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PART-IV

OFFICE OF THE EXECUTIVE COMMITTEE
KHASI HILLS AUTONOMOUS DISTRICT COUNCIL
SHILLONG

NOTIFICATION

The 4th August, 2015.

No.DC.II/Genl/31/2015/9. - It is hereby notified that in exercise of the powers conferred upon it by the proviso to Section 8 to be read with Sub-section 11 of Section 8 of the United Khasi-Jaintia Hills District (Establishment of Town Committee) Act, 1960, the Executive Committee, Khasi Hills Autonomous District Council is pleased to regulate the construction of new buildings or houses or the extension or alteration of existing buildings or houses as hereunder:-

PYNSHNGAINLANG SYIEM,
Chief Executive Member,
Khasi Hills Autonomous District Council.

CHAPTER – I

Preamble:- Whereas it has become expedient to set norms, standards, specifications and procedure for the construction of buildings and other mad-made structures for the prime purpose of safety of the occupants and convenience of the community as a whole. It is also pertinent in today's world that the built environment in our villages and towns, both existing and upcoming, needs to be addressed in terms of global issues of planned and sustainable development. We therefore need to codify our ancient traditional conventions on built forms that have always revolved around ecological and sociological values. New land development, the impact on our visual landscape and the like along with the traditional system should all incorporate good environmental planning and design, hence this Regulation:-

1. Short title, extent and commencement –

(i) This Regulation may be called the **Khasi Hills Autonomous District (Land Development and Building) Regulation, 2015**;

(ii) It shall extend to the whole of the Khasi Hills Autonomous District;

(iii) It shall come into force at once.

2. Definitions – In these regulations unless the context otherwise requires:

2.1 "Advertising sign" means any sign, either free standing or attached to a building or other structure which advertises a business or commercial establishment;

2.2 "Alteration" means a change from one occupancy to another or a structural change or change of any component of the building;

2.3 "Agriculture" includes horticulture, farming growing of crops, fruits, vegetables, flowers, grass, fodder and trees, any kind of cultivation of soil, breeding and keeping of live stock including cattle, horses, donkeys, mules and pigs, fish breeding, poultry farming and bee keeping, any use of land which is ancillary to the farming of land or to any purpose aforesaid, but shall not include the use of any land attached to a building for the purposes of gardens to be used along with such buildings; and "agricultural" shall be construed accordingly;

2.4 "Approved'' means approved by the Executive Committee or any Executive Member(s) duly authourised by the Executive Committee;

2.5 "Apartment" means the building will be called apartment house when the building is a arranged/intended/designed to be occupied by families independent to each other and with independent cooking facility professionally developed by private developers for the purpose of sale/lease to individual owners;

2.6 "Applicant" means every person who writes to the Executive Committee of his or her intention to erect or re-erect or alter a building;

2.7 "Architect" means a person having B.Arch degree from a recognized University and registered with the Council of Architecture (India) under Architect Act, 1972, and empanelled with the District Council;

2.8 "Balcony" means the horizontal projection of a building including handrail, balustrade or a parapet to serve a passage or a sit-out place;

2.9 "Black Waste Water" means the waste water discharged from the water closet, urinals and Municipal solid waste;

2.10 "Block Development Officer" means an officer appointed as such by the Government;

2.11 "Building" means any shop, house, hut, out-house, shed or stable, whether used for the purpose of human habitation or otherwise and whether of masonry, bricks, wood, mud, thatch, metal or any other material whatsoever and includes a wall and/or a well;

Definition of building shall also include
"Unsafe Building" means a building which,
- is structurally unsafe,
- is insanitary,
- is not provided with adequate means of egress,
- constitutes a fire hazard,
- in relation to its existing use constitutes a hazard to safety or health or public welfare by reasons of inadequate maintenance, dilapidation or abandonment.

2.12 "Building envelop" means the horizontal spatial limits upto which a building may be permitted to be constructed on a plot which shall not exceed the clear setbacks as prescribed in the Regulations.

2.13 "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. It includes the lines prescribed, if any, in any development plan or in these Regulations. The building line may change from time-to-time as decided by the Executive Committee;

2.14 "Building operations" means re-building operations, structural alterations of, or additions to, building and other operations normally undertaken in connection with the construction of buildings;

2.15 "Carpet area" means the covered area of the usable rooms at any floor level (excluding the area of the wall);

2.16 "Chajja" means a projection or horizontal structure overhang usually provided over opening of external walls to provide protection from sun and rain or for architectural consideration;
2.17 "Chief" means a Syiem, a Lyngdoh, a Sirdar, or a Wahadadar as the case may be of any Elaka;
2.18 "Chief and his Durbar" means an Executive Durbar presided over by the Chief of the Elaka with certain Headmen as members, the number of which shall be determined, and the names of which shall be approved by the Executive Committee on the recommendation of the Chief of the Elaka;

2.19 "Chimney" means an upright shaft containing one or more flues provided for the conveyance to the atmosphere of any product of combustion resulting from the operation of any heat producing appliance or equipment employing solid or gaseous fuel;
2.20 "Clinic" means a diagnostic center where patients are examined and investigated for diagnosis and relevant advices are given for

management but the patients are not admitted as indoor patients as in a hospital or nursing home. “Polyclinic” means an institution of a group of doctors for examinations, diagnosis and advice to the patients belonging to various specialties in medicine. The basic difference of a Clinic from a hospital or nursing home is that the patients are not kept in its premises for diagnostic or other therapeutic purposes as is done in a nursing home or hospital;

2.21 “Company” means and include mining, construction, manufacturing and power industry;

2.22 “Compliance” means 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;

2.23 “Coverage” means the quotient obtained in the terms of percentage by dividing the plinth areas of Ground floor by plot area, i.e.

$$\text{Coverage:} \quad \frac{\text{Plinth area of the Ground floor} \times 100}{\text{Plot area}}$$

2.24 “Damp proof course” means consisting of some appropriate water proofing material at a height of not less than 6 inches (0.15m) above the surface of the adjoining ground;

2.25 “Demolition of Building” means removal of roof and walls in such a way that the building is brought to an uninhabitable condition, water supply and electricity disconnected;

2.26 “Demolition of structure” means removal of the entire super structure above ground level;

2.27 “Density” means concentration of population expressed in terms of number of persons per hectare in a particular area;

2.28 “Development” with its grammatical variations, means the carrying out of building, engineering, mining, quarrying or other operations in, or over or under land, the cutting of a hill or any portion thereof or the making of any material change in any building or land or in the use of any building or land including sub-division of any land;

2.29 “District Council” means the Khasi Hills Autonomous District Council constituted under the Sixth Schedule to the Constitution of India;

2.30 “Dong” means a locality or part of a town whose boundary has been well defined.

2.31 “Dorbar Shnong” means the traditional village institution of the village of the Khasis and composed of all Khasi inhabitants of not less than 18 years of age, where the prevailing age-old customary and traditional governance and adjudication are carried-out;

2.32 “Drain” means a conduit, channel or pipe for carriage of storm water, sewage, waste water or other water borne wastes in a building drainage system;

2.33 "Drainage" means the removal of any liquid by a system constructed for this purpose;

2.34 "Demolished" means total dismantling of an existing building to erect a new structure;

2.35 "Elaka" means a Hima which is an administrative unit within the Autonomous District as specified in Appendix I & II of the United Khasi-Jaintia Hills Autonomous District (Appointment of Chiefs and Headmen) Act, 1959 and recognized as such by the District Council;

2.36 "Engineer" means a person having qualifications equivalent to graduate in Civil Engineering/Architectural Engineering of recognized Indian or Foreign university, or the member of civil engineering division/architectural engineering division of the Institution of Engineers (India) or the statutory body governing such profession, as and when established or as prescribed by the public service commission of the concerned State to be eligible for selection to the post of Assistant Engineer and empanelled with the Executive Committee;

2.37 "Erection or Re-erection or Enlargement" of any building includes-

(a) any material alteration or enlargement of any building;
(b) the conversion, by structural alternation, into a place of human habitation of any building not originally constructed for human habitation;
(c) the conversion of one or more places of human habitation into a lesser number of such places;
(d) the conversion of one or more places of human habitation into a greater number of such places;
(e) such alternation of a building as would affect a change in the drainage or sanitary arrangements or materially affect its security;
(f) the addition of any rooms, buildings out-houses or their structures to any building;
(g) the conversion by any structural alterations into a place of religious worship or into a building used for a sacred purpose or any place or building not originally meant or constituted for such purposes;
(h) roofing or covering an open space between walls or buildings, in respect of the structure which is formed by roofing or covering such space;
(i) conversion into a stall, shop, warehouse or godown of any building not originally constructed for use as such or vice versa; and
(j) construction of a door in a wall adjoining any street or land not vested in the owner of the wall and opening on such street or land;

2.38 "Executive Committee" means the Executive Committee of the Khasi Hills Autonomous District Council;

2.39 "Executive Dorbar" means the elected or nominated members and office bearers of the Dorbar Shnong consisting of the Rangbah Shnong, the Assistant or Deputy Rangbah Shnong, the Secretary, the Treasurer, the Sangot or any other office bearers the Dorbar Shnong deemed necessary;

2.40 "Exit" means a passage channel or means of egress from any building or floors area to a street or open space;

- Fire Exit means a way out leading to an escape route having panic bar hardware provided on the door.

