parking space for parking visitor's vehicles.
- 5.10.9** In buildings of mercantile (commercial), industrial and storage type, in addition to the parking space provided, a space at the rate of 3.5m x 7.5m, shall be provided for loading and unloading activities, for each 1000sqm of floor area or fraction thereof.
- 5.10.10** Parking spaces shall be paved and clearly marked for different types of vehicles.
- 5.10.11** Apart from parking at ground level, provision of underground or multi-storeyed parking may be permitted. The parking of vehicles at different level may also be mechanized. In the case of parking spaces provided in basement(s), at least two ramps of adequate width and slope shall be provided, located preferably at opposite ends. In such cases, a clear height of 3.6m in the basement floor has to be provided. In case of underground/multistoried parking, special measures with regard to fire safety, as stipulated by the Fire & Emergency Services Department, shall be taken.
- 5.10.12** Parking to be allowed on stilts shall not be considered as a separate floor and the same shall be exempted from computing the height of the building provided the total height of the building does not exceed 15m.
- 5.10.13** In the case of low-rise buildings, up to 50% of the open spaces required, as per Byelaw 5.3, may be allowed to be utilized for parking or loading or unloading spaces, provided a minimum distance of 3.6m around the building is kept free from any parking, loading and unloading spaces subject to fire safety considerations, as stipulated by Fire & Emergency Services Department.
- 5.10.14** In case of high-rise buildings, 50% of open space may be utilized for car parking in the setback after leaving a minimum setback of 6m around the building.
- 5.10.15** **In cases where misuse of parking space is noticed**, the use of entire building shall be discontinued and the use shall be permitted only after the parking spaces are made possible for parking use. Heavy penalty, as decided by the Authority from

time to time, shall be levied considering the period of misuse of the parking space and the benefit derived out of misuse.

5.11 Building at Intersection of Streets

5.11.1 At the intersection of streets, the corners of the boundary of the plot shall be rounded off or cut – off after leaving a minimum distance of 1.5m from the point of intersection. The Authority may further require the corner of the building to be rounded off or cut –off parallel to the rounded off or cut-off boundary up to the height of the ground floor. In such cases the FAR is to be allowed for the total area of the plot. Entry or exit for the buildings shall be provided away from the point of intersection.

5.12 Basement Floor

5.12.1 Basement floor shall be permitted, irrespective of the plot size, if suitable site conditions exist.

5.12.2 If the plinth of the ground floor of the building is constructed leaving more set back than the minimum prescribed, the basement floor may extend beyond this plinth of the building, but no part of the set-backs shall be used for the basement other than for parking.

5.12.3 Every basement storey shall be at least 2.4m in height from the floor to the bottom of the roof slab / beam / ceiling (whichever is less).

5.12.4 The basement storey should not project more than 1.50m above the average ground level.

5.12.5 If the plinth of the ground floor of the building is constructed leaving more set back than the minimum prescribed, the basement floor may extend beyond this plinth; but no part of the basement shall extend beyond the minimum set backs prescribed to the building within the plot.

5.12.6 Basement floor is not permissible on sites where the setbacks prescribed in Table 5.1 are less than 2m. In such cases, basement floor may be permitted if setbacks are increased to at least 2m.

5.12.7 When a basement floor is proposed for car parking, convenient entry and exit shall be provided to the basement.

5.12.8 Access to the basement floor, used for other than parking purposes, shall be from inside the building.

5.12.9 Adequate protection against fire shall be provided to the basement storey. The roof separating the basement and the floor above shall be constructed of materials like RCC or such other material which can provide resistance against fire for at least two hours. Where a basement floor is permitted in apartment houses (residential flat) and hotels, the owner shall display the basement plan at the entrance. Thimbles (metal rings to receive wires/ropes) shall be provided in the roof of the basement and

their positions clearly indicated on the plan. One fire extinguisher for every 100sqm of basement area or part thereof, shall be provided.

- 5.12.10 The walls and the floors of the basement shall be watertight and shall be so designed and constructed such that the water does not enter the basement.
- 5.12.11 Necessary arrangements shall be made to prevent moisture on walls.
- 5.12.12 No place in a basement floor shall be more than 11.25m away from the exit in case of residential/educational/institutional/hazardous buildings, 15m for commercial buildings and 22.5m for industrial buildings.
- 5.12.13 One additional basement for all buildings exceeding five floors may be permitted for parking and machines used for services and utilities of the buildings. The maximum number of basements in such buildings shall be two.
- 5.12.14 Two additional basements in case of three Star and above hotels may be permitted for parking and machines used for service and utilities of buildings. The maximum number of basements in such buildings shall be three.
- 5.12.15 **Provision of ramp in setback:** A ramp provided from surface level of the site to the basement floor shall have a minimum width of 3.50 meters and slope of not more than 1 in 8. The gradient of a ramp shall start after leaving a minimum distance of 1m from the front boundary of the plot. In the case of high rise buildings, the ramp may be provided in the set back area without affecting the free movement of fire tenders.
- 5.12.16 **Activities allowed in Basement floors:**
- (a) As a rule, basement shall be used for vehicular parking only.
 - (b) In case of three star hotel and above if extra area is available in the basement after meeting the requirements of parking facilities and other necessary items as provided in the byelaws, the same can be used for health club, shopping arcade, dining area without kitchen facilities, offices, conference hall, gym rooms, massage rooms, subject to reckoning such areas for FAR.
 - (c) In case of other commercial buildings, the spare area in the basement after catering to the requirements of parking facilities and other necessary items as provided in the byelaws, can be used for other purposes incidental to the commercial complex, such as restaurants, shopping arcade, health club, offices, subject to reckoning such areas for FAR.
 - (d) In case of public, semi-public buildings, the extra area available in the basement after fulfilling the required parking facilities as per byelaws can be used for:
 - (i) Canteen, conference hall, indoor games, stores in educational institutions, government offices of Local bodies and other statutory organisations.
 - (ii) X-ray rooms, radiology rooms, consulting rooms, physiotherapy, medical stores and canteens in government and private hospitals including nursing homes.
 - (e) In case of multi-storey residential apartments, the extra area available in the basement after meeting the requirements of parking facilities, can be used for other purposes incidental to the residential requirement, (such as shopping,

health club, gym rooms, indoor games), to a maximum of 5% of the total built up area, subject to reckoning such areas for the purposes of FAR.

- (f) In case of other residential buildings, the extra area available after catering to the requirements of parking can be used for play home, gym rooms, indoor games and professional consulting rooms (to a maximum of 20 Sqm) subject to reckoning such areas for the purpose of FAR.

(g) The uses to be permitted in basement are subject to providing of adequate drainage, ventilation, lighting and safety requirements.

5.13 Garages

5.13.1 For garages no side or rear setbacks are to be insisted. One upper floor, not exceeding 3.0m, in height shall be permitted provided no openings are provided towards neighbouring buildings and at least one opening for light and ventilation is provided towards the owner's property.

5.13.2 Garages shall be permitted in an appropriate place in the plot. In cases of buildings constructed or sanctioned prior to the enforcement of these byelaws, where due to site constraints, provisions would not have been followed, the same may be permitted anywhere in the site without harming the interests of adjoining property.

5.13.3 In case of corner plots, the garage shall be located at the rear corner diagonally opposite to the road intersection.

5.13.4 The maximum width of the garage shall not exceed 4m.

5.13.5 The garages shall not be constructed or reconstructed within 4.5m from road edge. This may be relaxed in cases where the garage forms part of the main building with minimum setback for the plot.

5.13.6 A garage not exceeding 3.00 meters width may be permitted as part of the main building with minimum setbacks applicable to such a building, provided such a garage is not located at the intersection of roads in the case of corner sites. The length of the garage shall not exceed one third of the length of the corresponding side of the site or 6.00 meters, whichever is less.

5.14 Foundations

5.14.1 The foundations of a building shall rest on good bearing strata, preferably on natural grounds.

5.14.2 The spread of the foundation of every building shall be so designed and constructed so as to sustain the dead load of the building and the superimposed load, and to transmit the loads to and distribute them over the soil in such a manner that pressure brought to bear on the soil by these loads shall not exceed the safe bearing capacity of the soil.

5.15 Plinth

- 5.15.1 The height of the plinth at the ground floor level should not be less than 0.45m. The basement height should not project more than 1m above the average ground level. In case of sloping street reference shall be made with respect of the street level at the centre of the frontage of the plot. Where the level of the plot is different from the street level, the plinth height shall be determined by the Authority with respect to the surrounding average ground level so that adequate drainage from the site is assured.
- 5.15.2 In case of plots situated in low lying areas/flood prone areas, the plinth level shall be above the maximum flood level notified by the MCC. The plinth level shall be such that sufficient gradient is created for sewerage, and to avoid any risk of surface drains flooding the building.
- 5.15.3 In case of access steps to the plinth, the construction shall be within the plot boundaries. In special cases, where the general level of the site is higher than the street level, the Authority shall have the power to impose conditions on the building schemes prescribing the location of the building and of any steps or ramps leading from the streets to the proposed building within the plot only. Such access ways shall be kept completely free of obstructions and open to the sky.

5.16 Wells

- 5.16.1 Licence from the competent authority is required for digging borewells, which will be based on the number and spacing of existing bore wells and open wells in the area, depth of water table and other requirements as per the prescribed guidelines from time to time.
- 5.16.2 The following byelaws (5.16.3 to 5.16.7) shall apply in the case of open wells.
- 5.16.3 The well shall have a minimum diameter of not less than 1m.
- 5.16.4 The ground adjoining the well shall, for a distance of not less than 1.20m in every direction, be covered, with a watertight pavement constructed so as to slope away from the well.
- 5.16.5 A drain shall be constructed around such pavement for draining the water and it shall be connected to the house drainage.
- 5.16.6 A parapet wall not less than seventy five centimeters high will be constructed above the level of the pavement.
- 5.16.7 The sides of the well shall be rendered impervious for a depth of not less than 1.8m from the level of the adjoining ground.

5.17 Other Requirements of Buildings

5.17.1 Habitable rooms

- (1) No habitable room shall have a floor area of less than 8.0sqm for plot sizes up to 120sqm with a minimum width of 2.4m.

- (2) The minimum height of all rooms used for human habitation shall be 2.75m measured from the surface of the floor to the lowest point of the ceiling (bottom slab). In case of air conditioned rooms, the height of not less than 2.4m measured from the surface of the floor to the lowest point of the air conditioning duct or false ceiling shall be provided. Where beams are provided the minimum head room shall be 2.4m.

5.17.2 Kitchen

- (1) The area of the kitchen where a separate dining area is provided shall not be less than 5sqm with a minimum width of 1.8m. Where there is a separate store, the size of the kitchen may be reduced to 4.5sqm. A kitchen which is also intended for dining shall have a floor area of not less than 7.5sqm with a minimum width of 2.1m.
- (2) The height of the kitchen shall not be less than 2.75m. Where beams are provided the minimum head room shall be 2.4 m.
- (3) Every room to be used as a kitchen shall have the following conveniences, namely:
 - (a) Unless separately provided with a pantry, provision should be made for washing of kitchen utensils with proper drainage.
 - (b) An impermeable floor.
 - (c) Proper chimney or exhaust fan to be provided for the escape of gases.

5.17.3 Store room

- (1) The height of a store room shall not be less than 2.2m.
- (2) The size of store room, where provided in a residential building, shall not be less than 3sqm.

5.17.4 Power room

- (1) In the case of multi-storey buildings, the panel boards and other instruments related to power supply shall be housed in a separate room reserved for the purpose. In no case, the space under the staircase shall be utilized for installing the panel boards as they may be possible sources of fire hazards and prevent the safe evacuation of the occupants.

5.17.5 Bath room and water closet

- (1) The size of a bath room shall not be less than 1.8sqm with a minimum width of 1.2m. If it is a combined bath and water closet, its floor area shall not be less than 2.0sqm, with a minimum width of 1.2m. The minimum floor area for water closets shall be 1.1sqm with a minimum width of 0.9m.
- (2) The height of a bath room or water closet measured from the surface of the floor to the lowest point of ceiling shall not be less than 2.2m.
- (3) Every room used as bath room and water closet, -
 - a) Shall be so situated that at least one of its walls shall have external wall opening.
 - b) Shall have the platform or seat, made of water-tight non-absorbent materials.
 - c) Shall be enclosed by walls or partitions and the surface of every such wall or partition shall be furnished with a smooth impervious material to a height of not less than 1m above the floor of such a room.
 - d) (i) Shall be provided with an impervious floor covering, sloping towards the drain with a suitable grade and not towards verandah or any other room.

- (ii) Shall not be used for any purpose except as a lavatory and no such room shall open directly into a kitchen or cooking space by a door, window or other openings. Every room containing water closets shall have a door completely closing the entrance to it.
- e) Shall have flush – out facility.

(4) Sanitary requirements:

All the buildings when erected or re-erected from foundation or when additions to the floors are made shall be provided with minimum sanitary accommodation.

(a) Office buildings, commercial buildings, cinemas, theatres, auditorium, meetings halls:

- (i) Every building shall be provided with at least one water closet in each floor, separately for males and females.
- (ii) The total number of such water closets for each sex shall be based upon the maximum number likely to occupy such building at any one time.
- (iii) One urinal shall be provided for every 25 males or part thereof and one water closet for every 25 females or part thereof up to 100 persons. For any number exceeding 100, one urinal for every 50 persons shall be provided.
- (iv) There shall be provided one water closet for every 50 persons of each sex or part thereof up to 500 persons and for excess over 500, one water closet for every 100 persons of each sex or part thereof shall be provided. However, if the total number of employees in such a building or the number of persons likely to use such building does not exceed 20 one water-closet each for both sexes shall be sufficient and no urinal may be provided.
- (v) An office building shall be deemed to be occupied by persons or employees at the rate of one per every 5sqm of the floor area and sanitary facilities shall be provided according to the number of employees or occupants so worked out.
- (vi) Such water closet and urinals shall be in an accessible location and shall be provided with signs plainly indicating their purposes and the sex for which they are meant.

(b) Industrial Buildings and Warehouses:-

All types of industrial buildings shall be provided with minimum sanitary facilities as under:

- (i) Every building shall be provided with at least one water closet in each floor, separately for males and females.
- (ii) Water closets shall be provided for each sex and number of such closets for each sex shall in every case be based upon the maximum number or persons of that sex employed in occupying such building.

- (iii) Water-closets shall be provided on the following scale:
- Where females are employed there shall be at least one water closet for every 25 females. Where males are employed, there shall be at least one water-closet for every 25 males.
- Provided that where the number of males employed exceed 100, it shall be sufficient if there is one water closet for every 25 males up to the first 100, and one water closet for every 50 thereafter.
- In calculating the number of water closets required under these byelaws, any number of workers less than 25 or 50, as the case may be, shall be reckoned as 25 or 50 and the number of workers to be considered shall be the maximum number employed at any one time during the day.
- (iv) In every such factory there shall be provided one urinal for every 100 persons of each sex or any less number thereof.
- (v) In every such factory there shall be provided one washing place of 3.6sqm in area with sufficient number of taps as per standards laid down by rules in respect of factories.
- (vi) In every building of the warehouse class, there shall be provided one water closet for every 50 males or any less number thereof and one water closet for every 50 females or any less number thereof and one water closet for every 50 females or any less number thereof. There after water closet shall be provided at the rate of one closet for every 70 persons.
- (vii) In every building of the warehouse class, there shall be provided one urinal for every 100 persons or any less number thereof.
- (viii) For the purpose of determining the number of water-closets and urinals each 30 sqm of the gross floor space of such building shall be deemed to be occupied by one person.
- (ix) Such water-closets and urinals shall be accessible in location and shall be provided with signs plainly indicating their purpose and the sex for which they are meant.

(c) Educational Buildings:

Any building used for educational purpose shall be provided with minimum sanitary facilities as follows:

- (i) Subject to minimum provisions of two water-closets and five urinals, there shall be one water-closet and four urinals for every 200 students or part thereof.
- (ii) Competent Authority may enforce the distribution of the above sanitary facilities to be provided at each floor of the building.
- (iii) The building shall be deemed to be occupied by students at the rate of one student per every 1.00sqm of the floor area of all the class-rooms and sanitary facilities shall be provided according to the number of students so worked out.

(d) Residential Building or Residential Tenements:

Each residential building or residential tenement shall be provided with at least one water-closet.

5.17.6 Septic tank/ Soak pit

- (1) In the case where there is no drainage facilities available to the land to be developed, the owner/developer shall provide septic tank, soak pit/soak well for disposal of sewage and waste water.
- (2) Septic tank/soak pit/soak well may be allowed in setback. The requirements of septic tank are given in Byelaw 7.3.

5.17.7 Mezzanine floor

- (1) Not more than one mezzanine floor shall be permissible in a building.
- (2) A Mezzanine floor shall be accessible only from its lower floor.
- (3) Minimum size of mezzanine floor if it is used as a living room shall be 9.5 sqm. The aggregate area of a mezzanine floor shall not exceed 1/3 (or 33.33%) of covered area of its lower floor.
- (4) The minimum height of mezzanine floor shall be 2.2m.
- (5) A Mezzanine floor may be permitted over a room or a compartment.
- (6) It shall conform to the standards of the habitable room as regards lighting and ventilation.
- (7) It shall be constructed without interfering with the ventilation of the space over and under it; A mezzanine floor shall not be sub-divided into smaller compartments unless adequate ventilation is provided.
- (8) A mezzanine floor or any part of it shall not be used as a kitchen.
- (9) In no case, a mezzanine floor shall be closed so as to make it liable to be converted into unventilated compartments.
- (10) Mezzanine floor area shall be considered while calculating FAR.

5.17.8 Loft

- (1) A loft provided in a kitchen shall not exceed 25% of the area of the kitchen and when provided over a bath room, water closet and corridor, the loft can occupy up to 100% of the area.
- (2) The head room or the loft shall be not more than 1.5m.

5.17.9 Staircase

- (1) The Minimum width of staircases shall be as follows:

a) Residential buildings (single dwellings)	1.0m
b) Residential hostel buildings & multi-storey buildings	1.5m
c) Assembly building like auditorium, theatres and cinemas	2.0m
d) Educational building up to 30m in height	1.5m
e) Institutional buildings like hospitals	1.5m
f) All other buildings	2.0m
- (2) The minimum width of tread without nosing shall be 25cm for residential buildings. The minimum width of tread for other buildings shall be 30cm.
- (3) Maximum riser shall be 19cm. for residential buildings and 15cm. for other buildings and they shall be limited to 15 per flight.
- (4) The minimum clear head room in a stair case shall be 2.2m.

- (5) The surface material of stairs, treads and landings shall be such as not to involve undue danger of slipping.

5.17.10 Lift

Provision of lifts shall be made for all buildings with a height of 15m and above and/or having more than ground plus three floors in accordance with the National Building Code with regard to planning and designing of lift. Lifts shall be terminated at the topmost floor.