2.41 "Factory" means a place to which the provision of the Indian Factories Act of 1934 or any amendment thereof shall apply;

2.42 "Filling station" means an area of land including any structures thereon that is or are used or designed to be used for the supply of fuel for the propulsion of vehicles. For the purpose of these Regulations there shall be deemed to be included within this term any area or structure used or designed to be used for polishing, greasing, washing, spraying or otherwise cleaning or servicing such motor vehicles;

2.43 "Firm" means an organisation offering design and planning consultancy services headed by a registered Architect or Town Planner empanelled with the District Council.

2.44 "Floor" means the lower surface in a storey which one normally walks in a building;

2.45 "Floor Area Ratio" (F.A.R) means the quotient obtained by dividing the total covered area (plinth area) on all floors by the area of a plot, i.e.,

$$\text{F.A.R.} - \frac{\text{Total covered area of all floors}}{\text{Plot area}} \times 100$$

2.46 "Form" means form appended to these Regulations;

2.47 "Garage, private" means an accessory building designed or used for the storage of motor driven vehicles owned or used by the occupants of the building to which it is necessary;

2.48 "Garage, public" means a building or portion thereof other than a private garage designed or used for repairing, serving, selling or storing motor driven vehicles;

2.49 "Geo-Technical Engineer" shall mean a Civil Engineer having at least 2 years experience in soil and foundation engineering under similar soil/geo-technical/ slope conditions;

2.50 "Gray waste-water" means waste water discharged from the bathrooms, sinks, showers, from washing clothes and so on;

2.51 "Green Building" means a building which uses less water, optimises energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building.

2.52 "Green Roof" means a roof that has a layer of living plants on top of the standard structure and waterproofing elements.

2.53 "Ground Level" means the finished surface after formation cutting of the site from where erection of the building starts;

2.54 "Group Housing" means apartments or multi-storeyed housing with more than 4 (four) building blocks in a plot where land is owned jointly and the construction is undertaken by a single agency;

2.55 "Habitable room" means a room occupied or designed for occupancy by one or more persons for study, living, sleeping, eating, cooking, if it is used for a living room, but not including bathrooms, water closet compartments, laundries, serving & store pantries corridors, cellars attics and space that are not used frequently or during extended period;

2.56 "Height of a room" means the vertical distance measured from the finished floor surface to the finished ceiling/slab surface. The height of a room with a pitched roof means the average height between the finished floor surface and the bottom of the eaves and the bottom of the ridge;

2.57 "Heritage building" means any building of one or more premises or any part thereof which requires preservation and conservation for historical, architectural, environmental, cultural or religious purpose includes such portion of the land adjoining such buildings as may be required;

2.58 "Heritage zone" means the area around such heritage building as delineated by the Executive Committee from time to time for restricting the height of building and use of building;

2.59 "Hotel" means a building or a part of the building comprising of more than fifteen rooms covering a floor area of more than 400 sq. m. in all and used for the purpose of boarding of persons with or without meal;

2.60 "Junior Engineer" means having qualification equivalent to Diploma in Civil Engineering from a recognized institute or as prescribed by the Public Service Commission of the concerned State to be eligible for selection to the post of Junior Engineer;

2.61 "Kutcha House" means a house whose walls and/or roof of which are made of materials such as un-burnt bricks, bamboos, mud, grass, reeds, thatch, loosely packed stones, etc.;

2.62 "Land" means and includes private land (Ri Kynti) and community land (Raid Land) either vacant or occupied and includes all benefits arising out of the land and things attached to the earth or permanently fastened to anything attached to the earth; but shall not include any land which is acquired by any Government or is included within any cantonment as by law established;

2.63 "Landscape Architect" means a person with a bachelor or master's degree in landscape architecture or equivalent from recognized Indian or foreign university empanelled with the District Council;
2.64 "Latrine connected" means a latrine connected by a sewer system;

2.65 "Latrine-septic" means latrine connected by a septic tank system;

2.66 "Ledge'" means a shelf-like projection, supported in any manner whatsoever, except by means or vertical supports within a room itself but not having projection wider than one meter;

2.67 "Licensed Architect/Engineer/Town Planner/Firm etc." means a qualified Architect/Engineer/Town Planner/Firm etc., who has been given license by the District Council.
Note: Presently, the legislation for profession of architecture is applicable in the country in the form of Architects Act 1972, whereas, for other professions and professionals like engineers, developers/promoters for taking up any project there is no legislative framework available/applicable in the country. In the absence of any such legislation, the appropriate qualifications, service conditions, professional fees and charges in the engineering profession etc., are varying and are not based on any uniform formula. Keeping the above in view, the qualifications/responsibilities and duties of Professionals are given in *Appendix D*.

2.68 "Loft" means a structure providing an intermediate storage space between two floors or a residential space in a pitched roof, above normal floor level with a maximum height of 1.5m and which is used for storage purpose;

2.69 "Licensing" the qualified technical personnel shall be licensed by the Executive Committee like Architects, Engineers, and Town Planners;

2.70 "Lifeline Building" means those buildings which are of post earthquake importance such as, hospital building, power house building, telephone exchange building, T.V. station, Radio Station, Jail, Police Station, office of Administration and Police Officers for critical functions in responding to a disaster event. The term also means all schools and select community and meeting halls (as identified by the Executive Committee) to perform emergency functions as evacuation centres and relief camps;

2.71 "Lodge" means a building or a part of a building comprising not more than fifteen rooms covering a floor area not exceeding 400 sq. m. in all used for the purpose of boarding of persons with or without meal which shall include lodging dormitories;

2.72 "Mason" shall preferably, have the following qualifications:

a) Working knowledge of drawing and sketches;
b) Training under capacity building programme of the Government/Executive Committee;

2.73 "Materials alteration" means a change of use in building materials in any existing building;

2.74 "Mezzanine floor" means an intermediate floor between any two floors above ground in all type of buildings provided the same is counted as part of total permissible floor area ratio and height of the building. Mezzanine floor may be permitted with the minimum clear height of 2.4m;

2.75 "Mixed use building" means a building having more than one use where the predominant use is maximum 2/3rd of the total use. The predominant use is to be in conformity with the Regulations;

2.76 "Multilevel car parking" means a building or structure designed specifically for the purpose of automobile parking having more than one floors or levels on which parking takes place by means of either static, automated or mechanical process comprising in the same building or structure, fully or in a part of it or any other independent structures like deck, steel frame, floors of the building or the structure as the case may be;

2.77 "Multiplex" means the Cinema halls existing along with other activities like shopping mall, cafeteria, restaurant etc. in one campus with not less than 2 separate cinema screens in two different halls under the same complex having minimum 400 (four hundred) seats comprising all theatres and not less than 150 seats in each theatre;

2.78 "Natural Hazard" means the probability of occurrence, within a specific period of time in a given area, of a potentially damaging natural phenomenon;

2.79 "Natural Hazard Prone Areas" means areas likely to have moderate to high intensity of earthquake, or cyclonic storm, or significant flood flow or inundation, or landslides/mud flows or one or more of these hazards;
Note: Moderate to very high damage risk zones of earthquakes are as shown in Seismic Zones III, IV and V specified in IS:1893; moderate to very high damage risk zones of cyclones are those areas along the sea coast of India prone to having wind velocities of 39 m/s or more as specified in IS:875(Part 3;) and flood prone areas in river plains (unprotected and protected) are indicated in the Flood Atlas of India prepared by the Central Water Commission, besides, other areas can be flooded under conditions of heavy intensity rains, inundation in depressions, back flow in drains, inadequate drainage, etc. as identified through local surveys in the development plan of the area and landslide prone areas as identified by the State Government/Executive Committee/Land surveys;

2.80 "Non-Structural Component" means those components of buildings which do not contribute to the structural stability such as infill walls in RCC frame buildings, glass panes, claddings, parapet walls, chimneys etc.;

2.81 "Occupier" means any person paying or liable to pay the rent or any portion of the rent of the land or building in respect of which the rent is due or compensation or premium on account of the occupation of such land and building and also a rent free tenant;

2.82 "Open Space" means an area forming an integral part of the plot, left open to the sky;
2.83 "Owner" means: -
a) When used with reference to any premises, the person who receives the rent of the said premises, or who would be entitled to receive the rent thereof if the premises were let out and includes: -

i) an agent, or trustee, who receives such rent on account of the owner;
ii) an agent, or trustee, who receives the rent of any premises devoted to religious or charitable purposes;
iii) a receiver; Administrator or manager appointed by any Court of competent jurisdiction to have the charge of, or to exercise the rights of an owner, of any premises; and
iv) a mortgagee in possession; and When used with reference to any animal, vehicle or boat, includes the person for the time being in charge of the animal; vehicle or boat;

2.84 "Parapet" means a low wall or railing built along the edge of a roof or floor not less than 90cm in height;

2.85 "Parking space" means an area enclosed or unenclosed, sufficient in size to store an automobile or any other conveyance together with a drive-way connecting the parking space with a street, or alley and permitting ingress or egress of all such conveyances;

2.86 "Person" means and includes an individual, firm, society, association and institution;

2.87 "Plinth" means the portion of a structure between the level of the ground and the floor immediately above the ground.

2.88 "Plot or site" means a continuous portion of land held under one ownership or clan or leased land from the Raid;

2.89 "Plumber" shall be licensed by the Executive Committee having the following minimum qualifications:

(i) A fair knowledge of official language of the State.
(ii) Working knowledge of drawings and sketches.
(iii) Certificate of training from I.T.I. for the trade with minimum two years experience of execution of sanitary and plumbing works under any Govt. Deptt./Local bodies or licensed Architect/Engineer.

OR

A sound practical knowledge or experience of sanitary and plumbing works under any Govt. Deptt./local bodies or licensed Architect for period of five years.

2.90 "Porch or Portico" means a roof cover supported on pillars or cantilevered for the purpose of pedestrian or vehicular approach to a building;

2.91 "Private street" means any street, road square, court valley passage or riding path which is not a public street, but does not include a path-way made by the owner of premises on his own land to secure the access to or the convenient use of such premises;

2.92 "Public place" means any place or building which is open to the use and enjoyment of the public whether it is actually used or enjoyed by the public or not and whether the entry is regulated by any charge or not;

2.93 "Pucca House" is one which has walls and roof made of the following materials:
Wall material: Burnt bricks, stones (packed with lime or cement), cement concrete, timber (excluding animal sheds, barns and the like), ekra, etc.
Roof Material: Tiles, CGI (Corrugated Galvanised Iron) sheets, asbestos cement sheet, RBC, (Reinforced Brick Concrete), RCC (Reinforced Cement Concrete), timber (excluding animal sheds, barns and the like), etc.;

2.94 "Quality Assurance" means all planned and systematic actions necessary to ensure that the final product i.e. structure or structural elements will perform satisfactorily in service life;

2.95 "Quality Audit" means a requirement for an independent assessment by a third party, of the quality and seismic or cyclone resistant features of all the high-rise buildings in earthquake zone V. The quality audit report shall consists of conformance or non-conformance of structures with the technical specifications for earthquake and cyclone resistance and to suggest remedies/rectification if any;

2.96 "Quality Control" means construction quality and to control of variation in the material properties and structural adequacy. In case of concrete, it is the control of accuracy of all operations which affect the consistency and strength of concrete, batching, mixing, transporting, placing, curing and testing;

2.97 "Rangbah Shnong" means the traditional head of a Village which shall also include a Sordar Shnong, a Matabor, a Myntri Shnong falling within the jurisdiction of each of the existing Elaka specified in Appendix I & II of the United Khasi-Jaintia Hills District (Appointment of Chiefs and Headmen) Act, 1959 and elected or selected as per prevailing custom in the village or Elaka;

2.98 "Raid" means any administrative unit recognised as such within an Elaka as specified in Appendix I & II of the United Khasi-Jaintia Hills Autonomous District (Appointment of Chiefs and Headmen) Act, 1959 composed of one or more villages under such Elaka;

2.99 "Registered Technical Personnel (RTP)" means qualified personnel as Architects, Engineers, Structural engineer, Planners, Landscape Architects, Urban Designer, Engineer for utility services Geo-Technical Engineers, Group of technical personnel and Supervisor/Firms who have been enrolled and licensed by the concerned Executive Committee;

2.100 "Regulation" means the Khasi Hills Autonomous District (Building and Land Development) Regulation, 2015;
2.101 "Reserved Forest & Conservation Area" means a zone that comprises of area like reserve forest, river edge, etc. No development should normally be allowed in this zone;

2.102 "Residence" includes the use for human habitation of any land or building or part thereof including gardens, garages, stable and out houses, if any appurtenant to such building and "residential" shall be construed accordingly;

2.103 "Retrofitting" means upgrading the strength of an unsafe building by using suitable engineering techniques;

2.104 "Ri-Kynti" means a private land or a land absolutely possessed by a person;

2.105 "Ri Raid" or **"Raid Land"** means lands set apart for the community over which no person(s) have proprietary, heritable or transferable rights excepting the right of use and occupancy;

2.106 "Secretary" means the Secretary to the Executive Committee of the Khasi Hills Autonomous District Council;

2.107 "Sanctioned Plan" means the set of plans and specification submitted under Regulations 4 & 5 in connection with a building and duly approved and sanctioned by the Executive Committee;
2.108 "Semi-pervious ground cover" means a semi-pervious paving which allow percolation of water into the underground water table.

2.109 "Setback" means the open space from the proposed building envelop to the plot boundaries and laid down in each case by the Executive Committee beyond which nothing can be constructed towards the boundaries;
2.110 "Service Floor" means an intermediate floor between any 2 (two) floors with a maximum height of 2.1 m forming an integral part of floor below primarily for use as conduit of air conditioning and other services without having a permanent access;
2.111 "Site Engineer" means a person having qualification equivalent to Degree/Diploma in Engineering (Civil) from a recognized institute/university or as prescribed by the Public Service Commission of the concerned State to be eligible for selection to the post of Assistant/Junior Engineer;
2.112 "Special Building" means those buildings housing large gathering at a time such as cinemas, theatres, meeting halls, assembly halls, lecture halls, town halls, hotels, Public Institutions, Hospitals, Shopping malls, Multiplexes, I.C.T./ BPO's, Universities having a minimum plot area of 6000 sq.m and a mininmum plinth area of 3000 sq.m;
2.113 "Storey" means the portion of building included between the surface of any floor and the surface of the floor next above it;

2.114 "Structural Engineer" The minimum qualification for a structural engineer shall be graduate in civil engineering of recognized Indian or foreign university, or Corporate Member of Civil Engineering Division of Institution of Engineers (India), and with minimum 3 years experience in structural engineering practice with designing and field work;
2.115 "Tenement" means a part of a building intended or used or likely to be used as dwelling unit for a family;
2.116 "To erect" means
a) To erect a new building on any site whether previously built upon or not;
b) To re-erect any building of which portion have been pulled down, burnt or destroyed;
c) Conversion from one occupancy to another; and
d) To carry out alterations;

2.117 "Total floor area" means the area of all floors of building including habitable and mezzanine floor;

2.118 "Town Committee" means a committee constituted in accordance with the provisions of the United Khasi-Jaintia Hills District (Establishment of Town Committee) Act, 1960;

2.119 "Town Planner" shall mean a Planner with graduate or postgraduate degree in Town Planning from a recognised institution or qualifications required for membership of the Institute of Town Planners, India;

2.120 "Travel distance" means the distance an occupant has to travel to reach the exit;

2.121 "Urban Designer" means a person with a master's degree in urban design or equivalent from recognized Indian or foreign university empanelled with the District Council;

2.122 "Verandah" means a covered area with at least one side open to the outside;

2.123 "Village" means an area of human habitation having definite contiguous boundary where a number of houses has been grouped together under one village for administrative purposes and recognized as such by the Elaka under which the village falls and by the Executive Committee;

2.124 "Warehouse" means a building, the whole or substantial part of which is used or intended to be used for the storage of goods whether for keeping or for sale or any similar purpose but does not include a store room attached to and used for the proper functioning of a shop;

2.125 "Workshop" means a building where not more than ten persons are employed in any repair or light manufacturing process.