5.17.11 Lightning Conductor

- (1) Lightning conductors (i.e., sufficient and properly earthed apparatus for protection of the building and its occupants against damage by lightning) shall be provided for structures with inherent explosive risks (such as explosives factories, stores and dumps and fuel tanks).
- (2) Lightning conductors shall be also provided:
 - a) where large numbers of people congregate
 - b) where essential public services are concentrated
 - c) where the area is one in which lightning strokes are prevalent
 - d) where there are tall or isolated structures
 - e) where the structures are on hill tops
 - f) where there are structures of historic or cultural importance
- (3) Since there are many cases where it is not easy to make a decision whether to provide lightning conductor or not, the factors effecting the risk of being struck and the consequential effects of a stroke shall be examined to assist in decision making.
- (4) As a rule, lightning conductors may be provided in high rise buildings, if the building is highest or one of the highest of the locality.
- (5) The lightning conductors shall be periodically checked and kept in good condition.

5.17.12 Boundary wall

- (1) Except with the special permission of the Authority,
 - (a) the maximum height of the front and side boundary wall shall be 1.5m above the ground level.
 - (b) The rear boundary walls shall not have a height of more than 2m above the centre line of the service road, or where there is no service road 2m above the ground level.
 - (c) In case of corner plots, the height of the boundary wall shall be restricted to 0.75m. for a length of rounded off or cut off as indicated in the Byelaws 5.12.
- (2) The stipulations of Byelaw (a) of the above, are not applicable to the boundary walls of jails, sanitarium and heavy industries and women's hostels;

5.17.13 Corridor

The minimum width of corridor for different building or type is as given in the Table 5.12.

Table 5.12 Minimum width of corridors (Byelaw 5.17.13)

Sl. No.	Building use or type	Minimum width of the corridor in meters
1	Residential building (single dwellings)	1.0
2	Residential building (multi-storey/flats/apartments)	2.0
3	Assembly buildings such as auditorium, Kalyana Mantapas, cinema theatre, religious building, temple, mosque or church and other buildings of public assembly or conference.	2.0
4	Institutional buildings such as:	
a)	Government office	2.0
b)	Government Hospitals	2.4
c)	Educational Buildings such as Schools, Colleges, Research Institutions.	2.0
d)	Commercial buildings such as private office, nursing homes, lodges, etc.	2.0
e)	All other buildings	2.0

5.17.14 Water supply

- (1) Before awarding the occupancy certificate, the Authorities shall verify that there are arrangements for supply of water either through legitimate supply lines from the MCC, or through wells/bore wells in the locality. Bore wells shall be provided in high rise buildings to provide alternative source of water supply where the Karnataka Urban Water Supply and Drainage Board so desires and the strata is capable of yielding water.

5.17.15 Mosquito-proof water tanks

- (1) Water storage tanks shall be maintained in perfectly mosquito-proof condition, by providing a properly fitting hinged cover and every tank more than 1.50m in height shall be provided with a permanently fixed iron/aluminum ladder to enable inspection by anti-malaria staff.

5.17.16 Sunshades

- (1) The sunshades shall be flat or gently sloped without any fascia to avoid water stagnation which may lead to breeding of mosquitoes.

5.17.17 Refuse area/disposal of solid waste

- (1) Wherever a property is developed or redeveloped, a space for community-bin for disposal of solid waste shall be provided in the road-side front marginal open space. The owners/occupants shall be required to provide the community-bin with air-tight cover on top at the standards prescribed by the Authority.

5.17.18 Provision of letter box

- (1) In all cases of buildings having more than two floors including ground floor, a letter box of appropriate dimension, for each separate unit shall be provided at ground floor level itself in such a way that post man can easily deliver the posts to it.

5.17.19 Disposal of polluted and unpolluted water

- (1) Separate drains shall be provided for the disposal of polluted and unpolluted water separately from the buildings. Polluted water shall be the water coming out from bathrooms, water closet, kitchen and from other parts of the building which is already used for domestic or other purposes. Unpolluted water shall include rain water and the unpolluted subsoil water, if any. Wherever possible, used water from bathrooms, kitchen etc shall be recycled, or diverted to gardening and other secondary uses whereas sewage from lavatories/water closet shall be connected to sewage drain or septic tanks.
- (2) Roof of every building shall be constructed so as to permit effectual drainage of rain water by means of sufficient rain water pipes of adequate size wherever required, which shall be so arranged, jointed and fixed as to ensure that the rain water is carried away from the building without causing dampness in any part of the wall or foundation of the building or those of an adjacent building or causing annoyance or inconvenience to the neighbour or passer – by.
- (3) Rain water pipe shall be affixed to the out-side of the external walls of the building or in recesses or chases cut or formed in such external walls or in such other manner as may be approved by the Authority, so as to discharge the rain water at a level not more than 0.6m above the ground level.
- (4) Rain water pipe shall be connected to the roadside drain or may be carried out in any other approved manner without causing damage to the property of the Authority. The rain water pipes shall be fixed so as to discharge the rain water at a level not more than 0.6m above the road level.

5.17.20 Lighting and ventilation requirements

- (1) **Natural ventilation:** Rooms shall have, for admission of light and air, one or more openings, such as windows and ventilators, opening directly to the external air or into an open verandah. Doors are not counted towards the area of openings in walls for lighting and ventilation purposes.
- (2) **Artificial ventilation:** Where the light and ventilation are not met through daylight and natural ventilation, the same shall be ensured through artificial lighting and mechanical ventilation, as per Part VIII Building Service section I, Lighting and ventilation of National Building Code of India.
- (3) **Area of openings:** a) Minimum aggregate area of openings excluding doors, shall not be less than $1/6^{\text{th}}$ of the floor area in the case of residential buildings. In the case of other public buildings like business houses, educational buildings, offices, institutional and hospital buildings, the minimum aggregate area of openings shall be not less than $1/5^{\text{th}}$ of the floor area. The area of openings shall be increased by 25% in the case of kitchen. No portion of a room shall be assumed to be lighted if it is more than 7.5m from the opening. b) In case of bath rooms and water closets, minimum area of window or ventilator shall be 0.3sqm with side not less than 0.3m.
- (4) **Ventilation shaft** – For lighting and ventilating the space in water closets and bath rooms, when no opening is provided towards any open spaces, they shall open on

to the ventilating shaft, the size of which shall not be less than as indicated below (Table 5.13):

Table 5.13 Ventilation shaft (Regulation 5.17.20(4))

No. of storeys	Size of ventilation shaft in sqm.	Minimum width in m.
Upto 2	1.2	0.9
Upto 4	1.8	1.2
Upto 6	4.0	1.5
Upto 8	5.4	1.8
Upto 10	8.0	2.4
11 and above	9.0	3.0

5.18 Exit Requirements (As per NBC 2005. Latest provisions of NBC shall be made use of, at the time of enforcement of the byelaws)

5.18.1 General

- (1) Every building meant for human occupancy shall be provided with exits sufficient to permit safe escape of occupants, in case of fire or other emergency.
- (2) In every building for multi family dwellings and all places of assembly, exits shall comply with the minimum requirements of the latest NBC provisions.
- (3) All exits shall be free of obstructions.
- (4) No building shall be altered so as to reduce the number, and size of exits to less than that required.
- (5) Exits shall be clearly visible. Routes to reach the exits shall be clearly marked and signs.
- (6) Wherever necessary, adequate and continuous illumination shall be provided for exits.
- (7) Fire fighting equipment shall be suitably located and clearly marked.
- (8) Alarm devices shall be installed to ensure prompt evacuation of the persons concerned.
- (9) All exits shall provide continuous means of egress to the exterior of buildings or to the exterior open space leading to a street.
- (10) Exits shall be so arranged that they may be reached without passing through another occupied unit.

5.18.2 Arrangement of exits – Exits shall be so located that the travel distance on the floor shall not exceed the limits given in Table 5.14.

5.18.3 Capacity of exits

- a) The unit of exit width used to measure capacity of any exist shall be 50cm. A clear width of 25 cm. shall be counted as an additional half unit. Clear width less than 25 cm shall not be counted for exit width;
- b) The occupants per unit exit width shall be as given in Table 5.15.

5.18.4 Occupant load

The occupant load of buildings shall be worked out as given in Table 5.16.

5.18.5 Number of exits

- i) The location, width and number of exits shall be in accordance with the travel distance, capacity of exits and the population of building based on occupant load;
- ii) There shall not be less than 2 exits serving every floor for buildings of 15m height and above and at least one of them shall be an internal stairway.

**Table 5.14 Travel distance for occupants
(Byelaw 5.18.2)**

Sl. No.	Group of occupancy	Maximum travel distance in mtrs.
1	Residential	22.5
2	Educational	22.5
3	Institutional	22.5
4	Assembly	30.0
5	Business	30.0
6	Commercial/Mercantile	45.0
7	Industrial	30.0
8	Storage	30.0
9	Hazardous	22.5

Note 1: The travel distance to any exit from the dead end of a corridor shall not exceed half the distance specified above except in educational, assembly and institutional occupancies in which case it shall not exceed 6m.

Note 2: Whenever more than one exit is required for any room, space or floor of a building, exits shall be placed as remote from each other as possible and shall be arranged so as to provide direct access to the exits from different directions.

Note 3: For fully sprinklered building, the travel distance may be increased by 50% of the values specified.

Note 4: Ramps shall be protected with automatic sprinkler system and shall be counted as one of the means of escape.

**Table 5.15 Occupants per unit exit width - maximum number of occupants
(Byelaw 5.18.3)**

Sl. No.	Group of occupancy	Stairways	Ramps	Doors
1	Residential	25	50	75
2	Educational	25	50	75
3	Institutional	25	50	75
4	Assembly	40	50	60
5	Business	50	60	75
6	Commercial/Mercantile	50	60	75
7	Industrial	50	60	75
8	Storage	50	60	75
9	Hazardous	25	30	40

Note: Horizontal allowance: When horizontal exit is provided in buildings mercantile, storage, industrial, business and assembly occupancies, the capacity per storey per unit width of exit stairways in the table above, may be increased by 50% and in the buildings of industrial occupancy, it may be increased by 100%.

**Table 5.16 Occupant Load
(Clause 5.18.4)**

Sl. No.	Group of occupancy	Occupant load-gross floor area in sqm per person
1	Residential	12.5
2	Educational	4.0
3	Institutional	15.0*
4	Assembly	
	a) With fixed or loose seats and dance floors	0.6**
	b) Without seating facilities including dining rooms	1.5**
5	Business and industrial	10.0
6	Storage	30.0
7	Hazardous	10.0

* The gross area shall mean plinth area or covered area. Occupant load in dormitory portions or homes for the aged, orphanages, asylums, etc., where sleeping accommodation is provided, shall be calculated at not less than 7.5sqm gross floor area per person.

** The gross floor area shall include, in addition, the main assembly room or space, any occupied connecting room or space in the same storey or in the storey above or below where entrance in common to such rooms and spaces and they are available for use by the occupants or the assembly place. No deduction shall be made in the gross floor area for corridors, closets or other sub-divisions. The areas shall include all space serving the particular assembly occupancy.

Note; The occupant load of a mezzanine floor discharging to a floor below shall be added to that floor occupancy and the capacity of the exits shall be designed for the total occupancy load thus established.

5.18.6 Doorways

- (1) Every exit doorway shall open into an enclosed stairway, a horizontal exit, or a corridor or passageway providing continuous and protected means of egress;
- (2) No exit doorway shall be less than 75cm in width in the case of residential buildings and 100 cm in the case of other buildings. Doorways shall be not less than 200 cm. in height.
- (3) Exit doorways shall open outwards i.e., away from the room. But shall not obstruct the travel along any exit. No door, when open, shall reduce the required width of stairway or landing to less than 90cm. Overhead or sliding doors shall not be installed;
- (4) Exit doors shall not open immediately upon a flight of stairs; a landing equal to at least the width of the door shall be provided in the stairway at each doorway; level of landing shall be same as that of the floor which it serves.

5.18.7 Revolving doors

- (1) Revolving doors shall not be used as required exits except in residential, business and commercial occupancies, but shall not constitute more than $\frac{1}{2}$ the total required door width;
- (2) When revolving doors are considered as required exitway, the following assumptions shall be make;
 - (a) Each revolving door shall be counted as one half of the exit unit width.
 - (b) Revolving doors shall not be located at the foot of a stairway. Any stairway served by a revolving door shall discharge through a lobby or foyer.

5.18.8 Staircase

- (1) Interior stairs shall be constructed of non-combustive materials;
- (2) Interior staircases of all buildings with the exception of residential buildings up to G+3 floors shall be constructed as self contained units with at least one side adjacent to an external wall. The staircase shall be completely enclosed in the case of buildings of 15m height and above
- (3) A staircase shall not be arranged around a lift shaft unless the latter is entirely enclosed by a material of fire resistance rating;
- (4) Hollow combustible construction shall not be permitted;
- (5) The minimum width of an internal staircase shall be as per byelaw 5.17.9;
- (6) The minimum width of treads without nosing shall be as per byelaw 5.17.9;
- (7) The maximum riser shall be as per byelaw 5.17.9;
- (8) Handrails shall be provided with a minimum height of 100cm for all buildings and shall be firmly supported;
- (9) No windings should be provided in a public building except in the case of emergency exits.

5.18.9 Fire escapes or external stairs

- (1) Fire escapes shall not be taken into account in calculating the evacuation time of a building;
- (2) All fire escapes above the ground level shall be directly connected to the ground and shall not lead to the basement floor.
- (3) All entrances to a fire escape shall be separate and remote from the internal staircase;
- (4) The route to fire escape shall be free of obstruction at all times except a door way leading to the fire escape which shall have the required fire resistance;
- (5) Fire escapes shall be constructed of non-combustible materials;
- (6) Stairs of fire escapes shall have straight flights not less than 75cm. wide, 20cm. tread and with risers not more than 19cm. The number of risers shall be limited to 16 per flight;
- (7) Handrails shall be of a height of a not less than 100cm.

5.18.10 Spiral stairs (fire escape)

- (1) The use of spiral staircases shall be limited to low occupant loads and to buildings of not more than 9m height, unless they are connected to platforms such as balconies and terraces to provide for a pause during escape. A spiral fire escape shall be not less than 150cm in diameter and shall be designed to give adequate headroom.

5.18.11 Ramps

- (1) Ramps with a slope of not more than 1:10 may be substituted and shall comply with all the applicable requirements of required stairways regarding enclosures, capacity and dimensions. Larger slopes shall be provided for special use but in no case greater than 1 in 10. For all slopes exceeding, 1:10 and wherever the use is such as to involve danger of slipping, the ramp shall be surfaced with approved non-slipping materials;

5.18.12 Exit corridors and passage ways

- (1) Exit corridors and passage ways shall be of width of not less than twice the aggregate required width of exit doorways leading from them in the direction of travel to the exits. Where stairways discharge through corridors and passage ways, the height of corridors and passage ways shall be not less than 2.4 m.

5.19 Fire Protections in High Rise Buildings (As per NBC 2005. Latest provisions of NBC shall be made use of, at the time of enforcement of the byelaws)

5.19.1 In case of **high rise buildings**, the latest NBC Provisions, such as listed below, shall be made for safety of buildings from fire:

- (1) In addition to the requirement under Byelaws 5.17.10, at least one lift designed as fire-lift as defined in the NBC, shall be installed.
- (2) At least one stair-case shall be provided as a fire staircase as defined in the National Building Code. Provided that this shall not be applicable if any two sides of a staircase are kept totally open to external open air space.
- (3) Water Supply: Underground tank as specified in recommendation of expert committee on fire safety, as fire tank, shall be provided.
- (4) The internal fire hydrants shall be installed as provided in the National Building Code or as prescribed in the Indian Standard Code of practice for installation of internal fire hydrants in high rise buildings. The detailed plan showing the arrangement of pipe lines, booster pumps and water-tanks at various levels shall be submitted for approval of the concerned authority along with the plans and sections of the buildings.
- (5) An external fire hydrant shall be provided within the confines of the site of the building and shall be connected with Municipal Water mains not less than 10cm in diameter. In addition, fire hydrant shall be connected with Booster Pump from the static supply maintained on site.
- (6) Separate electric circuits for lift installation, lighting of passages, corridors and stairs and for internal fire hydrant system shall be provided.
- (7) All the requirements under the above byelaws shall be clearly indicated on plans duly signed by the owner and the person who has prepared the plans. The Competent Authority may direct the owner to submit such further drawings as may be necessary, to clarify the implementation of the provisions of the above byelaws.
- (8) Every building having a height of more than 15m shall be provided with generators, which can be utilized in case of failure of the electricity.
- (9) The standard of National Building Code must be adopted fully in providing staircase and alarm system.
- (10) There should be provision of dry-powder, fire extinguisher to the extent of two on each floor with a capacity of 5kg in all the high rise buildings.

- (11) Suitable detection as well as protection arrangements shall be provided according to the fire risks according to the high-rise residential buildings and other occupancies.
- (12) Basement car parking shall be protected with automatic sprinklers.
- (13) The guidelines for fire drill and evacuation procedure for high rise buildings, as given in NBC, shall be strictly implemented.

5.20 Development of Low Cost Housing

5.20.1 Scope: These regulations shall be applicable to development of schemes for socially and economically backward class of people for economically weaker section of the society and for low cost housing only undertaken by public agencies, co-operative societies Government or Semi Government bodies, Registered Developers.

5.20.2 Planning: The type of development shall be for housing for socially and economically backward class of people, and for low cost housing, block development as group housing.

- (1) The maximum permissible density in Dwelling shall be 225 dwelling per hector.
- (2) The minimum and the maximum plot size shall be between 18 sqm and 40 sqm. respectively with built up area not exceeding 70% of the plot area leaving front as well as rear margin of 1.5m.
- (3) The minimum frontage of plot shall be 3.0m in width.
- (4) At every 20 such continuous plots, 2.0m wide space open to sky shall be provided.
- (5) The maximum numbers of stories in a building construction on the plot shall be ground plus one upper storey only.
- (6) Common plot at the rate of 10% percent of the area of the plot / land developed shall be provided for open space / community open space which shall be exclusive of approach roads , path ways, or margins .

5.20.3 Building Requirements

- (1) The minimum height of the plinth shall be 0.3m from the top surface of approach road or path way.
- (2) The maximum floor space index permissible shall be 1.8.
- (3) (a) The size of living room, bed room shall not be less than 8sqm with minimum width of 2.4m.
(b) In case of single room tenement a separate kitchen is not necessary: and in case of double room tenements, the kitchen shall not be less than 4sqm in area with the minimum width of 1.5m.
(c) (i) Size of independent bath room and water closet shall be 0.9sqm with minimum width of 0.9m each.

(ii) Size of combined bath room and water closet shall be 1.8sqm with minimum width of 1m.

(4) (i) The minimum height of room shall be as under:-

Living room	:	2.4m.
Kitchen room	:	2.4m.
Bath /water closet	:	2.1m.
Corridor	:	2.1m.