3. (1) Regulation on Construction of Building

No building or houses shall be constructed, altered, extended within the Khasi Hills Autonomous District except under a permission issued on that behalf by an officer duly authorized by the Executive Committee under the provisions of these Regulations. These Regulations shall apply to subdivision, development or re-development of land or construction, reconstruction or alterations of buildings.

Provided that for Villages that don't belong to a Town Committee, permission for kutcha house and pucca house shall be granted by the Rangbah Shnong on the approval of the Dorbar Shnong or Executive Dorbar after compliance with the Regulations along with the specification laid down in **Form 1C or Forms 1,1A, and 1B** respectively of these Regulations. Such applications shall be disposed of by the Rangbah Shnong and his Executive Dorbar within a period of thirty days with a copy to the Secretary.

The Dorbar Shnong shall ensure the following:

(a) that soft cover/greenery should be included in the plan for building sites.

(b) For any building having a minimum covered area of 500 sq.m, the applicant should provide soft cover of at least 15% of the plot area.

(c) For any other building, having lesser covered area, the soft cover should be atleast 10% of the plot area.

(d) that the application for construction of any pucca building shall be accompanied by a building plan duly certified by a qualified Architect/Town Planner/Structural Engineer.

Provided that permission shall be granted by the Dorbar Shnong or Rangbah Shnong within a period of 30 (thirty) days and the fee(s) for such permission shall not be more than Rs.100/- (Rupees One hundred) only for kutcha buildings and not more than Rs.1500/- (Rupees One thousand five hundred) only for pucca and concrete buildings below two storied.

Provided further that all fees payable under this Section shall be for the development of the village.

(2) Application for permission
(i) All applications for permission for construction of building shall be submitted to the secretary of the Dorbar Shnong/Executive Dorbar or Town Committee or Executive Committee as prescribed in these Regulations (Chapter II). Application for building permission shall be accompanied by prescribed fees and four copies of necessary drawings and one copy shall be retained in the office of the Executive Committee for record after issue of permission or refusal.

(ii) All applications for permission for construction of special buildings shall be submitted to the Secretary as prescribed in these Regulations (Chapter II). Application for building permission shall be accompanied by prescribed fees and four copies of necessary drawings and one copy shall be retained in the office of the Executive Committee for record after issue of permission or refusal.

(3) Pre-approved drawings
Upon production of BPL card duly verified by the Rangbah Shnong, a person belonging to the LIG or EWS can avail pre-approved drawings from the Executive Committee at minimal fees as may be determined by the Executive Committee from time to time.

(4) Amendments
The Executive Committee may with the approval of the District Council amend any of the provisions of this Regulation.

CHAPTER – II
Requirement for Building Permission

4. Procedure for submission and scrutiny of application for development and construction.

4.1 From the date of coming into force of these Regulations, no change in the use of land or its development or sub-division of plot or layout of Private Street shall be made except with the written permission of Executive Committee for any land falling within the area of such Executive Committee.

4.2 Procedure in Villages or Dong not within a Town Committee.

4.2.1 For kutcha house
On receipt of an application for permission under sub-regulations 4.1 above, the Dorbar Shnong or Executive Dorbar shall:

(a) furnish to the applicant a written acknowledgement within a period of one week from its receipt;

(b) After enquiry as may be necessary, permission shall be granted by the Rangbah Shnong on the approval of the Dorbar Shnong or Executive Dorbar after compliance with the specification laid down in **Form 1C** of these Regulations and subject to the following conditions:

(i) the construction should be kutcha i.e. a house whose walls and/or roof of which are made of materials such as un-burnt bricks, bamboos, mud, grass, reeds, thatch, loosely packed stones, etc., and no stones should be used in the construction except for laying foundation erecting pillars and fixing windows and doors. No pucca masonry wall should be built towards construction;

(ii) the area covered under the construction is in accordance with the development plan/norms;

(iii) the Dorbar Shnong or Executive Dorbar shall verify the ownership of the plot before granting the permission;

(iv) the Dorbar Shnong or Executive Dorbar shall ensure that the existing traditional paths are not obstructed before granting permission and shall maintain proper setback for future development of roads;

(v) the Dorbar Shnong or Executive Dorbar may permit extension of the existing building provided the proper set backs are maintained;

(vi) occupancy certificate from the Dorbar Shnong or Executive Dorbar shall be required for kutcha construction and the guidelines as per ***Appendix E*** should be strictly adhered to;

(vii) the application shall be submitted as per prescribed **Form 1C**.

(c) The permission shall be issued in a standard form (Form 3A) duly signed by the Rangbah Shnong on the approval of the Dorbar Shnong or Executive Dorbar.

4.2.2 For pucca house

(a) After enquiry as may be necessary, the Dorbar Shnong or Executive Dorbar may grant permission for the construction of pucca house on a plot with prior recommendations of an Architect/Town Planner/Engineer subject to the following conditions:

(i) the area covered under the construction is in accordance with the development plan/norms;
(ii) the Dorbar Shnong or Executive Dorbar shall verify the ownership of the plot before granting the permission;
(iii) the Dorbar Shnong or Executive Dorbar shall ensure that the existing traditional paths are not obstructed before granting permission and shall maintain proper setback for future development of roads;
(iv) the Dorbar Shnong or Executive Dorbar may permit extension of the existing building provided the proper set backs are maintained;
(v) occupancy certificate from the Dorbar Shnong or Executive Dorbar shall be required for pucca construction and the guidelines as per these Regulations should be strictly adhered to;
(vi) the application for the building permission shall be duly signed by the applicant and shall be accompanied along with appropriate drawings of the proposed construction as prescribed in **Forms 1,1A,1B**, etc., along with No-objection Certificates (NOC) from the Dorbar Shnong and the Chief.

Provided that the Chief shall grant or refuse the NOC within a period of 10 (ten) working days from the date of application or the same shall be considered as deemed granted. Any refusal within the stipulated time shall be brought to the notice of the Executive Committee.

(b) The permission shall be issued in a standard form (Form 3) duly signed by the Rangbah Shnong on the approval of the Dorbar Shnong or Executive Dorbar. One copy each of the permitted drawings should be forwarded to the Block Development Officer (BDO) and the Executive Committee for information by the Rangbah Shnong.

4.3 Procedure in Villages or Dong within a Town Committee.

4.3.1 After enquiry as may be necessary, the Town Committee/Executive Committee may grant permission for the construction of pucca house on a plot with prior recommendations of the Architect/Town Planner/Engineer of the Town Committee subject to the following conditions:

(i) the area covered under the construction is in accordance with the development plan/norms;
(ii) the Town Committee/Executive Committee shall verify the ownership of the plot before granting the permission;
(iii) the Town Committee/Executive Committee shall ensure that the existing traditional paths are not obstructed before granting permission and shall maintain proper setback for future development of roads;
(iv) the Town Committee/Executive Committee may permit extension of the existing building provided the proper set backs are maintained;
(v) occupancy certificate from the Town Committee/Executive Committee shall be required for pucca construction and the guidelines as per these Regulations should be strictly adhered to;
(vi) the application for the building permission shall be duly signed by the applicant and shall be accompanied along with appropriate drawings of the proposed construction as prescribed in **Forms 1,1A,1B**, etc., along with No-objection Certificates (NOC) from the Dorbar Shnong and the Chief. The NOCs could be signatures along with a seal on the drawing itself.

(b) The permission shall be issued in a standard form duly signed by the Secretary of the Town Committee. One copy each of the permitted drawings should be forwarded to the Block Development Officer (BDO) and the Executive Committee for information by the Town Committee.

4.3.2 In the absence of a competent Town Committee, all applications shall be directed to the Executive Committee.

5. Other requirements for pucca buildings.

5.1 Documents accompanying Application for Building Permission
The application for building permission shall be accompanied by documentary evidence of plot ownership, the site plan, the building plan, general specifications, Seismic certificate, Structural Design Basis Report and drawings, etc.

5.2 Requirement on Site Plan

i) In hilly terrain, the site plan should include location of land slide prone areas, if any, on or near the site, detected during reconnaissance. The Executive Dorbar/Town Committee/Executive Committee in such case shall cause to ensure that the site is away from such land slide prone areas.

ii) The site plan on a sloping site may also include proposals for diversion of the natural flow of water coming from uphill side of the building away from the foundation.

iii) The site plan shall be a countour survey map by a recognized surveyor.

Having met the above mentioned considerations, the site plan sent with the application for permission shall be drawn to a scale of 1:200 and shall show:

a) the boundaries of the site;

b) the direction of the North point relative to the plan of the buildings;

c) all existing buildings or structures including electric posts, telecommunication towers, etc.;

d) all surrounding buildings, in outline within a distance or 5 metres from the boundaries of the site;

e) the name of the street on which the building is proposed to be situated (if any) or location and name of the nearest street, public or religious building, including names of immediate neighbours;

f) the position of access from the street to the building;

g) the width of the street in front and of the street at the side of the building if any;

h) The dimension of front, rear and side setbacks, if any and also of the space to be left about the buildings to secure a free circulation of air, and admission of light;
i) the position of kitchens, staircases, privies, urinals, drains, cesspools, stables, cattle-sheds, garages, wells and other appurtenances of the building;
j) a clear statement of the area of the plot, plot coverage and the floor area ratio;

k) the highest flood level (HFL) reached above the street in front of the building.

5.3 Building Plans
The plans, sections and elevations of the building or buildings accompanying the notice shall be accurately drawn to a scale of 1:100.

a) Plans of all floors, terraces and accessory buildings indicating clearly (i) the north point, the percentage of covered area, the sizes and spacing of all supporting members, and dimensions of rooms; (ii) exact location of essential services such as W.Cs., sinks and baths; (iii) terrace plan indicating the drainage and the slope of the roof;

b) Sectional drawings showing clearly the materials used, sizes of footings, the thickness of retaining walls, the plinth level (at least 150 mm above the HFL), roof, floor slabs and walls, the sizes and spacing of framing members, the ceiling, parapet heights and the provision of all earthquake resisting elements. The sections should indicate the drainage and slope of the roofs and at least one section should be taken through the staircase;

c) All street elevations;

d) Plans and sections of private water supply and sewage disposal system (if any);

e) The drawings are to indicate where necessary, adequate arrangements for proper drainage, sewerage and surface drains, position and sizes of septic tank, soak pit and sump in cubic dimensions of length, breadth and depth;

f) Details of privy type, w.c. with hand flush and double pit, if any;

g) Dimensions of the portions projecting beyond the permissible building line;

h) Any other particulars as prescribed by the Executive Committee in the case of major proposals.

6. Structural Design Basis Report and Seismic Certificate
The Structural Design Basis Report mentioned in ***Appendix A*** and seismic certificate from a competent personnel as indicated in ***Appendix D*** that design is relevant to Indian Standard Code of Practice as well as compliant to earthquake resistant design shall accompany the application.

7. Ownership Title
Application shall also be accompanied by the attested copy of the Patta, sale/Lease Deed etc.

8. Signing of plans
All the plans (building plans and land development plans) shall be duly signed by (i) the owner and (ii) an Architect or Town Planner or Structural Engineer or a firm headed by an architect as licensed by the District Council and empanelled in the same. All accompanying structural drawings along with a Seismic Certificate shall be duly signed by a registered Structural Engineer.

9. Duration of sanction
The sanction once accorded shall remain valid up to three years, during which period a completion certificate for buildings as per **Form 6A** from the registered Architect or Town Planner or Structural Engineer as the case may be, shall be submitted and if this is not done, the sanction shall be got revalidated before the expiration of the said period. Revalidation shall be subject to the regulations then in force.

10. Colour Code

The plans accompanying the applications shall adopt the colour code as specified in Table I given below and indicate the same in the legend of the plans.

Table I Colour code for Plans

Sl. No.	**Item**	**Site Plan**		**Building Plan**	
		White Plan	Ammonia Print	White Plan	Ammonia Print
1.	Plot lines	Thick Black	Thick Black	Thick Black	Thick Black
2.	Existing street	Green	Green	-	-
3.	Future street, if any	Green dotted	Green dotted	-	-
4.	Permissible building lines	Thick dotted black	Thick dotted black	-	-
5.	Open spaces	No Colour	No colour	No colour	No colour
6.	Existing work	Black(outline)	Blue	Black	Blue
7.	Work proposed to be demolished	Yellow hatched	Yellow hatched	Yellow hatched	Yellow hatched
8.	Proposed work (see note 1)	Red filled in	Red	Red	Red
9.	Drainage and sewerage work	Red dotted	Red dotted	Red dotted	Red dotted
10.	Water supply work	Black dotted thin	Black dotted thin	Black dotted thin	Black dotted Thin

note_

i) *The above table is not applicable for entirely new construction*;

ii) For land development, subdivision, layout suitable colouring notations shall be used which shall be indexed.

iii) Specifications: - General specifications giving type and grade of materials used shall accompany the application.

11. Building Permission for Special Buildings

For Special buildings, the building sanction shall be sought directly from the Executive Committee only and shall be done in two stages.

Stage 1: First stage for planning clearance

The following additional information shall be furnished/ indicated in the building plans in addition to those mentioned in Building Regulations 5.

(a) Access to fire appliances/vehicles with details of vehicular turning circle/and clear motorable access way around the building;

(b) Size (width) of main and alternate staircase along with balcony approach, corridor ventilated lobby approach;

(c) Location and details of lift enclosures;

(d) Location and size of fire lift;

(e) Smoke stop lobby/door where provided;

(f) Refuse chutes; refuse chamber, services duct, etc.

(g) Vehicular parking spaces

(h) Refuge area if any;

(i) Details of building service-air conditioning system with position of dampers, mechanical ventilation system, electrical services, boilers, gas pipes etc.

(j) Details of exits including provision of ramps, etc.

(k) Location of generator, transformer and switchgear room;

(l) Smoke exhauster system if any;

(m) Details of fire alarm system network;

(n) Location of centralized control, connecting all fire alarm system, built in fire protection arrangements and public address system, etc.

(o) Location and dimension of static water storage tank and pump room;

(p) Location and details of fixed fire protection installations such as sprinklers, wet risers, hose reels, drenchers, CO_2 installation etc. and

(r) The proper signs/symbols and abbreviation of all fire fighting systems shall be shown as per the relevant I.S. code.

Stage 2: Second stage for building permit clearance

After obtaining the sanction for planning (Stage 1) from the Executive Committee, a complete set of structural plans, sections, details and design calculations duly signed by engineer/structural engineer along with the complete set of details duly approved in Stage 1 shall be submitted. The building plans/details shall be deemed sanctioned for the commencement of construction only after obtaining the permit for Stage 2 from the Executive Committee.

(a) Services Plans
The services plans shall include all details of building and plumbing services, and also plans, elevations and sections of private water supply, sewage disposal system and rainwater harvesting system, if any (Part 8 ‘Building Services’ and Part 9 ‘Plumbing Services’ of the National Building Code).

(b) Specifications
Specifications, both general and detailed, giving type and grade of materials to be used, duly signed by the registered architect, engineer, structural engineer or supervisor shall accompany the plans.

(c) Structural Sufficiency Certificate
The plans shall be accompanied by structural sufficiency certificate signed by the engineer/structural engineer and the owner jointly to the effect that the building is safe against various loads, forces and effects including natural disasters, such as, earthquake, landslides, cyclones, floods , etc as per Part 6 ‘Structural Design’ of the National Building Code and other relevant Codes. The engineer/structural engineer shall also have the details to substantiate his design.

(d) Supervision

The notice shall be further accompanied by a certificate by the registered architect/engineer/structural engineer/supervisor/town planner undertaking the supervision.

12. Grant or Refusal of Building Permission

The Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar must issue a receipt upon receiving the application. The Town Committee/Executive Committee may either sanction or refuse the permission or may sanction after modification as it may deem necessary and shall communicate its decision to the applicant in the prescribed form given in **Forms 3,3A & 4**.

(a) The Architect/Town Planner/Engineer of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar shall, in cases as listed in Sections 4 & 5, advise the Town Committee/Executive Committee, within a period of thirty (30) working days to sanction plans with or without modification or subject to such conditions as he considers expedient or to refuse to give sanction. In cases where village/town land is abutting state road/highway etc., the Architect/Town Planner/Engineer shall also advise the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar with respect to the appropriate building regulations.

(b) The Architect/Town Planner/Engineer shall, whenever the applications are referred to him, communicate his decision to the Town Committee/Executive Committee, within twenty (20) days of receipt of such applications by him. The Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar shall visit/investigate the site after giving a notice to the applicant within the 20 days period.

(c) On receipt of the decision of the Architect/Town Planner/Engineer under Sub regulations 4 & 5 above, the Town Committee/Executive Committee shall communicate the same to the applicant within a period of ten (10) days from the date of such decision.

(d) The applicant must re-submit the proposal as per recommendations of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar within 60 days of receipt of the modifications sought for.