(ii) In case of the slopping roof, the average height of the roof shall be 2.1m and the minimum height of the eaves shall be 2.4m.

(iii) The minimum slopes of the slopping roof, shall be 30⁰ for G.I sheets, asbestos sheets or tiled roof while for RCC slopping roof, the minimum slop shall be 12⁰.

(5) The opening through windows, ventilators and other opening for light and ventilation shall be as under: (i) One tenth of the room floor area.(ii) For water closet and bath not less than 0.2sqm.

(6) The width of stair case shall be 0.75m minimum. The maximum height of the riser shall be 20cm. The minimum width of the tread shall be 22.5cm. The minimum clear head roof of the stair case shall be 2.10m. There shall be one staircase for every 12 (twelve) dwelling units or part thereof.

5.20.4 Roads and Pathways

(1) The area under the roads and pathways in such housing project shall normally not exceed 20 percent of the total area of the project.

(2) Access to the dwelling units where motorised vehicles are not normally expected shall be by means of paved foot paths with right of way of 6m and pathways of 2m only. The right of way shall be adequate to allow for plying of emergency vehicles and also for side drains and plantation.

(3) Where motorable access ways are not provided and pedestrian path ways are provided the minimum width of such path way shall be 4m. which shall not exceed 50m in length.

5.20.5 Minimum Required Accommodation

(1) The minimum accommodation provided in every dwelling unit shall be one living room and a water closet. Where there is a drainage system, the agency developing the area shall install and maintain the internal drainage system. Where there is no drainage system, the individual soak-pit shall be provided as per provision of National Building Code.

(2) The loft if provided in the room shall not cover more than 30 % of the floor area of the room.

5.20.6 Structural Requirements

- (1) Load bearing walls of the building shall be of brick, stone or pre cast block in any mortar. In the case of R.C.C framed structure or wooden framed structure, filler walls may be of suitable local materials.
- (2) Roof of the building shall be of galvanized iron sheets, asbestos sheet, tiled roof or RCC roof.
- (3) Doors and windows of building shall be of any material.
- (4) Rest of the work of building shall be as per locally available resources and as per choice.
- (5) For structural safety and services, Byelaw 6.1 and 6.2 shall apply. Relevant provisions of IS codes shall be enforced.

6.0 STRUCTURAL DESIGN AND OTHER REQUIREMENTS

6.1 Structural Design

- 6.1.1 The loads and forces on buildings shall be in accordance with “Part 6 Structural Design: Section 1 – Loads, Forces & Effects” of the NBC 2005.
- 6.1.2 The structural design of foundations and elements of substructures of wood, masonry, reinforced or prestressed concrete shall be in accordance with “Part 6 Structural Design: Section 2 – Soils & Foundations; Section 3- Timber and Bamboo; Section 4- Masonry; Section 5- Concrete; Section 6 – Steel and, section 7- Prefabrication, Systems Building and Mixed/Composite Construction”, of the NBC 2005.
- 6.1.3 **Corrosion protection to RCC Structures:** It has been observed that many RCC structures in coastal region are subjected to extensive corrosion of steel, resulting in distress in RCC structures, leaky roofs and early deterioration of strength. To provide comprehensive corrosion protection to RCC structures and to increase their durability, it is strongly recommended that all reinforcement steel be provided with anticorrosive coating such as “Fusion Bonded Epoxy Coating”.

6.2 Fire and Life Safety Requirements

- 6.2.1 Buildings shall be planned, designed and constructed to ensure adequate safety of the property and inhabitants against fire or other emergency. This shall be carried out, in accordance with “Part 4 Fire and Life safety” of the National Building Code of India. The fire fighting requirements, arrangements and installations required in building shall also conform to the provisions of “Part 4 Fire and Life safety” of the NBC, as amended from time to time.
- 6.2.2 For buildings with ground floor + four floors and above (or height of 15m and above), clearance of the Director of Fire Services shall be obtained regarding the fire and life safety provision in building.

6.3 Building Services

- 6.3.1 The planning, design and installation of various building services shall be in accordance with “Part 8 Building Services: Section 1- Lighting & Ventilation; Section 2 – Electrical & Allied Installations; Section 3 – Air Conditioning, Heating and Mechanical Ventilation; Section 4 – Acoustics, Sound Insulation & Noise Control; section 5 – Installation of Lifts & Escalators” of the NBC 2005.

6.4 Plumbing Services

- 6.4.1 The planning, design and installation of various plumbing services shall be in accordance with “Part 9 Plumbing Services: Section 1 - Water Supply, drainage & sanitation (including Solid Waste management); Section 2 – Gas Supply” of the NBC 2005.

6.5 Telecom Services

- 6.5.1 Every Residential/Commercial premises shall provide an access path for leading copper/optical fibre cable to the building from outside the compound to the building.
- 6.5.2 A single 32mm GI pipe buried at a minimum depth of 600mm from the compound wall shall be connected to the access point inside the building. A hand hole of 0.60x0.60x0.60m at the outside of the compound wall where the pipe has been terminated shall be provided.
- 6.5.3 In case of multistoried residential/business premises, minimum 2 pipes, one of 32mm and 2nd one of 60mm diameter should be laid at a minimum depth of 600mm with hand hole at the boundary of the compound towards the street/road.
- 6.5.4 The buildings shall be completely pre wired within using concealed conduits for their communication requirements.
- 6.5.5 In case of the multi – storeyed building a separate room preferably 4.50x3.65m may be provided in the basement for installation of telecom equipment. The room should have proper ventilation and lighting. The internal wiring from all the apartments should be brought to this room and terminated on a termination box.
- 6.5.6 A vertical chute may be provided for drawing telecom cables from the basement with openings at every floor at a convenient place preferably near lift/staircase so that the telecom cable can be drawn for each floor/each flat.

6.6 Construction Practices and Safety

- 6.6.1 The various construction activities like; demolition, excavation, blasting, actual construction from foundation level up to completion shall be in accordance with “Part 7 Construction Practices and Safety” of the NBC 2005.
- 6.6.2 The safety measures to be adopted during the various construction operations, including storage of materials on the construction site and Corporation/public land shall be in accordance with “Part 7 Construction Practices and Safety” of the NBC 2005.

6.7 Building Materials

- 6.7.1 The requirement of building materials to be used in construction shall conform to “Part 5 Building Materials” of the NBC 2005.

6.8 Alternate Materials, Methods of Design and Construction

- 6.8.1 The provisions of byelaws 6.1, 6.3, 6.5, 6.6 and other provisions of the byelaws are not intended to prevent use of any material or method of construction not specifically prescribed in these regulations provided such a work has been approved by the Authority.

- 6.8.2 The Authority may approve any such alternative, provided it is found that the proposed alternative is satisfactory and conforms to the provisions of the relevant parts regarding materials, design and construction, method of work offered for the purpose intended, at least equivalent to that prescribed in the regulations in quality, strength, compatibility, effectiveness, fire, water and sound resistance, durability and safety.
- 6.8.3 **Tests** – Whenever there is insufficient evidence of compliance with the provisions of these regulations or evidence that any material or method of design or construction, does not conform to the requirement of the regulations or in order to substantiate claim for alternative materials, design or methods of construction the authority may require tests sufficiently in advance as proof of compliance. These tests shall be made by an approved agency at the expense of the owner.
- 6.8.4 Test methods shall be as per the relevant I.S. Codes. Copies of the results of all such tests shall be retained by the Authority for a period of not less than 2 years after the acceptance of the alternative materials.

Note 1: All references of clauses of the NBC in these regulations are referred to the publication of the National Building Code of India 2005. If these numbers are changed in subsequent additions, corresponding number shall be substituted.

Note 2: Facilities at the construction premises – Temporary lavatories shall be provided for the use of workers within the construction premises where the floor area is more than 250sqm.

6.9 Distance of Building from Electrical Lines and related Requirements

- 6.9.1 No building shall be erected below an electrical line, as well as within the horizontal distance from the electrical line indicated in the Table 6.1. The vertical distance below the level of the electrical line and the topmost surface of the building corresponding to the minimum horizontal distance, shall be as indicated in Table 6.1. The minimum vertical clearance is not applicable if the horizontal distance exceeds the minimum prescribed.

Table 6.1 Distance of building from electrical lines (Byelaw 6.9)

Electrical Lines	Vertical clearance (m)	Horizontal clearance (m)
a) Low and medium voltage lines service up to 11 kV	2.5	1.2
b) High voltage lines up to and including 11 kV	3.7	1.2
c) High voltage line above 11 and up to and including 33 kV	3.7	2.0
d) High voltage line above 33 kV	3.7 (plus 0.3m for every addl. 33kV or parts thereof)	2.0 (plus 0.3m for every addl. 33kV or parts thereof)

- 6.9.2 Where the requisitioned load is 25kW or more, or built up area in the premises of the applicant exceeds 500sqm, the applicant shall provide the required space in his premises also provide at his own cost electric line, distribution transformer and associated equipments. The transformer so provided by the applicant shall be dedicated to the premises of such applicant. The details of space to be provided by the applicant are as follows:
- a) An electrical room with RCC roof having clear floor area of 5mx4m with a vertical clearance of 2.75m, with locking facility, exhaust fans and adequate size of cable duct, shall be provided at the ground floor within the applicant's premises, near the main entrance for installing floor mounted distribution transformer and associated switchgear or
 - b) A clear space of 3mx5m open to the sky shall be provided within the applicant's premises preferably at the main entrance for installing the structure mounted distribution transformer and switchgear.

Note:

- (1) If space is not provided by the applicant, he is not entitled to get power supply.
- (2) For car parking area, external staircase area and balcony area, 50% of the area shall be taken for calculating the built up area.
- (3) Water tank area and chejja projection area shall not be considered for calculating built up area.
- (4) In case the sanctioned plan indicates two or more buildings in the same premises, they shall be clubbed together to calculate the built up area.
- (5) Byelaw 6.9.2 are not applicable to educational institutions, Govt. hospitals, Govt guest houses, hospitals of charitable institutions, Students' hostels, multi-storeyed buildings of slum dwellers and LT industries. However they shall be liable to pay the cost towards electric line/plant at the applicable rates.
- (6) In case of following installations, Byelaw 6.9.2 are not applicable, if the requisitioned load is less than 25kW irrespective of built up area:
Buildings of Govt offices (Govt. owned), godowns, kalamandiras, samudaya bhavanas, theatres of film societies, art galleries, auditoriums and charitable/religious institutions registered under section 12-A of Income Tax Act, temples, mosques, churches, gurudwaras and other places of worship, youth centers and vocational centers. However, if the required load is 25kW and above, Byelaw 6.9.2 shall be applicable.

6.9.3 Where any extension of electric line and/or erection of electric plant is required within the premises of the applicant, the applicant shall execute such works at his own cost through appropriate class of licensed electrical contract.

6.9.4 Byelaw 6.9.2 are applicable to existing consumers seeking additional loads, where addition of such loads makes the total load to be 25kW or above. The byelaws are also applicable to existing consumers when their total built up area exceeds 500sqm. In such cases, the consumer shall provide necessary space for the transformer as noted under regulations 6.9.2 above and install the transformer at his own cost.

6.9.5 Provision for low tension supply for layouts: In case of layouts approved by the competent authority, the developer shall execute at his own cost the electric line/plant such as extension works including extension of 11kV line, transformer, LT lines etc., but excluding improvement/augmentation works in the station and/or works of strengthening of the distribution main subject to specified conditions.

6.10 Solar water heater requirements

6.10.1 Solar water heaters shall be provided as per Table 6.2 for different categories of buildings.

**Table 6.2 Solar lighting and water heater requirements
(Byelaw 6.10)**

Sl. No.	Type of use	100 liters per day shall be provided for every unit
1	Restaurants serving food and drinks with seating/serving area of more than 100sqm and above	40sqm of seating or serving area
2	Lodging establishments and Tourist Homes	3 rooms
3	Hostel and guest houses	6 beds/persons capacity
4	Industrial canteens	50 workers
5	Nursing homes and hospitals	4 beds
6	Kalyana Mantapa, Community hall and Convention hall (with dining hall and kitchen)	30sqm of floor area
7	Recreational clubs	100sqm of floor area
8	Residential buildings:	
a)		Single dwelling unit measuring 200sqm of floor area or site area of more than 400sqm whichever is more
b)		500lpd for multi dwelling unit/ apartments for every 5 units and multiples thereof.
9	Solar photovoltaic lighting systems shall be installed in multi unit residential buildings (with more than five units) for lighting the set back areas, drive ways, and internal corridors.	

6.11 Safety Requirements against Natural Hazards

6.11.1 Protection of areas from earthquakes

(1) General Guidelines

- (a) In those areas where there are no dangers of soil liquefaction or settlements or landslides, all building structures and infrastructures should be designed using the relevant Indian Standards as provided in the byelaws and the NBC 2005.
- (b) Soils subjected to liquefaction potential under earthquake shaking can be improved by compaction to desired relative densities, so as to prevent the possibility of liquefaction.
- (c) Buildings and structures could be founded on deep bearing piles going to non-liquefiable soils.

(d) Steep slopes can be made more stable by terracing, soil nailing and construction of retaining walls, and by ensuring good drainage of water so that the saturation of hill-slope is avoided.

(e) Any other appropriate engineering intervention to save the building structures or infrastructure from the fury of earthquake.

Note: The protective action under (b) to (e) will usually involve large amount of costs and should only be considered in the case of large and costly structures. For ordinary buildings the cost of improvement of the site will usually be uneconomical, hence bad sites should be excluded from Land Use Zoning.

(2) Safety measures against earthquake in building construction:

(a) Building with ground plus four floors and above or buildings with a height of 15m and above shall be designed and constructed adopting the norms prescribed in the National Building Code and in the "Criteria for earthquake resistant design of structures" bearing No. IS 1893-2002 published by the Bureau of Indian Standards, making the buildings resistant to earthquakes. The supervision certificate and the completion certificate of every such building shall contain a certificate recorded by the Registered Engineer/Architect (as explained in byelaw 4.13) that the norms of the National Building Code and I.S. 1893-2002 have been followed in the design and construction of buildings for making the buildings resistant to earthquake.

(b) All important buildings such as schools, hospitals, government offices, life line installations, community centers, industrial and commercial buildings, auditoriums and cinema halls, kalyana mantapas, the buildings which are likely to be used as evacuation centres in cases of disasters, must also be designed as earthquake resistant.

(c) For masonry constructions, the ready reckoner "Earthquake Safe Construction of masonry Buildings: Simplified Guideline for all new buildings in the Seismic Zones V, IV & III of India" may be used.

6.11.2 Protection from Cyclonic Wind Damage

(1) Buildings and infrastructures in the cyclone prone areas should be designed according to the Indian Standards and Guidelines as provided in the regulations and the national Building Code of India.

(2) Light utility structures used for electrical transmission and distribution, and towers for communications, chimney stacks of industrial structures require special design considerations against the cyclonic wind pressures, suctions and uplifts.

(3) In case the buildings, structures and infrastructures are found on marine clay deposits it will be advisable to adopt either under-reamed or long piles which should penetrate the marine clay layer and rest on dense sand stratum, or individual column footing with a reinforced concrete beam located at the level of the ground, or a continuous reinforced concrete strip footing.

(4) Whenever the top soil could become slushy due to flooding, the top layer of 300mm deep of soil should not be considered for providing lateral stability.

(5) In storm surge prone areas, it will be preferable to construct the community structures, like schools, cyclone shelters, etc. by raising the level of the ground protected by provision of retaining walls at sufficient distance away from the building, taken to such depth that no erosion takes place due to receding storm surge. Alternatively, the community structures can be constructed on stilts with no masonry or bracing up to the probable maximum surge level.

6.11.3 Protection of areas from floods

- (1) This may require one or more of the following actions
 - (a) Construction of embankments against the water spills from the source of flooding like rivers, large drain etc.
 - (b) Construction of high enough embankments/bund around the planning area.
 - (c) Raising the planning area above the high flood level.
 - (d) Construction/improvement of drainage paths to effectively drain the water from the planning area.
 - (e) Construction of buildings and structures on deep foundations going below the depth of scour or on stilts with deep enough foundations under water.
 - (f) Flood proofing works such as the following:
 - (i) Providing quick drainage facility consisting of:
 - Revitalization of secondary and primary drainage channels after establishing the drainage blockage points;
 - Provision of additional waterways;
 - Clearing of clogged cross drainage works
 - (ii) Providing human and animal shelters for population living within embankments in the form of raised platform or use of available high ground.
 - (g) Anti-erosion actions in affected areas
 - (h) Any other suitable measure

Note: (1) Similar protection methods could be used against flooding caused in cyclone prone areas by high intensity rains or by storm surge. (2) The concept of land zoning should be kept in mind for areas where protection works are taken up to decide inter-se priority for location of structures considering possibility of failure of protection works during extreme disaster events.

6.12 Review of Structural Design (Third-party verification)

- 6.12.1 The Authority shall create a Structural Design review panel (SDRP) consisting of senior SER's and SDAR's whose task will be to review and certify the design prepared by SER or SDAR whenever referred by the Authority or by the Applicant. The expenses (such as fees), if any, shall be borne by the Applicant.
- 6.12.2 The Reviewing Agency shall submit addendum to the certificate or a new certificate in case of subsequent changes in structural design. Table 6.3 gives the proof checking requirements for structural design.

Table 6.3 Proof checking requirements for structural design (Byelaw 6.12)

SI No.	Type of structure	Submission from SER or SDAR	To be proof checked
1	Load bearing buildings upto 3 storeys	SDBR*	Not to be checked
2	Buildings upto seven storeys (RCC/ steel framed structures)	SDBR	To be checked
		Preliminary design	To be checked
3	Buildings greater than seven storeys (RCC/ steel framed structures)	SDBR	To be checked
		Preliminary design	To be checked
		Detailed structural design & structural drawings	To be checked
4	Public Buildings** (A) Load bearing upto 3 storeys	SDBR	Not to be checked
	(B) RCC/ steel structures	SDBR	To be checked
		Preliminary design	To be checked
	Detailed structural design & structural drawings	To be checked	
5	Special structures***	SDBR	To be checked
		Preliminary design	To be checked
		Detailed structural design & structural drawings	To be checked

* SDBD – Structural Design basis report

** Public building – assembly of large number of people including schools, hospitals, courts

*** Special structures – large span structures such as stadium, assembly halls or tall structures such as water tanks, TV tower, chimney, light house etc.

6.13 Rain water harvesting

6.13.1 To encourage and popularise the Rain Water Harvesting, concession in the water charges shall be provided as fixed by the Authority, for those buildings fitted with rain water harvesting facilities.

6.13.2 Rain water harvesting shall be mandatory for all new buildings and the rainwater from the terrace/roof top shall be directed by proper means to a properly designed rainwater harvesting structure for domestic use or for recharging ground water table.