On receiving all the modifications that have been sought for, the Town Committee/Executive Committee must intimate the grant/refusal of the building permission in writing within 15 working days and 30 working days for special buildings after the receipt of the modified proposal. The Executive Committee shall as far as possible advice on all the objections and modification so as to ensure their compliance.

(e) In case all or any modifications have not been complied with, the refusal must be issued in writing and fresh application is to be sought for consideration.

(f) On fulfillment of 12(d) by the applicant, no further additional modification/clarification are to be sought from the applicant. However, the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar may attach terms and conditions thereon.

(g) For building proposals requiring no modifications, the grant of building permission must be intimated by the Executive Committee or Town Committee or Dorbar Shnong/Executive Dorbar within 30 days after receipt of the application or else it will be deemed that the permission has been granted.

(h) The issue or receipt of applications must be handled by the authorized personnel(s) of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

13. Revocation of Permission
The Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar concerned may revoke any permit issued under the provision of these Regulations, wherever there has been any false statement or any misrepresentation of any material passed, approved or shown in the application on which the permit was based.

14. Suspension of Permission
Development permission granted under the relevant section of the Regulations shall deemed to be suspended in cases of resignation by any professional namely Architect on Record/Engineer on Record, Structural Engineer on Record, and Construction 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 development without any due permission.

15. Safeguards during Land Development
(1) It shall be the duty of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar to ensure that any land development for the purpose of erection/alteration etc., of building do not cause any damage to or destruction of catchment areas, water sources, spring sheds, streams and rivers.

(2) Any contravention of Sub-section (1) of Section 15 above, the person or company responsible shall bear the cost of restoring the environmental damage on the basis of Polluter Pays Principle (PPP) and any failure to comply shall render the rejection or cancellation of the permission.

16. Notice for commencement of building work
The owner before commencement of the work shall give a prior notice of 14 days to the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar in prescribed proforma given, in **Form 5** and the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar will inspect the work following the receipt of the notice to verify the same.

During Construction

17. Structural deviations during course of Construction
i) For any deviation from the sanctioned drawings during stage of construction, the permission of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar shall be obtained.

ii) If the construction is not according to the approved drawings, the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar has the power to stop the construction by written order. In such an event, the concerned Town Committee/Dorbar Shnong or Executive Dorbar shall inform the Executive Committee. If the permission holder fails to comply with the order served, the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar is empowered to cancel the building permission.
iii) It shall be incumbent on every person to submit revised drawings for any structural deviations he proposes to make during the course of construction of his building work for which an additional fee shall be paid as prescribed by the Executive Committee.

18. Inspection during Construction
a) On receipt of notice of commencement of work, the owner and the consultant architect/licensed technical personnel and the supervising engineer on record for the construction shall be present at site on the day and time of giving the alignment of the building(s).
b) After excavation of the foundation pits or trenches the owner and the consultant architect/licensed technical personnel and the supervising engineer on record for the construction shall be present at site on the day and time of giving the alignment of the building(s). It is mandatory for Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar to inspect and approve the same. Any deviations or rectifications required shall be approved to by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar within 14 days from the date of submission of the revised layout/ structures design drawing etc., by the applicant during the above period, all construction activities shall be temporarily stopped by the applicant.

c) On completion of column upto plinth and before its casting, the owner and the consultant architect/licensed technical personnel and the supervising engineer on record for the construction shall be present at site on the day and time after giving due intimation of 14 days to the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar for approval.

d) Any other stages of construction.
e) On completion of work after the receipt of completion form.

f) Non compliance on the part of the owner to comply with the above provisions would result in the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar declaring the building an "***Unauthorized Building***" and necessary action against the offenders will be initiated by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

g) Every inspection stage shall be recorded by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar and a copy of the same including any decision thereof shall be given to the owner.

Certificates

19. Completion Certificate

On completion of the building, the applicant and the licensed technical personnel as the case may be shall give notice to the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar in prescribed form as given in **Forms 6 & 6A**.

20. Occupancy certificate

As listed in Sections 4 & 5 no building hereafter erected, re-erected or altered materially shall be occupied in whole or part until an occupancy certificate is issued by the authorized person appointed/approved by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar after conducting the site inspection and after affirming that such a building conforms in all respects to the requirements of these Regulations and is fit for occupation.

The Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar on receipt of such notice of completion shall undertake inspection with regard to the following guidelines:

i) Compliance as per the sanctioned building drawings.

ii) In the records maintained, it should be clearly mentioned that the construction is in accordance with the sanctioned building drawings in respect to setbacks, building height, FAR, etc.

iii) The Certificate of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar and/or Fire Department for completion and/or fire safety requirements as provided in these Regulations has been procured and submitted by the owner.

iv) The functional/line agencies dealing with electric power, water supply, drainage and sewerage shall give regular connections to the building after such Occupancy Certificate is produced.
v) The approval or refusal of the Occupancy Certificate shall be issued within 15 days or may be issued after levying and collecting compounding fee, if any.

After completion of the building, an occupancy certificate as given in **Form 7** shall be issued by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar to confirm that such building is fit for occupation. A copy of the Occupancy Certificate shall be forwarded to the Executive Committee along with final revised drawings, if any.

21. Temporary certificate of occupancy

This certificate may be issued upon request by the applicant and the licensed technical personnel provided that completed portion(s) of a part of the entire work may be occupied safely without endangering life or safety of the occupants.

(i) A certificate of Competent Authority or Lift Inspector has been procured and submitted by the owner, regarding satisfactory installation of lift.

(ii) If any project consists of more than one detached or semi detached building/buildings in a building unit and any building/buildings thereof is completed as per provisions of Building Regulations (such as parking, common plots, internal roads, height of the building, infrastructure facilities, lift and fire safety measures), the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar may issue occupancy certificate for such one detached or semi detached building/buildings in a building unit. The occupancy certificate shall not be issued unless the information is supplied by the Owner and the Architect on Record/Engineer on Record concerned in the schedule as prescribed by the Executive Committee from time to time.

22. Offences and Penalties

Any person who violates the building permission sanction issued by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar or contravenes with the provisions of the Regulations or who interferes or obstruct any authorized person in the discharge of his duties shall be guilty of an offence. The Executive Committee or the Town Committee as the case may be, shall:

(i) Punish the person by a fine as fixed by the Executive Committee;

(ii) Take suitable action which may include demolition of un-authorized works, sealing of premises, prosecution and criminal proceeding against the offender, in pursuance of relevant laws in force, as decided by the Executive Committee or Town Committee;

(iii) Take suitable action against licensed technical personnel and license may be withdrawn in case of an offence as decided by the Executive Committee;

(iv) In the event of offences occurring in areas not within a Town Committee, the same shall be brought to the notice of the Executive Committee for necessary action.

a) The Executive Committee reserves the right to take action and to debar/blacklist the consultant/technical personnel, if found to have deviated from professional conduct or to have made any misstatement or on the account of misrepresentation of any material fact or default either in authentication of a plan or in the supervision of the construction against the building Regulations and the sanctioned building plans.

b) If the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar finds at any time any violation of the building Regulations or misrepresentation of fact, or construction at variance with the sanction or building Regulations, inclusive of the prescribed documents, the Executive Committee or Town Committee shall be entitled to revoke the sanction and take appropriate action against such professional and such professional shall not be authorized to submit fresh plans till finalization of the case.

c) Before debarring or blacklisting a professional if found to be indulging in professional misconduct or here she/he has misrepresented any material fact as per (a) and (b) above, the Town Committee/Executive Committee shall give him a show cause notice with personal hearing and the Executive Committee shall pass an order to debar him/her for submission and supervision of the construction with full justification for the same. An appeal against this order shall lie with the Tribunal constituted as per the provisions of this Regulation.

23. Permit exemptions

No notice and building permit, is necessary for the following alterations, which do not otherwise violate any provisions regarding general building requirements, structural stability and fire safety requirements of these Regulations;

(a) Plastering and patch repairs;

(b) Re-roofing or renewals of roof including roof of intermediate floors at the same height;

(c) Flooring and re-flooring;

(d) Opening and closing of windows leaves, ventilators and doors not opening towards other's properties and (or) public road/property;

(e) Replacing fallen bricks, stones, pillars beam etc.

(f) Construction or re-construction of sunshade not more than 75cms in width within one's land and not overhanging over a public street;

(g) Construction or re-construction of parapet not more than 1.5m in height and also construction or re-construction of boundary wall as permissible under these Regulations;

(h) White-washing, painting, etc. including erection of false ceiling in any floor at the permissible clear height provided the false ceiling in no way can be put to use as a loft etc;

(i) Reconstruction of portions of buildings damaged by storm, rains, fire, earthquake or any other natural calamity to the same extent and specification as existed prior to the damage provided the building use remains the same;

(j) Erection or re-erection of internal partitions provided the same are within the purview of the Regulations.