6.13.3 Rainwater harvesting in a building site includes storage or recharging into ground of rainwater falling on the terrace/roof top or on any paved or unpaved surface within the building site. The following systems are recommended for harvesting the rainwater drawn from terrace/roof top and the paved surface:

- A) Open well of a minimum of 1.00 m diameter and 6.00m in depth into which rainwater may be channeled and allowed after filtration for removing silt and floating material. The well shall be provided with ventilating covers. The water from the open well may be used for non-potable domestic purposes such as washing, flushing and for watering the garden, etc.

- B) Rainwater harvesting for recharge of ground water may be done through a bore well around which a pit of one meter width may be excavated up to a depth of at least 3.00 m and refilled with stone aggregate and sand. The filtered rainwater may be channeled to the refilled pit for recharging the bore well.
- C) An impervious storage tank of required capacity may be constructed in the setback or other than space and the rainwater may be channeled to the storage tank. The storage tank may be raised to a convenient height above the surface and shall always be provided with ventilating the surface and shall always be provided with ventilating covers and shall have draw off taps suitably place so that the rain water may be drawn off for domestic, washing, gardening and such other purposes. The storage tanks shall be provided with an overflow.
- D) The surplus rainwater after storage may be recharged into ground through percolation pits or trenches or combination of pits and trenches. Depending on the geomorphologic and topographical condition, the pits may be of the size of 1.20 m width x 1.20 m length x 2.00 m to 2.50 m depth. The trenches can be or 0.60 m width x 2.00 m to 6.00 m length x 1.50 m to 2.00 depth. Terrace water shall be channeled to pits or trenches. Such pits or trenches shall be backfilled with filter media comprising the following materials. -
 - a) 40 mm stone aggregate as bottom layer up to 50% of the depth;
 - b) 20 mm stone aggregate as lower middle layer up to 20% of the depth;
 - c) Course sand as upper middle layer up to 20% of the depth;
 - d) A thin layer of fine sand as top layer;
 - e) Top 10% of the pits / trenches will be empty and a splash is to be provided in this portion in such a way that roof top water falls on the splash pad;
 - f) Brick masonry wall is to be constructed on the exposed surface of pits / trenches and the cement mortar plastered;
 - g) The depth of wall below ground shall be such that the wall prevents lose soil entering into pits / trenches. The projection of the wall above ground shall at least be 15 cm;
 - h) Perforated concrete slabs shall be provided on the pits / trenches.
- E) If the open space surrounding the building is not paved, the top layer up to a sufficient depth shall be removed and refilled with course sand to allow percolation of rain water into ground.

6.13.4 The terrace shall be connected to the open well / bore well / storage tank /recharge pit /trench by means of H.D.P.E. / P.V.C. pipes through filter media. A valve system shall be provided to enable the first washings from roof or terrace catchments, as they would contain undesirable dirt. The mouths of all pipes and opening shall be covered with mosquito (insect) proof wire net. For the efficient discharge of rainwater, there shall be at least two rain water pipes of 100 mm diameter for a roof area of 100sqm.

6.13.5 Rainwater harvesting structures shall be sited as not to endanger the stability of building or earthwork. The structures shall be designed such that no dampness is caused in any part of the walls or foundation of the building or those of an adjacent building.

6.13.6 Every building with plinth area of exceeding 100sqm and built on a site measuring not less than 200sqm shall have one or more rain water harvesting structures having a minimum total capacity as detailed above.

6.13.7 The Authority may approve the rain water harvesting structures of specifications different from above, subject to the minimum capacity of rain water harvesting being ensured in each case.

6.13.8 The owner of every building mentioned above shall ensure that the rain water harvesting structure is maintained in good repair for storage of water for non potable purposes or recharge of groundwater at all times.

6.14 Facilities for physically challenged persons

6.14.1 Public and semi public buildings, having covered area of 300sqm. and above shall be designed and constructed to provide facilities to the physically challenged persons as prescribed in the byelaws below.

6.14.2 These regulations shall apply to the physically challenged persons having the following disabilities:-

- a) **Non-ambulatory disabilities:** Impairments that regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs;
- b) **Semi-ambulatory disabilities:** Impairments that cause individuals to walk difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastics, and those with pulmonary and cardiac ills may be sent ambulatory.
- c) **Hearing disabilities:** Deafness or hearing handicaps that make an individual insecure in public areas because he is unable to communicate or hear warning signals.
- d) **Sight disabilities:** Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

6.14.3 **Access path / walk way:** The width of access path / walk way from plot entry and surface parking to the building entry shall not be less than 1.80 m. It shall not have a gradient exceeding 5%.

6.14.4 **Surface parking:** At least two car spaces shall be provided at surface level near entrance with maximum travel distance of 30.00 m from the building entrance.

6.14.5 **Space for wheel chair users:** Adequate space shall be kept for the free movement of wheel chairs. The standard size of wheel chairs shall be taken as 1050 mm x 750 mm the doors shall have a minimum width of 900 mm to facilitate the free movement of wheel chairs.

6.14.6 **Approach to plinth level:** At least one entrance shall have approach through a ramp. The ramp shall have a minimum width of 1.80 m with maximum gradient of 1:10.

6.14.7 **Entrance landing:** Entrance landing shall be provided adjacent to ramp with the minimum dimension of 1.80 m x 2.00 m.

6.14.8 **Corridors:** The minimum width of corridors shall be 1.80 m.

6.14.9 **Staircase:** The minimum width of staircases shall be 1.50 m. The maximum number of risers on a flight shall be limited to 12. Size of treads shall not be less than 300mm and the height of risers shall not be more than 150mm.

- 6.14.10 **Lifts:**
(A) Wherever lifts are required to be installed as per regulations, provision of at least one lift shall be made for the wheel chair users with the following cage dimensions recommended for passenger lifts of 13 persons capacity by Bureau of Indian Standards.
(a) Clear internal depth 1.10m.
(b) Clear internal width 2.00m.
(c) Entrance door width 0.90m.
(B) The lift lobby shall have a minimum inside measurement of 1.80 m x 1.80 m.
- 6.14.11 **Toilets:** One special water closet in a set of toilets shall be provided for the use of physically challenged persons with wash basin keeping in view the following provisions.-
(a) The minimum size of toilet shall be 1.50 m x 1.75 m.
(b) The maximum height of the water closet set shall be 0.50 m above the floor.
- 6.14.12 **Hand rails:** Hand rails shall be provided for ramps, staircases, lifts and toilets. The height of handrails shall be normally 800 mm above the floor level. If the building is meant for the predominant use of children, the height of hand rails may be suitably altered.
- 6.14.13 **Guiding / Warning floor material:** The floor material to guide or to warn the visually impaired persons with a change of colour or material with conspicuously different texture and easily distinguishable from the rest of the surrounding floor materials is called guiding or warning floor material. The material with different texture shall give audible signals with sensory warning when person moves on this surface with walking stick. The guiding / warning floor material is meant to give the directional effect or warn a person at critical places. This floor material shall be provided in the following areas;
a) The access path to the building and to the parking area;
b) The landing lobby towards the information board, reception, lifts, staircase and toilets;
c) At the beginning / end of walkway where there is vehicular traffic;
d) At the location abruptly changing in level and at the beginning / end of ramp;
e) At the entrance / exit of the building.
- 6.14.14 **Proper signage:** Appropriate identification of specific facilities within a building for the physically challenged persons should be done with proper signage. Visually impaired persons make use of other senses such as hearing and touch to compensate for the lack of vision; where as visual signals shall benefit those with hearing disabilities. Signs should be designed and located such that they are easily legible by using suitable letter size (not less than 20 mm size). For visually impaired persons, information board in Braille should be installed on the wall at a suitable height and it should be possible to approach them closely. To ensure safe walking there should not be any protruding sign, which creates obstruction in walking. The symbols / illustrations should be in contrasting colour and properly illuminated so that with limited vision one may be able to differentiate amongst primary colours.

7.0 ENVIRONMENTAL SAFETY/CONSERVATION REQUIREMENTS

7.1 Control of air and water pollution

- 7.1.1 No industrial effluent shall be disposed or exposed so as to cause nuisance and endanger to public health. Without prejudice to the generality of the above provisions, the Authority may stipulate certain conditions or measures to control the air borne emissions and liquid effluents from industrial units.
- 7.1.2 Industries in the special industrial zone, which emit liquid and gaseous effluents, shall not be allowed to emit such effluent unless they are purified and rendered harmless from the public health point of view by provision of purification plants, as may be prescribed by the Competent Authority and/or Pollution Control Board.
- 7.1.3 Controls as prescribed from time to time by the KSPCB / Competent Authority shall be applicable to all development and redevelopment.
- 7.1.4 In case a factory/industry is required to dispose off trade waste and effluent, the local officer of KSPCB may be consulted regarding the means provided for such disposal before permission is granted by the Authority. In case it is proposed to discharge the waste/ effluent in public sewerage system, prior approval of the concerned Authority should be attached with the application for permission.

7.2 Control of drains, sewers, drainage and sewage works

- 7.2.1 It shall be unlawful for any person to place or deposit on public or private property within the jurisdiction of Authority any human or animal excrement, garbage or other objectionable waste.
- 7.2.2 It shall be unlawful for any person to discharge to any natural outlet or any where, within the area under the jurisdiction of Competent Authority any sewage or other polluted waters except where suitable treatment has been provided in accordance with subsequent provisions of these byelaws.
- 7.2.3 For permission to discharge into the sewage system from establishments producing industrial wastes, the owner or his authorised agent shall make application on a special form furnished by the Competent Authority as the case may be. The permit application shall be supplemented by any plans, specifications, sample test reports or other information considered pertinent in the opinion of the Authority. An inspection fee, fixed by the competent Authority for an industrial building sewer permit, shall be paid at the time application is filed. All industrial and trade establishments existing and discharging industrial wastes into the sewer system at the time of enactment of these byelaws shall also require permission to discharge into the sewer under these byelaws.
- 7.2.4 No person shall discharge or cause to be discharged any storm water, surface water, ground water, roof run-off, or subsurface drainage to any sanitary sewer. Uncontaminated cooling water or unpolluted industrial process water may be permitted to be discharged to any sanitary sewer by the Authority, on permission from KSPCB, if storm sewer is not available.

- 7.2.5 Storm water and all other unpolluted drainage shall be discharged to such sewer as are specifically designated as storm sewers or to a natural outlet approved by the Authority. Industrial cooling water or unpolluted process waters may be discharged with the prior approval of the Authority, on permission from KSPCB, to a storm sewer or natural outlet.
- 7.2.6 Grease, oil and sand interceptors of approved type and capacity shall be provided when in the opinion of the Authority, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts or any inflammable wastes, sand or other harmful ingredients, such interceptors shall be so located as to be readily accessible for cleaning and inspection.
- 7.2.7 No storage rooms where acids, cyanide, cyanogen compound or other dangerous substances are stored, shall be connected directly to the public sewers or to any natural outlet. Curing holding pit, or other approved arrangement may be required to be provided so that accidental discharge can be caught and disposed off in a safe manner.
- 7.2.8 All permits/licences granted under Clause 7.2.3 shall be valid for a period of 3 years and it shall be incumbent on the owner or his authorised agent to make an application for renewal with payment of a renewal fee three months before the 'expiry' of the permit period furnishing sample test reports and any other information considered pertinent.
- 7.2.9 No person shall discharge or cause to be discharged any of the kinds of sewage, industrial or factory waste, into any sewer or body of water within or entering the area, if that sewage is not conforming to the KSPCB norms (as per IS:2490 (Part I) – 1981) for discharge into public sewers.
- 7.2.10 No person shall discharge or caused to be discharged substances, materials, waters or wastes, if it appears likely in the opinion of the Authority that such wastes are not amenable to satisfactory treatment or can harm either sewers, sewage treatment process or equipment have an adverse effect on the reviving stream or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming his opinion as to the acceptability of such wastes the Authority will give consideration to such factors as the quantities of wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, degree of treatability of wastes and other pertinent factors.
- 7.2.11 If any waters of wastes which are discharged, or are proposed to be discharged to the public sewers, contain the substances or process characteristics enumerated in these byelaws and which in the judgment of the Authority may have a deleterious effect upon the sewage works, processes, equipment or reviving waters, or which otherwise create a hazard to life or constitute a public nuisance, the Authority may:
- a) reject the wastes.
 - b) require pre-treatment in a private waste treatment system to an acceptable condition for discharge to the public sewers.
 - c) require provision of flow equalizing facilities for control over the quantities and rates of discharge to avoid unusual volumes or flow or concentration of waste constituting slugs as defined.

- 7.2.12 The owner shall operate and maintain continuously and effectively at his expense the private waste treatment of flow equalization system in a sanitary and safe manner at all times.
- 7.2.13 When required by the Authority, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary appurtenances in the building sewer to facilitate observation sampling and measurement of the wastes. Such manhole when required shall be accessible at all times. In a default of the owner to install and maintain a control manhole and any required appurtenance within 1 month of a written notice from the Authority to do so, the latter shall be entitled to estimate the quality and quantity in any manner or method practicable for computing the amount of the surcharge and the presence of the objectionable constituents laid down in byelaws 7.2.9 and 7.2.10 above.
- 7.2.14 In the event that no special manhole has been required, the control manhole shall be connected to the nearest down stream manhole in the public sewer to the point at which the building sewer is connected.
- 7.2.15 Sampling shall be carried out to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb and property. The particular analysis involved will at the discretion of Authority be done either on basis of a 24 hours composite of all discharge of a property or as a grade sample or samples. Normally B.O.D. and suspended solids analysis are determined from 24 hours composites whereas pH is determined by grade samplings.
- 7.2.16 All tests and analysis of the characteristics of water and wastes to which reference is made in these byelaws shall be determined in accordance with Standard Methods as defined in Byelaw 2.0 and shall be determined at the said control manhole in the presence of representatives of all parties concerned, and tested at a Municipal or any other laboratory approved by the Authority.
- 7.2.17 The Authority may at any time before or after issue of permit or grant of connection, run additional tests of the sewage or wastes being discharged by any trade or industry over such period as it may deem necessary, cost of such test shall be borne by the Competent Authority.
- 7.2.18 The Authority or other duly authorised employees of the Competent Authority shall be permitted to enter all properties for the purposes of inspection, observations of these byelaws and having a direct bearing on the nature and source of discharge.
- 7.2.19 Any person found to be violating any provision of these byelaws shall be served by the Competent Authority with written notice stating the violation and providing a reasonable time limit not less than one month for the satisfactory correction thereof. The offender shall within the period of time stated in such notice, permanently cease all violations.
- 7.2.20 Any person who shall continue any violation beyond the time limit, provided for in byelaw 7.2.19 above, shall be liable for prosecution and be punished with a fine which may extend for each violation. In case of a continuing breach, a penalty on per-day basis shall be levied after the date of first conviction.
- 7.2.21 Any person violating any of the provisions of these byelaws shall become liable to the Competent Authority for any expenses, loss or damage occasioned to the Competent Authority by the reason of such violation and shall be liable to

suspension, revocation or cancellation, if any permissions were granted under the byelaws.

- 7.2.22 The above-mentioned byelaws shall be subject to modification from time to time as required by KSPCB and Competent Authority.

7.3 Requirements of septic tanks

7.3.1 Location and sub-soil dispersion - A sub-soil dispersion system shall not be closer than 9m to any source of drinking water, such as a well, to mitigate the possibility of bacterial pollution of water supply. It shall also be as far removed from the nearest habitable building as economically feasible but not closer than 2m to avoid damage to the structure. It is recommended that the bottom of the septic tank be atleast 1.5m above the ground water table.

7.3.2 Dimensions and other requirements, listed below as a reference, shall confirm to IS:2470 (Part I & II).

- a) Septic tank shall have a minimum inner width of 75 cm, a minimum depth of 1.5m below the water level and a per capita minimum liquid capacity of 85 liters. The length of the tanks shall be least twice the width.
- b) Septic tanks may be constructed of brick work, stone masonry, concrete or other suitable material as allowed in the standard design procedures.
- c) Under no circumstances should effluent from a septic tank or allowed into an open channel drain or body of water without adequate treatment.
- d) The minimum normal diameter of the pipe shall be 100 mm. Further at junction of pipes in manholes, the direction of flow from a branch connection should not make an angle exceeding 45 with the direction of flow in the main pipe.
- e) The gradients of land-drains, under-drainage as well as the bottom of dispersion trenches and soak wells should be between 1:300 and 1:1400.
- f) Every septic tank shall be provided with a ventilating pipe of at least 50 mm diameter. The top of the pipe shall be provided with a suitable cage of mosquito proof wire mesh. The ventilating pipe shall extend to a height, which would cause no smell or nuisance to any building in the area. Generally, the ventilating pipe should extend to a height of about 2 m above the septic tank building when it is located closer than 15 m.
- g) When the disposal of a septic tank effluent is to a seepage pit, the seepage pit may be of sectional dimension of 90 cm. and not less than 100cm in depth below the inner level of the inlet pipe. The pit may be lined with stone, brick and concrete blocks with dry open joint which should be backed with at least 7.5cm of clean coarse aggregate. The lining above the inlet level should be narrowed to reduce the size of the R.C.C. cover slabs. Where no lining is used, specially near trees the entitle pit should be filled with loose stones. A masonry ring should to be constructed at the top of the pit to prevent damage by flooding of the pit by surface run off. The inlet pipe should be taken down to a depth of 90 cm from the top as an anti mosquito measure.
- h) When the disposal of septic tank effluent is to a dispersion trench, the dispersion trench shall be 50 to 100 cm wide excavated to a slight gradient and shall be provided with a layer of shed gravel or crushed stones 15 to 25cm deep. Open joined pipes placed inside the trench shall be made of unglazed earthenware clay or concrete and shall have a minimum internal diameter or 70 to 100 mm. Each

dispersion trench should not be longer than 30m and trenches should not be placed closer than 1.8m to each other.

7.3.3 The above-mentioned byelaws shall be subject to modification from time to time as required by KSPCB and Competent Authority.

7.4 Requirements of motor fuels filling station and filling-cum service - station

7.4.1 Space Requirements

- (1) The minimum size for the location of Filling Station and filling cum Service Station shall be as follows: filling station 30.00m x 36.50m (In intensely developed areas the minimum frontage may be relaxed by the Authority after complete investigation). Filling cum service station shall be 2000 sqm having frontage not less than 30.00m.
- (2) The plot should be on level ground.
- (3) Every filling station should provide for one parking space for each four employees with a minimum of two car parking space.
- (4) In the case of filling cum service stations in addition to parking space requirements given above provision should also be made for one car parking space for each service station.
- (5) Common plot shall not be required.

7.4.2 Traffic requirements

- (1) A filling station or filling cum service station is a major generator of traffic and as such present a degree of traffic hazard on the road on which it is sited. This potential traffic hazard determines the number of station that can be permitted in any section of the road or the highway or in a section of a city, the objective being to keep the traffic hazard to the minimum.
- (2) A filling station or filling cum service station shall not be located opposite a break or opening in the central verge on a dual carriage as this will encourage the traffic to cross the road while entering a filling station or filling cum service station.
- (3) A filling station or filling cum service station preferably may not be sited too close to an intersection to a traffic island on the main road. To assure satisfactory distances, the minimum desirable distance between an access to a station and the tangent point of the traffic island or intersection should be 80.00 m.
- (4) In the case of main road provided along with a service road or a marginal access road, the access to the station shall be provided from the service to the marginal access road and not from the main road.
- (5) On road having heavy traffic, it is desirable to provide one station on either side of the road so that vehicles are not required to cross the road. On roads the traffic cannot support two filling station open on either side, one may be located on either sides provided the site is not close to a junction and conform to the requirements of the (3) above.
- (6) Stations on road curves or bends are a safety hazard and shall be avoided. Also, they shall not be located adjacent to the residential houses.
- (7) The minimum distance of the property line of the filling station from the central line of the road shall not be less than 15m or half the proposed right of way of the road, whichever is more. In the case of National Highways, and major road in the urban areas they should be set back so as to be outside the ultimate right of way of the highway along which it is to be located. However, variations can be approved in special cases if allowed by the competent Authority after complete investigation.

- (8) The heaping up of the oil cans and other goods within the premises which tend to create a sort of ugly character to the area should be discouraged. Preferential locations in highly congested highways in urban areas create traffic problems, which need proper and careful examination. Similarly the concentration of filling station and service station etc. along traffic or arteries creates problems in maintaining street capacity thereby depriving the community facility for mass and quick transport along the highway in urban.

7.4.3 Entrance and exit considerations

- (1) **In all location of filling stations:** The basic principle governing location as well as exit and entrance consideration is to minimize as much as possible interference with normal flow of traffic on the road.
- (2) For easy flow of the station a minimum frontage of 30m shall be provided with wide and easy entrance and exit kerbs, vehicles entering and leaving the station should be fully visible to the traffic on the main road and there should not be any obstruction to view between the filling station pumps and the road.
- (3) The following minimum requirements for the ingress should be observed.
- i) Maximum width of the drive ways at the side walk: 9.00m
 - ii) Minimum angle of intersection of drive ways with the street pavement: 60 degree
 - iii) Minimum distance from any drive way to any exterior property line: 6.00m.
 - iv) Minimum distance from any driveway to any interior plot line: 3.00m.
 - v) Minimum distance between kerb sites : 9.00m

7.4.4 The above mentioned byelaws shall be subject to modification from time to time as required by the concerned IS specifications and the Competent Authority.

7.5 Control of signs (hoardings), paging towers, telephone towers & outdoor display structures

7.5.1 Permission

No structure to display or hold any sign (hoardings) or outdoor display for advertising or paging towers, telephone towers, wireless (Cell Phone) micro wave receiving towers and other purposes will be done except with the previous permission of the Authority.

7.5.2 Design and size

Every hoarding or outdoor display for advertising or paging towers, telephone towers, wireless (Cell Phone) micro wave receiving towers shall be designed so as to withstand the wind, dead, seismic and other loads and other structural requirements in accordance with the National Building Code of India.

In the case of shopping units in commercial areas and/or residential-cum-commercial buildings, the display boards shall be at the same height above the shopping arcade and shall ordinarily be 45.5cm to 61cm in height. The placement and size of the boards shall form a part of the building permission and no change therein shall be permitted nor shall any additional boards be allowed to be displayed.

Size of the hording along the various roads shall be permitted as prescribed by appropriate authority. The appropriate authority shall prescribe size of the hording

according to local conditions and requirements with prior intimations to state governments.

7.5.3 Prohibited signs

The following signs are prohibited along major roads, having width beyond 18.00m.

- a) Any sign that by reason of its shapes; position or colour may be confused with an authorised traffic sign or signal.
- b) Any sign containing the word "Stop" ,"Look" ,"Danger" or other similar word that might mislead or confuse the travelers.
- c) Any sign that is attached to or printed on a rock or other natural objects and
- d) Any sign that is located within a public right-of-way unless it is an official street name, traffic sign or signal or other official sign.

7.5.4 General restrictions

- a) No ground sign shall be erected to a height according to local condition and requirements. Lighting, reflections may extend beyond the top of face of the sign.
- b) Every ground sign shall firmly support and anchored to the ground. Supports and anchors shall be of treated timber in accordance with good practice or metal treated for corrosion resistance or masonry or concrete.
- c) No ground sign shall be erected so as to obstruct from access to or egress from any building and;
- d) No ground sign shall be set nearer to the street line than the established building line.
- e) Distance from the junction of road:- No sign or hoarding along roads shall be permitted. In such away that it is not obstructing the vision required for safe traffic movements.
- f) Any hoarding which in the opinion of the Authority is likely to be confused with unauthorised traffic sign or signal shall not be permitted.
- g) Any hoarding containing the words "Stop", "Look", "Danger" or other similar words that might mislead or confuse the travelers shall not be permitted.
- h) No hoarding shall be permitted after keeping distance, according to local condition and requirements from any public park.
- i) No hoarding shall be permitted in the open margin space of the building.
- j) All permission for hording shall be given only after getting certificate from Registered Structural Engineer for the stability, safety of hording to be erected.

7.5.5 Hoarding on roof - Following provisions shall apply for roof signs.

- a) Location: No roof sign shall be placed on or over the roof of any building, unless the entire roof construction is of non-combustible material. The top of signboard should confirm the building height byelaws.
- b) Projection: No roof sign shall project beyond the existing building line of the building on which it is erected or shall extend beyond the roof in any direction.

- c) Support & Anchorage: Every roof sign shall be thoroughly secured and anchored to the building on or over which it is erected. All loads shall be safety distributed to the structural members of the building.

7.5.6 Wall signs - Following provisions shall apply for wall signs.

- a) Dimensions: The total area of the sign shall not exceed 25 percent of the total area of the facade on which the sign is erected. The facade of the building shall be subdivided into blocks of uniform height and the area of the sign erected on particular block shall not exceed 10 percent of the area of that block.
- b) Projection: No wall sign shall extend above the top of the wall or beyond the ends of the wall to which it is attached. At any place where pedestrians may pass along a wall, any wall sign attached there to shall not project more than 7.5cm. there from within a height of 2.5m. measured from the level of such place.
- c) Support & Attachment: Every wall sign shall be securely attached to walls, wooden blocks or anchorage with wood used in connection with screws, staples or nails shall not be considered proper anchorage, except in the case of wall signs attached to walls of wood.
- d) Reflectors: Lighting reflectors may project 2.4m beyond the face of the wall provided such reflectors are at least 4m above the footpath level, but in no case shall such reflectors project beyond a vertical plane one meter inside the kerb line.

7.5.7 Projecting signs

- a) No projecting sign or any part of its supports or frame work shall project more than 2m beyond the main face of the building to which such sign is attached. At every place where pedestrians may pass underneath a projecting sign, an over-head clearance of at least 2.5m shall be maintained.
- b) Comprehensive Sign Design: Particularly in the case of an existing structure where because of the code amendment new signage is likely to cover less of the building facade than previously, it is hoped that Comprehensive Sign Designs will encourage the rehabilitation of the building front itself as well as the careful design of the sign that goes on it.

7.5.8 Signs in urban renewal project areas

These signs must confirm with the zoning byelaws and with the special restrictions for the area, which may include additional byelaws or requirements.

- a) Banners, Sign-Boards etc: Banners, signboards and several other kinds of signs other than on-premise signs shall be only temporarily permitted.
- b) No signs within 30m distance of a park entrances or institutional entrances shall be permitted.

7.5.9 Historical buildings

The Competent Authority is empowered to deny the permission on the ground of ambiance of heritage buildings and precincts.

7.5.10 Telecommunication infrastructure (paging, cellular mobiles, BSNL etc.)

- a) **Location :** The Telecommunication Infrastructure shall be either placed on the building roof tops or on the ground or open space within the premises subject to other byelaws.
- b) **Type of structure :**
 - i. Steel fabricated tower or antennae's on M.S. pole.
 - ii. Pre-fabricated shelters of fiberglass or P.V.C. on the building roof top/terrace for equipment.
 - iii. Masonry Structure/ Shelter on the ground for equipment.
 - iv. Generator set with sound proof cover to reduce the noise level.
- c) **Requirement:**
 - i. Every applicant has to obtain/ procure the necessary permission from the "Standing Advisory Committee on Radio Frequency Allocation" (SACFA) issued by Ministry of Telecommunications.
 - ii. Every applicant will have to produce the structural stability certificate from the Registered Structural Engineer which shall be the liability of both parties
 - iii. Applicant has to produce/ submitted plans of structure to be erected.
- d) **Projection:** No Pager and/or Telephone Tower shall project beyond the existing building line of the building on which it is erected in any direction.
- e) **Structural Safety:** Pager and/or Telephone Tower shall be structurally safe to withstand against earthquake, cyclone and flood. The competent authority shall be empowered to prohibit from holding any Pager and/or Telephone Tower or shall demolish any existing Pager and/or Telephone Tower after serving a 30 days prior notice, if the same is found to be constructed against prevailing codal provisions.

7.5.11 Deposit and fees

- a) The fees for erection and maintenance of the hoarding shall be charged as decided by Competent Authority from time to time.
- b) The fees for hoarding shall be paid by the applicant in advance, for the calendar year or part thereof.

7.6 Control of Mining and Quarrying

- 7.6.1 No mining, quarrying and brick kiln operations where no blasting is involved shall be permitted within a distance of 50m from the boundary of any public road, railway line, canal, transmission line or any other building. No mining, quarrying and brick kiln operations, which involves blasting, shall be permitted within a distance of 200m from any public road, railway line, canal, transmission line or any other building.
- 7.6.2 No building operations shall be permitted on the plot on which mining, quarrying and kiln operations have been permitted, without the prior approval of the competent authority.
- 7.6.3 The maximum depth of mining & quarrying, and all other related requirements shall be as per the regulations stipulated by the Department of Mining and Geology.

- 7.6.4 The mining, quarrying and brick kiln shall be permitted for a stipulated period not exceeding three years from the date of permission at a time and shall be so prescribed in the permission.
- 7.6.5 The following shall govern the mining, quarrying and brick kiln operations and shall form conditions of the permission:
- a) The mining, quarrying and brick kiln operations shall not cause any nuisance to people in the vicinity.
 - b) The mining, quarrying and brick kiln operations below the average ground level shall be permitted only for the extraction.

7.7 Control of Development along Rivers and in Coastal Regulation Zone

- 7.7.1 The Competent Authority shall ensure that use and activities in the costal areas are in consistent with the principles and requirements of environmental conservation.
- 7.7.2 For protecting the coastal areas and beaches from environmental degradation, construction activity, without NOC from CRZ Authorities, is prohibited within 500m of coastal stretches of high tide line.
- 7.7.3 Action must be taken separately by the Development Authority in association with related agencies to prepare a detailed Coastal Management Plan in order to have effective control over the development coming up within 500m of the high tide line.
- 7.7.4 Construction activity on the banks of the rivers and backwaters, without NOC from CRZ Authorities, are prohibited within 150m on both sides of rivers and backwaters.
- 7.7.5 The maps of the area, wherein NOC from CRZ Authorities is required for the construction activity, shall be made available to the public by the CRZ Authorities in their office for inspection during the prescribed hours on all working days. The maps shall also be made available on their home page, home page of MUDA and MCC, and also in the form of CDs and printed books for purchase at nominal price.
- 7.7.6 No attempt shall be made to alter the natural course of a stream or a river.

7.8 Control of Mega Projects

- 7.8.1 Any construction project such as new townships, industrial townships, settlement colonies, commercial complexes, hospitals and office complexes for 1,000 (one thousand) persons or above, or discharging sewage of 50,000 (fifty thousand) litres per day or above or with an investment of Rs 50,00,00,000 (Rupees fifty crores) or above is **mandatory** to obtain clearance of the KSPCB as well as clearance from Ministry of Environment and Forests.

8.0 REGISTRATION, QUALIFICATIONS AND DUTIES OF PROFESSIONALS

8.1 Registration of Professionals

- 8.1.1 The Authority shall register Town Planners (RTP), Architects (RA), Engineers (RE), Structural Engineers (RSE), Structural Design Agencies (RSDA), Geo-technical Engineers (RGE), Construction Engineers (RCE), Construction Management Agency (RCMA), Quality Auditors (RQA) and Quality Audit Agencies (RQAA), Developers (RD), Electrical Engineers (REE) wherever applicable. The qualified technical personnel shall be registered and licensed by the Authority. Application for registration and licence shall be submitted by above-mentioned professionals to the Development Authority as per format cited at **Form 26**.
- 8.1.2 Registration with licence shall be valid for a period of three consecutive calendar years and shall be renewable on the completion of every three consecutive calendar years.
- 8.1.3 The registration may be suspended for a specified period or cancelled permanently for unprofessional conduct.
- 8.1.4 Civil contractors, masons, plumbers/plumbing contractors, electrical technicians/electrical contractors and other skilled/semiskilled personnel involved in construction activities shall have proper training through vocational courses or training at recognized Industrial Training Institutes. The Construction Engineer on Record shall confirm the skills of above personnel, through verification of relevant certificates, before employing them at the construction site. However there is no need for registration of these personnel.

8.2 Fee for Registration

- 8.2.1 The fee for registration/licencing/renewal of registration of any qualified technical personnel (such as Engineer, Architect, Town Planner) as well as developer/builder shall be as decided by the Authority.
- 8.2.2 If the owner himself is the developer/builder then there is no need for registration as developer/builder.
- 8.2.3 Applications for licence renewal may be submitted to the Authority from 45 days before the expiry of the licence and the Authority shall communicate its decision within two weeks of receiving the application. The approval of fresh applications shall also be intimated to the applicants within 15 days of receiving the application.
- 8.2.4 If the applications for licence renewal are submitted after the date of expiration of licence, such applications shall be treated as fresh ones.

8.3 Qualification of Professionals

8.3.1 Registered Structural Engineer (RSE)

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

Grade-I

Scope of work: To prepare structural design and structural drawings of all types of buildings including high-rise buildings.

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 engineer OR
- (ii) M. E. Structures/ Earthquake Engineering or Ph.D. in Structures with minimum 5 years of experience (after attaining the degree) in structural design work at a responsible position as a structural engineer OR
- (iii) In the case of faculty members of academic Institutions - M. E. Structures/ Earthquake Engineering or Ph.D. in Structures with minimum 5 years of experience (after attaining the degree).
- (iv) The experience as stated above shall be under a Structural Engineer on Record, except for the faculty members of academic Institutions. (This requirement shall be waived for the first ten years of the promulgation of these Byelaws)

Grade-II

Scope of work: To prepare structural design and structural drawings of all types of buildings except high-rise buildings. (Plinth area up to 5000 m²)

Eligibility:

- (i) Diploma in Civil or equivalent with minimum of 8 years experience (after attaining the diploma) in structural design work at a responsible position as a structural engineer OR
- (ii) B. E. Civil or equivalent with minimum 5 years experience (after attaining the degree) in structural design work at a responsible position as a structural engineer OR
- (iii) M. E. Structures/ Earthquake Engineering or Ph.D. in Structural Engineering with minimum 2 years of experience (after attaining the degree) in structural design work at a responsible position as a structural engineer
- (iv) In the case of faculty members of academic Institutions - M. E. Structures/ Earthquake Engineering or Ph.D. in Structures with minimum 2 years of experience (after attaining the degree).
- (v) The experience as stated above shall be under a Structural Engineer on Record, except for the faculty members of academic Institutions. (This requirement shall be waived for the first five years of the promulgation of these Byelaws)

8.3.2 Registered Engineer (RE)

Registered Engineers are those Graduate Civil Engineers or Diploma Holders in Civil Engineering who are registered by local bodies to submit drawings and other documents for obtaining licence.

8.3.3 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 of 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.

8.3.4 Registered Construction Management Agency (RCMA)

- (A) The requirement for registration shall be
- (i) Owner of a proprietary firm shall be an RCE
 - (ii) Fifty per cent partners of a partnership firm shall be RCE
 - (iii) A designated officer of a limited company shall be RCE

8.3.5 Registered Quality Auditor (RQA)

- (A) The requirements for registration shall be:
- (i) B.E. Civil or equivalent with five years experience in testing of building materials including concrete and/or experience in quality control work with a reputed construction agency.
 - (ii) M.E. (Civil) or equivalent with two years experience as above.
 - (iii) B.Arch. or equivalent with a degree or diploma in Construction Management and five years of experience in quality control aspects of construction.
 - (iv) The experience as stated above shall be under one or more registered quality inspector/s of in quality work under one or more reputed construction agencies of minimum ten years of standing from within or outside the area of jurisdiction of the Competent Authority.

8.3.6 Registered Quality Audit Agency (RQAA)

- (A) The requirements for registration shall be:
- (i) Owner of a proprietary firm shall be QAR
 - (ii) Fifty percent partners of a partnership firm shall be QAR
 - (iii) A designated officer of a limited company shall be a QAR

8.3.7 Registered Electrical Engineer (REE)

- (A) The requirements for registration shall be:
- (i) B. E. (Electrical) or equivalent with minimum 10 years experience (after attaining the degree) in electrical works with proof of appointment for the purpose OR
 - (ii) M.E. (Electrical Engineering) or equivalent with minimum 5 years of experience (after attaining the degree) as above OR
 - (iii) PhD (Electrical Engineering) or equivalent with minimum 1 year of experience as above OR

- (iv) In the case of faculty members of academic Institutions - M. E. Electrical Engineering with minimum 2 years of experience (after attaining the degree).

8.3.8 Registered Geotechnical Engineer (RGE)

- (A) The requirements for registration shall be:
 - (i) B. E. (Civil) or equivalent with minimum 10 years experience (after attaining the degree) in geotechnical investigations with proof of appointment for the purpose OR
 - (ii) M.E. (Geotechnical Engineering) or equivalent with minimum 5 years of experience (after attaining the degree) as above OR
 - (iii) PhD (Geotechnical Engineering) or equivalent with minimum 1 year of experience as above OR
 - (iv) In the case of faculty members of academic Institutions - M. E. Geotechnical Engineering with minimum 2 years of experience (after attaining the degree).
 - (v) Shall have a laboratory for soil tests and equipments for field tests, or shall be capable of hiring services of a competent soil testing laboratory.

8.3.9 Registered Geo-Technical Agency (RGA)

- The requirements for registration shall be:
 - (i) Owner of a proprietary firm shall be M.E. (or equivalent) in Geo-technical Engineering with minimum 10 years of experience and should be a RGE.
 - (ii) Atleast fifty percent partners of a partnership firm should be RGE, shall have educational qualifications as in (i) but a minimum 5 years experience.
 - (iii) A designated officer of a limited company shall have qualifications as (i)
 - (iv) The experience as stated above shall be under one or more Geo-technical Agency on Record. Such agencies established within or outside the area of jurisdiction of the competent authority shall be of minimum ten years of standing.
 - (v) The agency shall have a laboratory for soil tests and equipments for field tests.