24. Fees for Building Permission & Incentives

24.1 The rates for residential, commercial, institutional, apartment, educational, storage, industries, major proposals etc., shall be chargeable as per the rates fixed by the Executive Committee from time to time. The rate for Special Building category shall be fixed at a higher rate.

24.2 For erection of Reception & Transmission Towers and Advertising Signs/hoardings, an installation fee shall be charge and subsequently annual renewal fee shall be chargeable as per the rates fixed by the Executive Committee from time to time.

24.3 The fixation of these fees shall be governed by the following: -

(i) For erection of new building shall be as per Schedule of Fees.

(ii) For re-erection of existing building the fees chargeable shall be the same as for erection of new building.

(iii) For addition and alteration in the existing building, the fees shall be chargeable on the added portion only.

(iv) For revised plan of an already sanctioned building a processing fee as fixed by the Executive Committee shall be paid by the applicant.

(v) For change of use and variation of rates, the fees chargeable shall be the difference between the two, subject to the conditions that_

(a) The revised plan is in conformance with the building bye laws applicable for that particular use and the building plans are compatible for that use.

(b) No fees to be refunded in case there is change of use of higher rate to lower rate, e.g. Commercial to residential use.

(c) Change of building use.

(vi) For renewal of building permission, the processing fees as fixed by the Executive Committee shall be paid and the validity shall be 18 months.

24.4 ***Incentives*** in terms of rebate in building permission fees will be given by the Executive Committee:

i) For owners or their successors-in-interest who incorporate sustainability/green building features like rainwater harvesting, underground water tank, use of solar, wind and micro hydel projects, led lighting etc.

ii) Leaving 1.5 times or more the minimum setbacks in all sides: 10 % rebate on building permission fees will be allowed provided the setbacks has to be on all sides to qualify for the rebate. Leaving more on one side and the minimum on other sides would not qualify for such rebate.

iii) Where owners provide at least 25% additional parking space over and above the minimum they would be allowed for a rebate of 10 % in building permission fees.

25. Unsafe Building

Any building reported to be unsafe or damaged shall be examined by a technical body to be constituted by the Executive Committee/Town Committee and shall make a written record of its findings. The Executive Committee/Town Committee/ shall give notice to the owner or occupier to complete the specified repairs or improvements or to demolish the building within a stated time. A copy of the written record of the findings shall be forwarded to the Executive Committee.

25.1 Disregard of Notice

If the owner fails to comply with the notice, the Executive Committee/Town Committee can demolish or remove the structure and realize the cost of demolition through suitable method or the Executive Committee/Town Committee may take assistance of the District Administration to remove the structure as it deems fit.

25.2 Building to be vacated

The Executive Committee/Town Committee may on prima facie evidence of inspections/findings that structural elements in a building or building construction appear to be unsafe, may declare the building to be vacated until such records and evidences are produced by the applicant and his/her consultant engineer. The Executive Committee/Town Committee shall keep a record of its findings in detail.

26. Architectural Control

Dismantling and renovation or any development plan of any heritage/archaeological structure or site, built forms like building structures, monoliths/mawbynnas, living root bridges, sacred groves, traditional bridges etc., may be referred to a broad base committee comprising of a panel of Architects, Planners and non-Governmental Organizations to be chaired by an authorized officer of the Executive Committee. Permission for the above work shall be based on drawings submitted by registered architects in consultation with technical experts of respective fields.

For major public building complexes or buildings coming up in an important area near historic/monumental buildings and areas of heritage, the aesthetics of the whole scheme may also have to be examined, *vis-a-vis* existing structures. This clause is intended to cover very few structures to come up in the vicinity of other declared/historically important structures, and the scrutiny shall be limited to the external architectural features only so as to ensure an aesthetic continuance of the existing structures with the new. The scrutiny shall not deal with the routine building plan scrutiny from other requirements of this Regulation from the point of view of structural safety and functional requirements.

27. Removal of difficulties

If any difficulty arises in interpreting or giving effect to any provision of this Regulation, the Executive Committee may as the occasion requires, take any action not inconsistent with the provisions of this Regulation which may appear to it necessary for the purpose of removing such difficulty.

28. Appeals

(1) Appeals against any order made by the Rangbah Shnong or Executive Dorbar or Dorbar Shnong or Town Committee under the provisions of this Regulation shall lie with the Executive Committee whose decision shall be final.

(i) Provided that the Executive Committee may authorize any three of its Executive Members to exercise power or powers conferred upon them under the provisions of this Regulation. Anything heard, any act done or order passed by such members of the Executive Committee shall be deemed to have been heard, done or passed by the Executive Committee.

(ii) Every appeal made under this section shall be preferred by a party within one month from the date of the order appealed against. However delay, if any in filing the appeal beyond the period of one month may be condoned by the appellate authority on good and sufficient reasons shown by the appellant for such delay.

(2) Appeals against any order made by the Executive Committee under the provisions of this Regulation shall lie with the Tribunal constituted by the District Council whose decision shall be final. Such appeal shall be filed within 30 days from the date of the order accompanied by a petition fee of Rupees two hundred only.

(i) Provided that the Presiding Officer of the Tribunal to be constituted shall not be below the rank of a Magistrate 1st Class of the District Council Court.

CHAPTER – III
General Building and Site Requirements

29. Identification of Natural Hazard Prone Areas

29.1 Earthquake Prone Areas

a. Intensities of VII or more on Modified Mercalli or MSK intensity scale are considered moderate to high. Areas under seismic zones III, IV and V as specified in IS 1893. Therefore, all areas in these three zones will be considered prone to earthquake hazards.

b. In these zones the areas which have soil conditions and the level of water table favourable for liquefaction or settlements under earthquake vibrations will have greater risk to buildings and structures which will be of special consideration under Land Use Zoning.

c. Under these zones, those hilly areas which are identified to have poor slope stability conditions and where landslides could be triggered by earthquake or where due to prior saturated conditions, mud flow could be initiated by earthquakes and where avalanches could be triggered by earthquake will be specially risk prone.

d. Whereas, earthquake hazard prone areas defined in 'a' above are identified on the map given in IS 1893 to small scale and more easily identified in the larger scale state wise maps given in the Vulnerability Atlas of India, the special risky areas as defined in 'b' and 'c' above, have to be determined specifically for the planning area under consideration through special studies to be carried out by geologists and geo-technical engineers.
e. If an active fault trace is identified by GSI (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 15 m on either side of fault trace.

29.2 Cyclone Prone Areas
a. Areas prone to cyclonic storms are along the sea coast of India where the cyclonic wind velocities of 39 meter per second or more are specified in the Wind Velocity Map given in IS 875 (part 3) to a small scale and easily identified in the Vulnerability Atlas of India where the Maps are drawn state wise on a larger scale.
b. In these cyclone prone areas, those areas which are likely to be subjected to heavy rain induced floods or to flooding by sea-water under the conditions of storm surge, are specially risky due to damage by flood flow and inundation under water.
c. Whereas, areas under 'a' are easily identified, those with special risk as under 'b' have to be identified by special contour survey of the planning area under consideration and study of the past flooding and storm surge history of the area. These studies may have to be carried out through the Survey of India or locally appointed survey teams, and by reference to the Central Water Commission, Government of India and the department of the State or U.T dealing with the floods.

29.3 Flood Prone Areas
a. The flood prone areas in river plains (unprotected and protected by bunds) are indicated in the Flood Atlas of India prepared by the Central Water Commission and reproduced on larger scale in the state wise maps in the Vulnerability Atlas of India.
b. Besides the above areas, other areas can be flooded under conditions of heavy intensity rains, inundation in depressions, backflow in drains, inadequate drainage, failure of protection works, etc.
c. Whereas, the flood prone areas under 'a' are identified on the available maps as indicated, the areas under 'b' have to be identified through local contour survey and study of the flood history of the planning area. Such studies may be carried out through Survey of India or local survey teams, and by reference to the Central Water Commission and the departments of the state or U.T dealing with the floods.