8.3.10 Registered Architect (RA)

Qualification and Experience:

- (A) Requirement for registration: The person/firm/company acting as Architect shall be registered with Council of Architecture and shall be bind with the terms & conditions as prescribed under the professional rules by the Council of Architecture to render professional services.

8.3.11 own Planner on Record (TPR)

- (A) Requirement for registration: The person/ firm/company acting as Town Planner shall be registered with the Institute of Town Planners and shall be bind with the terms & conditions as prescribed under the professional rules by the Institute of Town Planners to render professional services.

8.3.12 Developer/Builder on Record (DR)

- (A) Requirement for registration: Although there is no specific requirement on the educational qualification, if the developer is different from the owner, it is preferable that the developer has completed the basic compulsory education. If the owner himself is the Developer, there is no need for registration. However if the Developer is interested to develop other's property, then he has to register with the Authority.

8.4 Responsibilities of Owners to Appoint Professionals

8.4.1 Appointment of Professionals

The Owner / Developer shall appoint the following professionals, out of the registered professionals described byelaw 8.3 above, for the project as required.

- Town Planner on Record (TPR)
- Architect on Record (AR)
- Engineer on Record (ER)
- Structural Engineer on Record (SER)
- Structural Design Agency on Record (SDAR)
- Geo-technical Engineer on Record (GER)
- Construction Engineer on Record (CER)
- Construction Management Agency on Record (CMAR)
- Quality Auditor on Record (QAR)
- Quality Audit Agency on Record (QAAR)
- Electrical Engineer on Record (REE)
- Developer on Record (DR)

8.4.1 The Owner / Developer shall submit a list of the appointed professionals on Record with the application for Licence to the competent authorities. (Consent/undertaking from these professionals shall be needed in the required format at the time of seeking Licence)

8.4.2 In case the Owner / Developer change any of the professional on Record intimation to that effect shall be sent to the competent authorities, along with a no-objection certificate from the professional who is being changed.

8.5 Duties and Responsibilities of Professionals

8.5.1 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.

8.5.2 The Structural Engineer, The Geotechnical Engineer and the Architect shall be jointly held responsible for adhering to the provisions of the relevant and prevailing 'Indian Standard Specifications'. The Construction Engineer/Site Supervisor, the Quality Auditor, the Developer/ Builder and the Contractor shall be held responsible for the actual execution as per the design.

8.5.3 The professionals shall 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'. However, if the structural damage/failure is due to poor site conditions, poor workmanship or poor quality of foundation/construction or mistakes/drawbacks in the design etc., the contractor and the concerned professionals shall be held responsible, and the byelaws related to professional misconduct shall be applicable.

**8.5.4 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 or SDAR that
- (i) the SER / SDAR 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/ SDAR 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/geotechnical engineer 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 by and on behalf of the SDAR shall only be signed by Registered Structural Engineer (SER) as a proprietor, partner or as a designated officer of the company.
- (D) To prepare a report of the structural design.
- a) 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.
 - b) 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.
 - c) To supply two copies of structural drawings to the supervisor.
 - d) To advise the Owner/Architect/Engineer for arranging for tests and their reports for soil, building material etc. for his evaluation and design consideration.
 - e) To prepare the revised calculations & drawings in case of any revision with reference to the earlier submission of drawings & design in a particular case.
 - f) 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.

8.5.5 Construction Engineer on Record (CER)/ Site Supervisor on Record

All construction work shall be carried out under the supervision of a Construction Engineer/Site Supervisor 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 verify, through verification of relevant certificates, the skills of masons, plumbers/plumbing contractors, electrical technicians/electrical contractors and other personnel involved in construction activities.
- d) To provide for safety of workers and others during excavation, construction and erection.
- e) To provide safe and adequate temporary structure required for construction and erection.
- f) To bring to the notice of the structural designer and Architect/Engineer any situation of circumstances which in his opinion are liable to endanger the safety of the structure.
- g) 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.
- h) He/she shall be in overall charge of the site and responsible for overall supervision of the work.
- i) 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.
- j) He/she shall take adequate measures to ensure that no damage is caused to the work under construction and adjoining properties.
- k) He/she shall also ensure that no undue inconvenience is caused in the course of his/her work to the people in the neighborhood.
- l) 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.

8.5.6 Construction Management Agency on Record (CMAR).

Construction work for a high-rise building or Special Structures shall be carried out by a Construction Management Agency on Record.

Duties and Responsibilities:

- (A) At the time of seeking permission from Competent Authority for starting construction of a high-rise building or special structures, the Owner shall submit an undertaking from CMAR that
 - i. the CMAR is agreeable to accept the assignment to execute the project as per designs, drawings and specifications*
 - ii. the CMAR shall install a Quality Assurance programme by retaining an independent Quality Audit Agency on Record (QAAR) and submit a certificate concerning the same to the Owner/Developer as well as to the Competent Authority. The appointed QAAR shall be acceptable to the Owner/Developer.*(The text put in italics does not specifically apply/relate for registration.)

- (B) Upon completion of the construction work of the high-rise building and Special Structures the CMAR shall intimate to the Owner/Developer that the work has been carried out according to the design drawings and specifications and written instructions of SDAR and as per guidance of the QAAR.
- (C) The CMAR shall submit a report and certificate in the prescribed format from the QAAR that the quality assurance programme has been satisfactorily carried out on the construction work. This report and certificate shall be submitted to the Owner/Developer for final submission to the Competent Authority.
- (D) All Reports and other submissions to the Competent Authority by and on behalf of the CMAR shall only be signed by Construction Engineer ON Record (CER) as a proprietor, partner or by as a designated officer of the company.

8.5.7 Quality Auditor On Record (QAR)

- (A) The construction work of a high-rise building executed by CMAR shall be under an independent quality inspection programme prepared and implemented under the supervision of an independent QAR.

8.5.8 Quality Audit Agency On Record (QAAR)

For all high-rise construction and special structures, it will be necessary to have an Independent Quality Inspection Programme, which will be determined and executed by and independent Quality Audit Agency on Record (QAAR).

- (A) At the time of seeking permission from competent authority for starting construction of a high rise building of special structures CMAR shall submit an undertaking form QAAR that:
 - (1) The QAAR is agreeable to accept the assignment to implement the quality inspection programme. AND that the appointed QAAR is acceptable to the Owner/Developer.
 - (2) The QAAR will get all the testing of building materials, concrete etc. done by an independent approved testing laboratory.
- (B) During construction of a high rise building and special structures the QAAR shall carry out necessary testing of materials as well as non- destructive testing of structural components with the help of approved testing laboratory and submit to the CMAR and the owner/developer the reports as per quality inspection programme.
- (C) Upon completion of the construction of high-rise building or the special structure the QAAR shall submit the report and certificate in the prescribed format based on the quality inspection programme. This report and certificate will be submitted to the CMAR and the owner/developer for final submission to the competent authority.
- (D) All reports and other submissions to the CMAR by QAAR shall only be signed by Quality Auditor on Record (QAR) as proprietor, partner or as a designated officer of the company.

8.5.9 Electrical Engineer on Record (EER)

For electrical works of high rise buildings and for buildings for medium to heavy industries, the services of an Electrical Engineer on Record shall be used. Such an Electrical Engineer must be a member of the Electrical Consultants Association of India.

Duties and Responsibilities:

- (a) To compute the electrical needs of the building
- (b) To plan for the various electrical components in the building such as distribution transformers, electrical panels, generator sets, cables/wires and earthing system, lighting conductors and so on.

8.5.10 Geotechnical Agency on Record (GAR)/Geotechnical Engineer on Record:

For foundation work/inspection, when required, the services of a Geotechnical Agency on Record or Geotechnical Engineer on Record shall be used.

Duties and Responsibilities:

- (a) To carry out soil investigation at proposed locations as per specifications of Structural Engineer on Record (SER) of Structural Design Agency on Record (SDAR).
- (b) To recommend various type foundation for proposed structure and loading with supporting calculations
- (c) To enable SER or SDAR to take site decision in case strata different than soil investigation report is met with.
- (d) To list out precautionary measures so that there is no damage to adjacent property.

8.6 Duties and Responsibilities of Developer/Builder

- 1) To obtain and submit to the Competent Authority, along with application for licence, 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 byelaws.
- 4) To appoint a registered CER as construction engineer/site supervisor.
- 5) To verify, through verification of relevant certificates, the skills of masons, plumbers/plumbing contractors, electrical technicians/electrical contractors and other personnel involved in construction activities.
- 6) To obtain and adhere to the quality assurance procedure prepared by the registered construction engineer/site supervisor.
- 7) To adequately enable the construction engineer/site supervisor to carry out his responsibilities.
- 8) To certify along with the construction engineer/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.
- 9) To obtain development permission from the Competent Authority prior to commencement of construction of the real estate development
- 10) To regularly submit progress reports and certificates as required by the Competent Authority.
- 11) 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

- 12) 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.
- 13) 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.
- 14) 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 /Construction Engineer or Site Supervisor 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.
- 15) When no registered construction contractor or construction engineer/site supervisor is required to be appointed and not appointed he shall be responsible for their duties and responsibilities under the byelaws.
- 16) 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.
- 17) 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 byelaws.
- 18) He shall exhibit the names of registered persons only, on site and no additional names will be exhibited/displayed.
- 19) He shall explain the construction design and its intended use as per approved plan only, to the prospective purchaser of the premises under construction.
- 20) He shall make available copies of titles for the land, approved plans and all certificates issued to the Competent Authority under these Byelaws.

8.7 Duties and Responsibilities of 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.

The responsibilities of an owner:

- 1) To appoint a registered architect/engineer and structural engineer;
- 2) To obtain at relevant stages, for submission to the Competent Authority, certificates from them that in designing the development and providing detailed drawings and specifications for it they have complied with requirements as laid out in the byelaws.
- 3) To appoint a registered construction engineer/site supervisor.
- 4) To obtain and adhere to the quality assurance procedure prepared by the registered construction engineer/site supervisor.
- 5) To adequately enable the construction engineer/site supervisor to carry out his responsibilities.

- 6) To certify along with the site supervisor that construction of the development has been undertaken as per designs, detailed drawings and specifications provided by the Architect/Engineer and the Structural Engineer.
- 7) To obtain development permission from the Competent Authority prior to the development.
- 8) To regularly submit progress reports and certificates as required by the Competent Authority.
- 9) To obtain an occupancy certificate from the Competent Authority prior use being made of the development.
- 10) To inform in writing the Competent Authority within 7 days, if for any reason he ceases to be relieved of his responsibilities as the owner of the 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.

8.8 Appointment of Professionals under Special Circumstances

8.8.1 In Case Of termination of professionals:

In case of termination of employment of any of the professional persons employed under byelaws. It shall be the duty of the person employed to intimate immediately in writing to the Competent Authority specifically indicating the stage up to which he has supervised the construction. In the absence of any such intimation and until such intimation has been received, person so last engaged shall be deemed to continue to supervise the work in question.

8.8.2 In Case of death of professionals:

Where any of the professional persons employed under these byelaws and required for the execution of the projects dies or ceases to be employee before such building work is completed, the further erection of such building or the further execution of such work shall forthwith be suspended until another person as required under these byelaws is engaged and his name has been duly communicated to the Competent Authority.

APPENDIX A – FORMS

Form 1
Application for License to erect/re-erect/alter a Building
or part of a Building
(Byelaws 4.1, 4.2)

Ref No

Date:

To:

The Commissioner,
Mangalore City Corporation
Mangalore.

Sir,

I/We hereby give notice that I/we intend to erect/re-erect/to make alterations in the plot/building bearing property No. plot no,, city survey No....., ward No. locality/street in accordance with the Building Byelaws of Mangalore City Corporation, I/We forward herewith the following plans and specifications in quadruplicate duly signed by me/us

.....
(name in block letters)

The registered Construction Engineer Sri/smt Bearing the registration No..... will supervise the construction.

The necessary documents, as listed in byelaw 4.2, are enclosed herewith.

I further give the following information:

- a) The occupancy of building is intended to use.
- b) The source of water for the construction is
- c) The duration of stocking of building materials is

I request that the plans submitted be approved and permission be accorded to execute the work.

Signature of the owner

Name of the owner

(in block letters)

Address of owner

Tel:

Checklist for the documents to be enclosed with Form 1 (byelaw 4.2)

(Note: All documents are NOT needed for small buildings. Please refer Byelaws 4.2 & 4.25 for details)

- (1) Undertaking for hazard safety requirement, as per the form prescribed in Form 2
- (2) Certificate as per the form prescribed in Form 3
- (3) Certificates prescribed as per the form in Form 4 and Form 12 (12a (i.e., Part I) and 12b or 12c or 12d as applicable).
- (4) Certificate prescribed as per the form in Form No.5.
- (5) Title deed/possession certificate.
- (6) Property Book/Khata Certificate and Latest Assessment Book Extract
- (7) Survey Sketch
- (8) Land Conversion/Alienation Certificate and Sketch
- (9) Up-to Date Tax Paid Receipt (certified copies)
- (10) Previously Sanctioned Plan, if any
- (11) Drawings (Key Plan, Site Plan, Building Plan, Plan of Parking Area)
- (12) Detailed Floor-wise area calculation with sketches (colour index)
- (13) Licence fee/Scrutiny fee Receipt
- (14) Indemnity Bond on stamp paper (in case of high-rise buildings).
- (15) Schedule II of the National Building Organization duly filled in duplicate as per Form 22.
- (16) Foundation Certificate
- (17) Sewage Disposal Arrangements (drawings)
- (18) Other Certificates, as applicable
- (19) Any other information

Form 2
Certificate of Undertaking for Hazard Safety Requirement
(Byelaw 4.2)

Ref No

Date:

To

The Commissioner,
Mangalore City Corporation
Mangalore.

Ref: Proposed work of _____
(Title of project)

Plot/building bearing property No. plot no,, city survey No.....,
ward No. locality/street

1. Certified that the building plans submitted for approval will satisfy the safety requirements as stipulated under the "Mangalore City Building Byelaws 2006" 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.
3. Footpath and road will not be used for stocking building materials as well as depositing debris. In the event of violation of this undertaking, we understand that the licence will be suspended.

Owner:

Name in Block Letters _____ Signature with date _____

Address _____
_____ Pin code _____ Tel _____

Developer on Record

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Structural Engineer on Record

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Architect on Record/ Engineer on Record

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Form 3
Certificate of Undertaking of Architect on Record/Engineer on Record
(Byelaw 4.2)

Ref No

Date:

To

The Commissioner,
Mangalore City Corporation
Mangalore.

Ref: Proposed work of _____
(Title of the project)

Plot/building bearing property No. plot no,, city survey
No.....,ward No. locality/street

For _____

(Name of Owner)

Address: _____

Tel.No.: _____

I am/am not a member of Council of Architects/Institution of Engineers (India). I am a Registered Architect/Engineer 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 / Building Byelaws 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 Byelaws, 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.

I also undertake to report to the Authority within 3 days of any deviation from the sanctioned plan, or violation of the Building Byelaws/Zoning regulations, observed during the proposed work.

Signature : _____ Date : _____
Reg. No. _____ Validity date _____

Name : _____

Address : _____

Tel. No. : _____

Form 4
Certificate of Undertaking of Structural Engineer on Record
(Byelaw 4.2)

Ref No

Date:

To

The Commissioner,
Mangalore City Corporation
Mangalore.

Ref: Proposed work of _____
(Title of the project)

Plot/building bearing property No. plot no,, city survey
No.....,ward No. locality/street

For _____
(Name of Owner)
Address: _____
Tel.No.: _____

I am a Registered Structural Engineer (RSE) Grade _____. This is to certify that I have been appointed as the Structural Engineer on Record to prepare the Structural design basis report, detailed structural design and detailed structural drawings for above mentioned project. I am fully conversant of my duties and responsibilities under the Byelaws and assure that I shall fulfill them in all respects.

I have prepared and signed a Structural Design Basis Report (SDBR).

I undertake to carry out a detailed structural design and prepare detailed structural drawings of the proposed building as per the latest Indian Standard Specifications, and as indicated in the Structural Design Basis Report.

I undertake to supply the owner and the construction engineer the detailed structural drawings. If my services are terminated, I undertake to intimate the Authority in writing.

Signature : _____ Date : _____
Reg. No. _____ Validity date _____

Name : _____
Address : _____
Tel. No. : _____

Form 5
Certificate of Undertaking of Construction Engineer on Record
(Byelaw 4.2)

Ref No

Date:

To

The Commissioner,
Mangalore City Coporation
Mangalore.

Ref: Proposed work of _____
(Title of the project)

Plot/building bearing property No. plot no,, city survey
No.....,ward No. locality/street

For _____
(Name of Owner)
Address: _____
Tel.No.: _____

I possess a current Registration to act as Registered Construction Engineer.

I hereby certify that I am appointed as a Construction Engineer on Record on the above mentioned project and that all the works under my charge shall be executed in accordance with the drawings and specifications prepared for this project.

I am fully conversant with the provisions of the Byelaws, which are in force and about the Duties and Responsibilities under the same, and I undertake to fulfill them in all respect.

Signature : _____ Date : _____
Reg. No. _____ Validity date _____

Name.....
Address.....
Tel.No.....

Form 6
Application for License to

- (i) develop or redevelop any piece of Land
 - (ii) convert or alienate any piece of land
 - (iii) change the land use under special circumstances
- (Byelaw 4.1, 4.2)**

Ref No:

Date:

To

The Commissioner,
Mangalore City Corporation
Mangalore.

Sir,

I/We intend to develop/re-develop the land/convert or alienate the land/change the land use under special circumstances as described in the enclosure. I/We forward herewith the following in quadruplicate duly signed by me/us (name in block letters), the licensed Architect/Engineer..... (name) with group License No., who has prepared the maps and will/will not supervise the work.

- 1. Key Plan
- 2. Site Plan
- 3. Layout Plan
- 4. Specifications
- 5. Complete Address of the Plot

- 6. Evidence of right over the land
 - (i) Copy of Deed
 - (ii) Copy of Mutation
 - (iii) Land Rent Receipt

- 7. Receipt of Payment of Fees
- 8. Any other information

I/We request that the licence may be granted.

Signature of Applicant :

Date Name of the Applicant :
(in Block Letters)

Address of the Applicant. :

Tel:.....

Form 7
Sanction of License
(Byelaw 4.11)

From

The Commissioner
Mangalore City Corporation
Mangalore

To

.....
.....
.....

Sir/ Madam,

With reference to your application No..... dated For grant of licence for the erection/ reerection/ making. Alteration / renewal of the building bearing property No., plot No....., City Survey No....., ward No....., locality/street..... I have to inform you that sanction has been granted by the Authority subject to the following conditions:

1. A copy of the sanctioned plan should be displayed in the work spot.
2. A note book should be maintained in the workspot and should invariably be produced to the inspecting officers of the Corporation for recording instructions.
3. The building shall not be occupied without obtaining occupancy certification after completion of the building under section 310 of KMC Act, 1976.
4. (i) the plants and trees within the site should not be disturbed as much as possible, (ii) at least two trees shall be grown in the sites where the site area exceeds 200sqm, and for every additional 200sqm, additional two trees shall be planted in the interest of improving the environment of the area. If a tree dies a new tree shall be planted as replacement.
5. Structural design basis report along with soil investigation report may be submitted at least one month in advance and subsequent approval before the commencement of the work. (for residential buildings, but excluding high-rise buildings)
6. Other conditions.

Office Communication No.....

Dated

Signature of Authority.....
Name, designation and Address of the
Authority

Office Stamp

Form 8
Refusal of License
(Byelaw 4.11)

From

The Commissioner
Mangalore City Corporation
Mangalore

To

.....
.....
.....

Sir/ Madam,

With reference to your application No. dated for grant of license for the erection/ making alteration / renewal of the building bearing property No..... plot No..... City Survey No..... ward No..... locality / street I have to inform you that sanction has been refused by the Authority on the following grounds:

- 1.
- 2.
- 3.
- 4.
- 5.

Office Communication No.....

Dated

Signature of Authority.....
Name, designation and Address of the
Authority

Office Stamp

Form 9
Grant of licence to

- (i) develop or redevelop any piece of Land
 - (ii) convert or alienate any piece of land
 - (iii) change the land use under special circumstances
- (Byelaw 4.11)**

Licence is hereby granted / refused under Byelaw 4.11

to _____
(Name of the person)

for _____
(Description of work)

on the following conditions:

(in case of grant)

a)

b)

(in case of refusal)

a) Documents / N.O.C. etc.: -
Following documents / plans / N.O.C/ undertakings are not submitted.

i)

ii)

b) Site Clearance: -

(i) Site is not cleared with respect to

- Road line
- Reservations
- Zone
- Other (specify)

(ii) Proposed use is not permissible according to the width of road as per the Building Byelaw Clause No.....

Office Communication No.....

Dated

Signature of Authority.....
Name, designation and Address of the
Authority

Office Stamp

Form 10
Notice of Commencement of Work
(Byelaw 4.12.1)

Ref No

Date:

To

The Commissioner,
Mangalore City Coporation
Mangalore.

I hereby certify that the erection/ material alteration of the building bearing property No.plot No....., City Survey No..... ward No..... locality / street under the supervision of

- a) Architect/Engineer (name)_____bearing registration No.....
- b) Structural Engineer (name)_____, bearing registration No.....
- c) Construction Engineer (name)_____, bearing registration No.....

in accordance with plans sanctioned as per your permission vide No..... LP..... dated is to commence on.....

Signature of the owner
Name of the owner
(in block letters)
Address of owner
.....
Tel
.....

Form 11
Commencement Certificate
(Byelaw 4.12.2)

To

.....
.....
.....

Sir,

Subject : Issue of permission for the commencement of work of the building
sanctioned in License No..... LP.....Dated.....

Ref : Your application dated

The property No..... of Ward No. was inspected on..... and the foundation marked/laid/ columns marked/ fixed is verified with reference to the building plan sanctioned by the Mangalore City Corporation in LP No..... and found that the same is as per the sanctioned plan and hence permission is hereby accorded to proceed with the work subject to the following conditions:

1. The work should be carried out strictly as per the sanctioned plan and Building Byelaws without any deviations, alterations or violations.
2. When the work has reached the completion of the foundation or footing or columns fixed, the Corporation shall be intimated regarding the progress of work so as to facilitate the Authority to inspect and verify as to whether the construction is being carried out as per the sanctioned plan and Byelaws.
3. Other conditions.

Office Communication No.....

Dated

Signature of Authority.....
Name, designation and Address of the
Authority

Office Stamp

Form 12a
Structural Design Basis Report (part 1)
 (Byelaw 4.2)

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

Part 1 General Data			
S. No.	Description	Information	Notes
1	<i>Address of the Building</i> <ul style="list-style-type: none"> • Name of the building • Property Number • Plot number • City Survey Number • Ward No. • Locality/Street • District 		
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 the storyes to be added later, if any)		
8	Number of Basements below ground level		
9	<i>Type of Structure</i> <ul style="list-style-type: none"> • Load Bearing Walls • R.C.C. Frame • R.C.C. and Shear Walls • Steel frame 		
10	<i>Soil Data</i> <ul style="list-style-type: none"> • Type of soil • Design Safe Bearing Capacity 		IS: 1893 Cl. 6.3.5.2 IS: 1904
11	Dead Loads (Unit Weight Adopted) <ul style="list-style-type: none"> • Earth • Water • Brick Masonry • Plain Cement Concrete • Reinforced Cement Concrete • Floor Finish • Other Fill Materials 		IS: 875 Part 1

Part 1			
General Data			
S. No.	Description	Information	Notes
	<ul style="list-style-type: none"> Piazza Floor Fill and Landscape 		
12	<p align="center">Imposed (live) Loads</p> <ul style="list-style-type: none"> Piazza floor accessible for Fire Tender Piazza floor not accessible for Fire Tender Floor Loads* Roof Loads** 		IS: 875 Part 2
13	<p align="center">Cyclone/Wind</p> <ul style="list-style-type: none"> Speed Design pressure intensity 		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 2
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 A1 sheets

** Incase terrace garden is provided, indicate additional fill load and live load

*** Indicate on a small scale plan on A₄ size sheet

Form 12b
Structural Design Basis Report (part 2)
 (Byelaw 4.2)

Part 2		Load Bearing Masonry Buildings							
S. No.	Description	Information			Notes				
1	Building Category				IS: 4326 Cl. 7 Read with IS: 1893				
					Zone	II	III	IV	V
					Bldg				
					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	Re: size and position of openings (see note no. 1 at the end of this table)				IS:4326 Table 4, Fig. 7				
	<ul style="list-style-type: none"> • Minimum distance (b₅) • Ratio (b₁+b₂+b₃)/l₁ or (b₆ + b₇)/l₂ • Minimum pier width between consequent opening (b₄) • Vertical Distance (h₃) • Ratio of wall height to thickness • Ratio of wall length between cross wall to thickness 								
7	Horizontal seismic band	P	TP	NA	(see note no. 2 at the end of this table)				
	• at plinth level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS: 4326 Cl. 8.4.6				
	• at window sill level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS: 4326 Cl. 8.3				
	• at lintel level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS: 4326 Cl. 8.4.2				
	• at ceiling level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS: 4326 Cl. 8.3				
	• at eave level of sloping roof	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS: 4326 Cl. 8.3 IS: 4326 Cl. 8.4.4				

	<ul style="list-style-type: none"> • at top of gable walls • at top of ridge walls 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
8	Vertical Reinforcing Bar		
	<ul style="list-style-type: none"> • at corners and T junctions of walls • at jambs of doors and window openings 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	IS: 4326 Cl. 8.4.8 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	Horizontal Bracings in pitched truss		
	<ul style="list-style-type: none"> • in horizontal plan at the level of ties • in the slopes of pitched roofs 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Notes:

1. Information in item 6 should be given on separate A4 sized sheets for all walls with the large number of openings
2. **P** indicates “ **Information Provided**”
TP indicates “ **Information to be provided**”
NA indicates “ **Not Applicable**”
 Tick mark on box

Form 12c
Structural Design Basis Report (part 3)
 (Byelaw 4.2)

Part 3 Reinforced Concrete Framed Buildings			
S. No.	Description	Information	Notes
1	<p style="text-align: center;">Type of Building</p> <ul style="list-style-type: none"> • Regular frames • Regular frames with shear walls • Irregular frames • Irregular frames with shear walls • Soft storey 		IS: 1893 Cl. 7.1
2	Number of basements		
3	Number of Floors including ground floor		
4	<p style="text-align: center;">Horizontal Floor System</p> <ul style="list-style-type: none"> • Beams and Slabs • Waffles • Ribbed Floor • Flat slabs with drops • Flat plate with drops 		
5	<p>Soil Data</p> <ul style="list-style-type: none"> • Type of Soil • Recommended type of foundation <ul style="list-style-type: none"> - Independent footing - Raft - Piles • Recommended bearing capacity of soil • Recommended, type, length, diameter and local capacity of piles • Depth of water table • Chemical analysis of ground water • Chemical analysis of Soil 		IS: 1498
6	<p style="text-align: center;">Foundations</p> <ul style="list-style-type: none"> • Depth below ground level • Type <ul style="list-style-type: none"> ▪ Independent ▪ Interconnected ▪ Raft ▪ Piles 		
7	System of interconnecting foundations		IS: 1893 Cl. 7.12.1

Part 3 Reinforced Concrete Framed Buildings			
S. No.	Description	Information	Notes
	<ul style="list-style-type: none"> ▪ Plinth Beams ▪ Foundation Beams 		
8	Grades of concrete used in different parts of building		
9	Method of analysis used		
10	Computer software used		
11	Torsion included		IS: 1893 Cl. 7.9
12	<p style="text-align: center;">Base Shear</p> <ul style="list-style-type: none"> a) Based on approximate fundamental period b) Based on dynamic analysis c) Ratio of a/b 		IS: 1893 Cl. 7.5.3
13	Distribution of seismic forces along the height of the building		IS: 1893 Cl. 7.7 (Provide Sketch)
14	The column of soft ground storey specially designed		IS: 1893 Cl. 7.10
15	<p style="text-align: center;">Clear minimum cover provided in</p> <ul style="list-style-type: none"> • Footing • Column • Beams • Slabs • Walls 		IS: 456 Cl. 26.4
16	<p style="text-align: center;">Ductile detailing of RC frame</p> <ul style="list-style-type: none"> • Type of reinforcement used • Minimum dimension of beams • Minimum dimension of columns • Minimum percentage of reinforcement of beams at any cross section • Maximum percentage of reinforcement at any section of beam • Spacing of transverse reinforcement in 2-d length of beams near the ends • Ratio of capacity of beams in shear to capacity of beams in flexure • Maximum percentage of reinforcement in column • Confining stirrups near ends of columns and in beam-column joints <ul style="list-style-type: none"> a) Diameter b) Spacing • Ratio of shear capacity of columns to maximum seismic shear in the storey 		IS:456 Cl.5.6 IS:13920 Cl.6.1 IS: 13932Cl.7.1.2 IS: 456Cl.26.5.1.1 (a) IS: 13920Cl.6.2.1 IS: 456Cl. 26.5.1.1 (b) IS:13920 Cl.6.2.2 IS:13920 Cl.6.3.5 IS: 456Cl.26.5.3.1 IS: 13920Cl.4

Part 3		Reinforced Concrete Framed Buildings	
S. No.	Description	Information	Notes

1. A certificate to the effect that this report will be completed and submitted at least one month before commencement of Construction shall be submitted with the application for Building Development Permission.
2. In addition to the completed report following additional information shall be submitted, at the latest, one month before commencement of Construction.

2.1 Foundations

- 2.1.1 In case raft foundation has been adopted indicate K value used for analysis of the raft
- 2.1.2 In case pile foundations have been used give full particulars of the piles, type, dia, length, capacity
- 2.1.3 In case of high water table indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

2.2 Idealization for Earthquake analysis

- 2.2.1 In case of a composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system.
- 2.2.2 Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.

2.3 Submit framing plans of each floor

2.4 In case of basements, indicate the system used to contain earth pressures

Form 12d
Structural Design Basis Report (part 4)
(Byelaw 4.2)

Part 4 Buildings in Structural Steel			
S. No.	Description	Information	Notes
1	Adopted method of design	<ul style="list-style-type: none"> ○ Simple ○ Semi-rigid ○ Rigid 	IS: 800; Cl. 3.4.4 IS: 800; Cl. 3.4.5 IS: 800; Cl. 3.4.6
2	Design based on	<ul style="list-style-type: none"> ○ Elastic Analysis ○ Plastic Analysis 	IS: 800; Section-9 SP: 6(6)
3	Floor Construction	<ul style="list-style-type: none"> ○ Composite ○ Non-composite ○ Boarded 	
4	Roof Construction	<ul style="list-style-type: none"> ○ Composite ○ Non-composite ○ Metal ○ Any other 	
5	Horizontal Force resisting system adopted	<ul style="list-style-type: none"> ○ Frames ○ Braced frames ○ frames & shear walls 	Note: Seismic force As per IS: 1893 <i>Would depend on System</i>
6	Slenderness ratios maintained	Members defined in Table 3.1, IS:800	IS: 800; Cl. 3.7
7	Member deflection limited to	Beam, Rafters Crane Girders Purlins Top of Columns	IS: 800; Cl. 3.13
8	Structural members	<ul style="list-style-type: none"> ○ Encased in Concrete ○ Not encased 	IS: 800; Section 10
9	Proposed material	<ul style="list-style-type: none"> ○ General Weldable ○ High strength ○ Cold formed ○ Tubular 	IS: 2062 IS: 8500 IS: 801, 811 IS: 806
10	Minimum metal thickness specified for corrosion protection	<ul style="list-style-type: none"> ○ Hot rolled sections ○ Cold formed sections ○ Tubes 	IS: 800, CL.3.8 Cl. 3.8.1 to Cl. 3.8.4 Cl. 3.8.5 Cl. 3.8.5
11	Structural Connections	<ul style="list-style-type: none"> ○ Rivets ○ C T Bolts ○ S H F G Bolts ○ Black Bolts ○ Welding- Field Shop (Specify welding type proposed) ○ Composite 	IS: 800, Section-8 IS: 1929,2155,1149 IS: 6639, 1367 IS: 3757, 4000 IS: 1363, 1367 IS: 816, 814, 1395, 7280, 3613, 6419, 6560, 813, 9595

Part 4 Buildings in Structural Steel			
S. No.	Description	Information	Notes
12	Minimum Fire Rating Proposed, with method	<ul style="list-style-type: none"> o Rating ----- hours o Method proposed <ul style="list-style-type: none"> - In tumescent Painting - Spraying - Quilting - Fire retardant boarding 	IS: 1641, 1642, 1643

Form 13
Progress Certificate : Plinth Stage
(Byelaw 4.13.1)

(Plinth Stage/In case of basement casting of basement slab)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Coporation
Mangalore

Sir,

We hereby inform you that the work of execution of the building as per approved plan, working drawing and structural drawings has reached the Plinth Level and is executed under our supervision.

We declare that the amended plan is not necessary at this stage.

Yours faithfully,

Owner:

Name in Block Letters _____ Signature with date _____

Address _____
_____ Pin code _____ Tel _____

Developer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Construction Engineer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Form 14
Progress Certificate : First Storey
(Byelaw 4.13.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To

Commissioner
Mangalore City Corporation
Mangalore

Sir,

We hereby inform you that the work of execution of the building as per approved plan, working drawing and structural drawings has reached the First Storey Level and is executed under our supervision.

We declare that the amended plan is not necessary at this stage.

Yours faithfully,

Owner:

Name in Block Letters _____ Signature with date _____

Address _____
_____ Pin code _____ Tel _____

Developer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Construction Engineer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Form 15
Progress Certificate : Middle Storey (in case of high-rise buildings)
(Byelaw 4.13.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

Sir,

We hereby inform you that the work of execution of the building as per approved plan, working drawing and structural drawings has reached the _____ Storey Level and is executed under our supervision.

We declare that the amended plan is not necessary at this stage.

Yours faithfully,

Owner:

Name in Block Letters _____ Signature with date _____

Address _____
_____ Pin code _____ Tel _____

Developer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Construction Engineer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Form 16
Progress Certificate ; Last Storey
(Byelaw 4.13.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

Sir,

We hereby inform you that the work of execution of the building as per approved plan, working drawing and structural drawings has reached the _____ Storey Level (last storey level) and is executed under our supervision.

We declare that the amended plan is not necessary at this stage.

Yours faithfully,

Owner:

Name in Block Letters _____ Signature with date _____

Address _____
_____ Pin code _____ Tel _____

Developer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Construction Engineer on Record:

Name in Block Letters _____ Signature with date _____

Registration No. _____ Validity date _____

Address _____
_____ Pin code _____ Tel _____

Form 17
Completion Report
(Byelaw 4.14.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

Sir,

1. 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.
2. We declare that the work is executed as per the approved plan/permission granted 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.
3. We hereby declare that the plan as per the building erected has been submitted and approved.
4. We have transferred the area of parking space provided as per approved plan to an individual/association before for occupancy certificate.
5. Any subsequent change from the completion drawings will be our responsibility.
6. We request that the occupancy certificate for the premises be issued.

Yours faithfully,

Owner:

Name in Block Letters _____ Signature with date _____
Address _____
_____ Pin code _____ Tel _____

Developer on Record :

Name in Block Letters _____ Signature with date _____
Registration No. _____ Validity date _____
Address _____
_____ Pin code _____ Tel _____

Encl:

- 1) Building completion report by the architect on record
- 2) Building completion report by the construction engineer on record
- 3) Building completion report by the structural engineer on record

Form 18
Building Completion Report by the Architect/Engineer on Record
(Byelaw 4.14.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

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/Engineer on record.
3. Construction has been done under our supervision / guidance and adheres to the drawings submitted.

Yours faithfully,

Architect/Engineer on Record:

Name in Block Letters _____ Signature with date _____
Registration No. _____ Validity date _____
Address _____
_____ Pin code _____ Tel _____

Form 19
Building Completion Report by the Construction Engineer on
Record
(Byelaw 4.14.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

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.

Yours faithfully,

Construction Engineer on Record:

Name in Block Letters _____ Signature with date _____
Registration No. _____ Validity date _____
Address _____
_____ Pin code _____ Tel _____

Form 20
Building Completion Report by the Structural Engineer on Record
(Byelaw 4.14.1)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To
Commissioner
Mangalore City Corporation
Mangalore

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.

Yours faithfully,

Structural Engineer on Record:

Name in Block Letters _____ Signature with date _____
Registration No. _____ Validity date _____
Address _____
_____ Pin code _____ Tel _____

Form 21
Occupancy Certificate
(Byelaw 4.14.1)

A plan was sanctioned for construction ofbuilding consisting of At Vide LP No..... / Dt : -

On receipt of the intimation of the completion of the building from the Owner/Developer, the building was inspected by the and it was found that the applicant has built the building according to the sanctioned plan/effectuated certain changes from the sanctioned plan. These changes were regularized by the Commissioner in his note dated as recommended by the by levying a penalty of Rs..... After ensuring that the deviations are within the permissible limit of 5% from the sanctioned plan.

The applicant has paid a sum of Rs..... (Rupees) vide challan No. dated Towards the compounding fine. Hence, the deviations affected by the applicant are regularized.

Therefore, permission is granted to occupy the building for Purpose at vide LP Consisting of with the following details.

Floor Description	Area	No. of Units / Use of the floor	Remarks

And subject to the following conditions :

1. He shall not add or alter materially, the structure or a part of the structure there off without specific permission of MCC. In the event of the applicant violating, the MCC has the right to demolish the deviated/altered/added portion without any prior notice.
2. He shall construct the toilet, facilities for the visitors, drivers and servants at Ground floor Level within the plinth area of the building within 3 months from the date of issue of O.C.
3. The basement floor must be used for car parking purpose only as per sanctioned plan.
4. Other conditions.

On default of the above conditions, the O.C. issued will be with drawn.

Office Stamp
Office communication No.....
Dated

Signature of Authority
Name, designation and Address of the Authority
.....

Form 22
SCHEDULE II OF THE NATIONAL BUILDING ORGANISATION

(Byelaw 4.2)
GOVERNMENT OF INDIA, MINISTRY OF WORKS AND HOUSING
NATIONAL BUILDING ORGANISATION

Housing and Building Construction activity in Private Sector (Karnataka State)

Name of Corporation : MANGALORE CITY CORPORATION

District : Dakshina Kannada Taluk: Mangalore for the Quarter Ending

Note : For items 1 and 2, please fill in the appropriate

Code Number in

1. Nature of Construction :

Code No. :

- a) New Construction
b) Additions to existing buildings.

1.
2.

2.Type of Construction :	Code No.	Total Plinth area (Sqm)	Total Floor area (Sqm)
a) Residential Building	Code No.		
i) Dwellings	1		
ii) Other residential places (such as Hostels, Dormitories/ Lodging Hotels and Clubs)	2		
b) Industrial buildings (Factories/Plants, Workshops etc.,)	3		
c) Commercial buildings(Shops ware-house, offices, public garden etc.,)	4		
d) Institutional building (Schools, Hospitals and dispensaries, Religious building etc.,)	5		
e) Other buildings (Public buildings Public Libraries, amusement Buildings etc.,)	6		
3. Number of Stories in the building			

4. Number and type of dwelling in the constructions :

Type of Dwelling	Number of Dwellings		
	New Construction	Additions to existing buildings	Total Plinth area (Sqm)
One Room Unit			
Two Room Unit			
Three Room Unit			
Four or more Room unit			

Particulars for the following items should be given while

Applying for 'Occupancy Certificate' only

5. Estimated construction Cost (if available)..... Rs.....

6. Number and date of issue of authorization Certificate

7. Date of Commencement o Construction

8. Date of completion of Construction

Date :

(Signature of applicant)

Name and Address of applicant

(In Block Letters)

(For use in Office only)

Reference Number of application :

Number and date of issue of authorization /

Occupation Certificate.

Form 23
Foundation Certificate by the
Registered Geotechnical Engineer on Record
(Byelaw 4.2)

Ref. No.
Owner's Name:

Date:
Location:

Plot/building bearing property No.plot no,,
city survey No.....,Ward No.locality/street

To
The Commissioner,
Mangalore City Corporation
Mangalore.

Ref: Proposed work of _____
(Title of the project)

Owner: _____
Address: _____
Tel. No.: _____

I am a Registered Geotechnical Engineer (RGE). This is to certify that I have visited the site and have carried out required studies with respect to the proposed construction. I hereby certify that:

- The foundation is/is not fit to bear the additional building load in respect of old buildings above which new floors are proposed to be added.
- The excavation depth will/ will not be more than 3m and prior approval from the authority is/is not required.
- The filling height will/ will not be more than 3m and prior approval from the authority is/is not required.
- The land is low-lying, water logged area. The filling height will/ will not be more than 1m and prior approval from the authority is/is not required.
- The site is/is not fit for building construction. (in the case of low-lying, water logging area, hilly regions and terrains with steep slope).
- The site can be used for building construction after suitably designing the foundation and stabilizing the slopes.
- The site is/is not fit for construction of high-rise buildings and amount of excavation/filling involved will/ will not affect the neighbouring sites in any way.
- Any other observations/remarks.

Signature : _____ Date : _____
Reg. No. _____ Validity date _____

Name : _____
Address : _____
Tel. No. : _____

Form 24
Structural Inspection Report
(Byelaw 4.23)

STRUCTURAL INSPECTION REPORT

(This form has to be completed by registered Structural Engineer after his site Inspection and verification regarding compliance of all recommendation by the owner, which in the opinion of the registered structural engineer are necessary for safety of the structure)

I. Description by title and location of the property including C.S.No.etc

II. Name of the present owner :

III. Description of the structure :

(Briefly describe the property in general and the structure in particular)

(a) Function	(b) Framed construction							
	Residence(with or without shops)	Apartments (with or Without shops)	Office Bldg.	Shopping centre	School, College	Hostel	Auditorium	Factory
	1	2	3	4	5	6	7	8
A. Load bearing masonry wall construction								
B. Framed structure								
construction and structural materials	Critical load bearing element	Brick	RCC	Stone	Timber	Steel		
	Roof Floor	RCC	Timber	RBC	Steel	Jack-arch		

IV. Year of construction :

Year of subsequent additions or rectification's (Please describe briefly the nature of additions or rectification's) :

V. Date of last inspection report filed Last filed by whom (This does not apply to the first report) :

VI. Soil on which building is founded :
 i) Any change subsequent to construction :
 ii) Nearby open excavation :
 iii) Nearby collection of water :
 iv) proximity of drain :
 v) underground water-tank :
 vi) Rain water pipe out-lets :
 vii) Settlements :

- VII. The Super-structure (R.C.C. Frame structure) :
- I) Crack in beam or column nature and extent of crack probable causes. :
- ii) Cover spell :
- iii) Exposure of reinforcement :
- iv) subsequent damage by user for taking pipes, conduits, hanging, fans or any other fixtures, etc. :
- v) Crack in slab :
- vi) Spalling of concrete or plaster of slab :
- vii) Corrosion of reinforcement :
- viii) Loads in excess of design loads :
- VIII The Super-Structure (Steel Structure) :
- I) Paintings :
- ii) Corrosion :
- iii) Joint, nuts, bolts, rivets, welds, gusset plates :
- iv) Bending or buckling of members :
- v) Base plate connections with columns or pedestals :
- vi) Loading :
- IX. The Super-Structure (Load bearing masonry structure) Cracks in masonry walls) :
- (Please describe some of the major cracks, their nature, extent and location, with a sketch, if necessary.
- X. Recommendations if any :

This is to certify that the above is a correct representation of facts as given to me by the owner and as determined by me after Site Inspection to the best of my ability and judgment.

The recommendations made by me to ensure adequate safety of the structure are compiled with by the owner to my entire satisfaction.

Registered Structural Engineer:

Name in Block Letters _____ Signature with date _____
Registration No. _____ Validity date _____
Address _____
_____ Pin code _____ Tel _____

Form 25
Model Proforma for Technical Audit Report
 (Byelaw 4.12.2)

1.	Design	
1.1	Design/Drawings available?	Y/N
	Design category	Y/N
	Type design?	Design to be collected to refer to Design Consultant/H.O.
	Specific design ?	
	Drawings prepared/checked by competent Authority?	Y/N
	Design Drawings/details	
	Structural detailed included	Y/N
	Earthquake/cyclone resistant features included?	Y/N
	Design verified/vetted by Dept./Govt. approved agency/competent authority?	Y/N
	Design changes approved by dept./govt. approved agency/competent authority?	Y/N
2	Foundation	
2.1	Foundation used	Existing/New
2.2.1	If existing foundation used	
2.2.1	Depth of foundation below ground	: <50cm/50-70/>70cm
2.2.2	Type of masonry	: Stone/Bricks/PCC Blocks
2.2.3	Thickness of masonry (above ground)	: 23cm/35/>35
2.2.4	Mortar used	: Cement-Sand/Lime/Mud
2.2.5	Mix of cement mortar	: 1:4/1:6/Leaner
2.2.6	Height up to Plinth	: _____ cm
2.2.7	If stone masonry	
2.2.7.1	Through Stones	: Yes/No, if Yes Adequate/Inadequate
2.2.7.2	Corner Stones	: Yes/No, if Yes Adequate/Inadequate
2.3	If new foundation used	
2.3.1	Depth of foundation below ground	: _____ <50/50-70/>70cm
2.3.2	Type of masonry blocks	: stone/bricks/PCC
2.3.3	Thickness of Masonry above plinth	: 23 cm/35/>35cm
2.3.4	Mortar used	: Cement – sand/lime/mud
2.3.5	Mix of cement mortar (1:4)	: Yes/No
2.3.6	Height up to Plinth	: <60/>60cm
2.3.7	If stone masonry	
2.3.7.1	Through Stones	: Yes/No, if Yes Adequate/Inadequate
2.3.7.2	Corner Stones	: Yes/No, if Yes Adequate/Inadequate
2.4	Vertical reinforcement in foundation	: Yes/No

3	Walling	
3.1	Type of masonry	: Stone/Brick/PCC Blocks
3.2	Mortar used	: Cement – Sand/Lime/Mud
3.3	Mix of cement mortar	: 1:4/1:6/Leaner
3.4	Thickness of wall	: >23cm/23cm/<23cm
3.5	Mixing of mortar	: OK/Not OK
3.6	Joint Property filled	: OK/NOT OK
3.7	Wetting of bricks	: Good/ Medium/ Poor
3.8	If stone masonry	
	3.8.1 Through Stones	: Yes/No
	3.8.2 Corner Stones	: Yes/No
	3.9 Overall workmanship	: Good / Medium / Poor
4	Roofing	
4.1	Type of roof	: Flat/Sloping
4.2	If sloped	: Morbid tiles/ A.C. sheet/ G.I. sheet
4.3	Purlins	: Angle-Iron / Timber / NA
4.4	Truss type	: _____
4.5	Anchorage with wall	: Adequate/ Inadequate/ NA
5	Materials	
5.1	Cement	
5.1.1	Source	Authorised Dealer/Market
5.1.2	Type of cement	: OPC/PPC/PSC
5.1.3	If OPC	: Grade (33/ 43/ 53)
5.2	Sand	
5.2.1	Type of sand	: River sand / Stone dust
5.2.2	Presence of deleterious materials	: Mild / Moderate/ High
5.3	Coarse Aggregates	
5.3.1	Type coarse Aggregates	: Gravel/ Crushed Stone
5.3.2	Presence of deleterious material	: Mild/ Moderate / High
5.4	P.C.C. Blocks (Applicable for onsite production)	
5.4.1	Type of P.C.C. Blocks	: Solid blocks/Hollow blocks
5.4.2	Ratio of concrete in blocks	: _____
5.4.3	Interlocking feature	: Yes/No
5.4.4	Course aggregates used	: Natural/ Crushed stone
5.5	Bricks Blocks, Stone etc.	
5.5.1	Strength (field assessment)	: Low/Medium/High
5.5.2	Dimensional accuracy	: Yes/No
5.6	Concrete	
5.6.1.	Mix of concrete	: (1:1 ½:3)/ (1:2:4)/Design Mix
5.6.2	Batching	: Weigh batching/Volume batching

5.6.3	Compaction	: Vibrators/Thappies and rods
5.6.4	Workability	: Low / Medium / High
5.6.5	Availability of water	: Sufficient / Insufficient
5.6.6	Curing	: Satisfactory/Unsatisfactory.
5.7	Reinforcing Steel	
5.7.1	Type of Steel	: Plain mild steel/HYSD bars
5.7.2	Source	: Authorised Dealer/Market
5.7.3	Whether IS marked	: Yes/No
5.7.4	Conditions of bars	: Clean/Corroded
5.7.5	Fixing of reinforcement as per drawing	: Yes/No
5.7.6	Suitable cover	: Yes/No
5.7.7	Spacing of bars	: Regular/Irregular
5.7.8	Overlaps as per specifications	: Yes/ No
5.8	Form Work	
5.8.1	Type of Form Work	: Timber / Plyboard/ Steel
5.8.2	Use of mould oil	: Yes/No
5.8.3	Leakage of cement slurry	: Observed/Not observed
5.9	Source	
5.9.1	Cement	
5.9.2	Sand	
5.9.3	Coarse Aggregate	
5.9.4	Bricks	
5.9.5	PCC Blocks	
6	Seismic Resistance Features	
6.1	Masonry Structures	
6.1.1	Provision of bands at	
	Provided Adequate	
	6.1.1.1 Plinth level	Yes/No Yes/No
	6.1.1.2 Sill level	Yes/No Yes/No
	6.1.1.3 Lintel level	Yes/No Yes/No
	6.1.1.4 Roof level (if applicable)	Yes/No Yes/No
6.1.2	If sloped roof, whether seismic bands are provide at	
	6.1.2.1 Gable wall top	Yes/No Yes/No
	6.1.2.2 Eaves level	Yes/No Yes/No
6.1.3	Provision of vertical steel in masonry at	
	Provided Adequate	
	6.1.3.1 Each corner	Yes/No Yes/No
	6.1.3.2 Each T-junction	Yes/No Yes/No
	6.1.3.3 Each door joint	Yes/No Yes/No
	6.1.3.4 Around each window	Yes/No Yes/No
6.1.4	Openings	
	6.1.4.1 Total width of openings : <50%/50*-60%/>60% (*-42% for double storey)	
	6.1.4.2 Clearance from corner	OK/Not OK
	6.1.4.3 Pier width between two openings	OK/Not OK
6.2	Framed structures	
6.2.1	Ductile detailing	
	6.2.1.1 Spacing of stirrup	OK/Not OK
	6.2.1.2 Sizes of members	OK/Not OK
	6.2.1.3 End anchorage	OK/Not OK
	6.2.1.4 Lapping (length, location, etc.)	OK/Not OK
	6.2.1.5 Angle of stirrup hook	90/135 degrees

6.3 Any testing carried out by owner/ Engineering Supervisor on		Testing done	Testing results
6.3.1	Water	Yes/No	OK/Not OK
6.3.2	Cement	Yes/No	OK/Not OK
6.3.3	Bricks/PCC blocks/Stones	Yes/No	OK/Not OK
6.3.4	Aggregate	Yes/No	OK/Not OK
6.3.5	Mortar	Yes/No	OK/Not OK
6.3.6	Concrete	Yes/No	OK/Not OK
6.3.7	Reinforcement	Yes/No	OK/Not OK

Form 26
Registration of Professionals
(Byelaw 8.1)
**(Licensing For Architect/Engineer / Structural Engineer/Structural Design
Agency/Geotechnical Engineer/Construction Engineer/ Construction
Management Agency/Quality Auditor/Quality Audit Agency/ Town Planner/
Electrical Engineer/Developer etc)**

APPLICATION FORM

Name

Address (Local)

Permanent Address

Telephone No.

Qualifications
(copy of relevant certificates to be attached)

Experience

Membership of professional societies

Are you serving anywhere?
(Give detailed address of employer and his
No Objection Certificate)

Registration (License) /Registration
(License) renewal fee/remitted
in person/by M. O. etc.

Last year's Registration/License No.

Further particulars, if any

I hereby undertake to abide by all Rules, Byelaws, Standing Orders, Requisitions and instructions given by the Authority and shall carry out duties and responsibilities as prescribed in Mangalore City Building Byelaws. I also understand that if, I fail to perform my duties as above, the Authority will be entitled to withdraw my Registration/License and forfeit my Registration/licensing fee, if any.

Kindly grant me a new/renewed Registration/License for the year _____ to _____.
Registration/License Book may be sent to me when ready. I send herewith two passport size
copies of my photographs signed by me.

Ref No
Date:

Signature of applicant:

Form 27
Application for Permission to demolish a Building
or part of a Building
(Byelaw 4.1, 4.2)

Ref No

Date:

To:

The Commissioner,
Mangalore City Corporation
Mangalore.

Sir,

I/We hereby give notice that I/we intend to demolish a building or part of a building in the plot/building bearing property No. plot no,, city survey No....., ward No. locality/street in accordance with the Building Byelaws of Mangalore City, I/We forward herewith the following plans and specifications in duplicate duly signed by me/us. I/we have informed the neighbours about our proposed work. (in case of buildings abutting neighbours property, their written consent for demolition shall be enclosed). I/we will take utmost care with respect to the hazard safety requirement. I/we will be fully responsible for any consequences arising out of this work.

.....
(name in block letters)

Signature of the owner
Name of the owner
(in block letters)
Address of owner
.....

Tel:

Note:

Only scrutiny fee has to be paid. No other supporting documents, except item No.(5), (6) and (9) of Byelaw 4.2 are needed to be enclosed with the application.

APPENDIX B – INDIAN STANDARDS

List of Indian Standards for Structural Design

C-1 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 801: 1975 Code of Practice for Use of Cold Formed Light Gauge Steel Structural Members in General Building Construction
4. IS 875 (Part 2):1987 Design loads (other than earthquake) for buildings and structures Part 2 Imposed Loads
5. IS 875 (Part 3):1987 Design loads (other than earthquake) for buildings and structures Part 3 Wind Loads
6. IS 875 (Part 4):1987 Design loads (other than earthquake) for buildings and structures Part 4 Snow Loads
7. IS 875 (Part 5):1987 Design loads (other than earthquake) for buildings and structures Part 5 special loads and load combination
8. IS 883:1966 Code of Practice for Design of Structural Timber in Building
9. IS 1904:1987 Code of Practice for Structural Safety of Buildings: Foundation
10. IS 1905:1987 Code of Practice for Structural Safety of Buildings: Masonry Walls
11. IS 2911 (Part 1): Section 1: 1979 Code of Practice for Design and Construction of Pile Foundation
Part 1: Section 2 Based Cast-in-situ Piles
Part 1: Section 3 Driven Precast Concrete Piles
Part 1: Section 4 Based precast Concrete Piles
Part 2: Timber Piles
Part 3: Under Reamed Piles
Part 4: Load Test on Piles

C-2 For Cyclone/Wind Storm Protection

12. IS 875 (3)-1987 Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures, Part 3, Wind Loads
13. Guidelines (Based on IS 875 (3)-1987) for improving the Cyclonic Resistance of Low rise houses and other building

C-3 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 Buildings - Guidelines
18. IS:13827-1993 Improving Earthquake Resistance of Earthen Buildings -Guidelines
19. IS:13935-1993 Repair and Seismic Strengthening of Buildings -Guidelines

C-4 For Protection of Landslide Hazard

- 20 IS 14458 (Part 1): 1998 Guidelines for retaining wall for hill area: Part 1 Selection of type of wall.
- 21 IS 14458 (Part 2): 1997 Guidelines for retaining wall for hill area: Part 2 Design of retaining/breast walls
- 22 IS 14458 (Part 3): 1998 Guidelines for retaining wall for hill area: Part 3 Construction of dry stone walls
- 23 IS 14496 (Part 2): 1998 Guidelines for preparation of landslide – Hazard zonation maps in mountainous terrains: Part 2 Macrozonation

Note: Whenever an Indian Standard including those referred in the National Building Code of India is referred, the latest revision of the same shall be followed.