29.4 Landslide Prone Areas
(a) While it is known that most hilly areas are prone to landslides/landslips, the susceptibility of the various areas to landslide varies from very low to very high. Landslide zoning naturally requires mapping on large scale. Normally medium scale of 1:25000 is at least chosen.
In preparation of the landslide zone map, two types of factors are considered important as listed here below:
1. Geological/Topographic Factors/Parameters
- Lithology
- Geological Structures/Lineaments
- Slope-dip (bedding, joint) relation
- Geomorphology
- Drainage
- Slope angle, slope aspect and slope morphology
- Land use
- Soil texture and depth
- Rock weathering

2. Triggering Factors
- Rainfall
- Earthquake
- Anthropogeny

(b) Whereas the factors listed under geological/topographic parameters have been considered as basic inputs for the landslide potential model, the three triggering factors namely, rainfall, earthquake and anthropogeny were considered external factors which trigger the occurrence of a landslide.
(c) Whereas, the landslide prone areas under 'a' are available for some parts of the country on the maps given in Landslide Hazard Zonation Mapping in the Himalayas of Uttranchal and Himachal Pradesh States using Remote Sensing and GIS Techniques, pub. By National Remote Sensing Agency, Department of Space, Government of India, Hyderabad and Landslide Hazard Zonation Atlas of India – Landslide Hazard Maps and Cases Studies prepared by Building Materials & Technology Promotion Council, Ministry of Urban Development & Poverty Alleviation, Govt. of India, the risky areas in other parts of the country have to be determined specially for the planning areas under consideration through special studies to be carried out by the State/UT governments and the concerned Competent Authorities.

30. Protective measures in Natural Hazard Prone Areas
In natural hazard prone areas identified under the land use zoning regulations, structures, buildings and installations which cannot be avoided, protective measures for such construction / development should be properly safeguarded based on the suggestion given in Section 79.

31. Sites containing deposited refuse
No building shall be constructed on any site on any part of which there is deposited refuse, excreta or other offensive matter to which the health authority having jurisdiction objects, until such refuse has been prepared or left in manner suitable for building purpose to the satisfaction of the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar that where it is intended to construct a building on piles or on reinforced concrete pillars, the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar may approve the erection of such a building after the refuse has been appropriately treated by chemical or some other manner to the satisfaction of the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar concerned and has been covered by a layer of sand or other matters or by a layer of cement concrete not less than 15 cm thick.

32. Damp sites
Wherever the dampness of a site or the nature of the soil renders such precautions necessary, the ground surface of the site between the walls of any building erected thereon shall be covered with a layer of sound cement concrete not less than 15 cm thick or with asphalt paving on a layer of closely packed broken stone hard cake not less than 15 cm thick or be otherwise rendered damp proof to the satisfaction of the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar concerned.

33. Sites containing pits and quarries etc.
No building shall be erected on a site which comprises or includes a pit, quarry or other excavations or any part thereof unless such site has been prepared or, left in a manner and condition suitable for building purposes to the satisfaction of the Executive Committee/ Town Committee/ Dorbar Shnong or Executive Dorbar.

34. Requirement of Sites
Any piece of land shall be used as a site for construction provided:

(i) The site is properly drained or capable of being drained.
(ii) The site is to have proper means of access.
(iii) The site is not prone to land slide.
(iv) A soil investigation report from a geo technical expert has to be submitted for all buildings beyond 9m in height, and/ or in areas where the soil condition/ soil bearing capacity is known to be of weaker nature.
(v) Generally, no earth cutting shall be permitted in order to achieve basements and all building proposals shall follow the slope profile of the plot and such earth cutting shall be limited to a maximum of 3.00 meters only. However the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar may relax the same owing to site conditions and the maximum earth cutting height shall be upto the crest of the RCC wall being limited to 6.00 m only.

NO LAND SHALL BE USED AS A SITE FOR THE CONSTRUCTION OF BUILDING

(i) If the site is found to be liable to liquefaction as per soil survey report under the earthquake intensity of the area, except where appropriate protection measures are taken.

(ii) If the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar finds that the proposed development falls in the area liable to flooding, except where protection measures are adopted to prevent flooding damage.

35. Exterior Open Space

The building envelop shall be governed by the following minimum clear open space and setbacks:

(i) ***Front setback***

(a) Every building abutting a street/footpath shall have a front setback with a minimum width of 3 meters from the front property line to the front building envelop.

(b) In case the site fronts on two streets, both of which are major roads, then the front setback shall be a minimum of 3.00 m from the edge of both the roads' right of way.

(c) In case the plot fronts two streets, one of which is a major road and the other a minor road but having the potential of being developed into a major road and or leading to an attraction zone(s), then the front setback shall be a minimum of 3.00 m from the edge of both roads' right of way.

(ii) ***Side and Rear setback***

Every building shall have a minimum clear side and rear setback as prescribed in these Regulations. No use is permitted in this open space except steps and soak pit or in case this space is 3.00 m wherein parking of vehicles is allowed.

(iii) ***Soft-cover provision***

(a) Soft cover should be included in the plan for building sites.

(b) For any building having a minimum covered area of 500 sq.m, the applicant should provide soft cover of at least 15% of the plot area.

(c) For any other building, having lesser covered area, the soft cover should be atleast 10% of the plot area.

(d) Semi-pervious ground cover should be used as paving wherever possible.

36. Rain Water Harvesting

Water harvesting through storing of water runoff including rainwater in all existing and new buildings shall be mandatory. The plans submitted shall indicate the system of storm water drainage along with points of collection of rain water in surface reservoirs or in recharge wells.

37. Recycling of waste water

The recycled water should be used for non drinking purposes. See Chapter VII, Section 62.8

38. Energy Conservation Building

Building or building complexes having a connected load of 100 KW will be regulated as per the Energy Conservation Code 2007 as amended. Generally buildings or complexes having air conditioned area of 1,000 sq.m or more will also fall under this category.

39. Distance from Electricity Lines

No verandah, Balcony or the like shall be allowed to be erected or re-erected or new addition or alteration made to a building within a distance quoted in Table-II below in accordance with the current Indian Electricity Rules as amended from time to time.

Table II

		Vertically (metres)	Horizontally (metres)
a)	Low and Medium Voltage lines and services lines	2.5	1.2.
b)	High voltage lines upto and including 11 kV	3.7	1.2
c)	High voltage lines above 11 kV and upto and including 33 kV	3.7	2.0
d)	Extra high voltage line beyond 33 kV	3.7 (plus 0.3 m for every additional 33 kV or part thereof)	2.0 (plus 0.3 m for every additional 33 kV or part thereof)

40. Requirements of Parts of Building

40.1 Table III - Minimum size and width of different components of residential buildings.

Table III

Sl.No.	Component of Building	Min. requirement for plots upto 50 sq.m.
1.	Habitable Room	Area 7.50 sq.m. Width 2.10 m.
2.	Kitchen	Area 3.30 sq.m. Width 1.50 m.
3.	Pantries	Area Not applicable Width Not applicable Height Not applicable
4.	Bathroom	Area 1.20 sq.m. Width 1.00 m.
5.	W.C.	Area 1.00 sq.m. Width 0.90 m.
6.	Combined Bath & W.C.	Area 1.80 sq.m. Width 1.00 m.
7.	Store	Area No restriction Width No restriction

Table IV

SIZES AND AREA REQUIREMENT				
Sl. No.	Type of room	Maximum Floor Area	Minimum floor area	Minimum height
1.	Mezzanine floor	Maximum coverage of 33.3 % of plinth area of the room size	9.50 sq m.	2.40 m clear height
2.	Loft	Maximum coverage 26% of room sizes		-----
3.	Ledge	Maximum coverage 25% of room sizes.		2.20 m
4.	Garages		3 x 6 sq.m	2.40 m clear height
5.	Parapet			1.00 m.
6.	Staircase	Maximum height of riser =15 – 17.5 cm	Minimum length of tread = 27 – 30 cm	Max. no of risers in one single flight is 15

note_ *Maximum height of riser & tread for all types of special buildings & those above 12m height shall 15 cm & 30 cm respectively.*

40.2 Kitchen, Bathroom and Water closet

(i) Every kitchen, bathroom and water closet shall be so planned that one of its wall shall open to external air by ventilator/exhaust fan etc;

(ii) No room containing water-closets shall be used for any purpose except as a lavatory and no such room shall open directly into any kitchen or cooking space by a door, window or other opening. Every room containing water-closet shall have a door completely closing the entrance to it;

(iii) A flue, if found necessary for a kitchen and;

(iv) In case of a 4 storeyed building, a refuse chute shall be provided. They shall be constructed with the I.S. 6024-1973 Code of practice for construction of refuse chute in multi-storeyed buildings.

Table V

Combined Ventilation Shaft for Kitchen and Toilet

Height of the building (in floors.)	Minimum size of ventilation shaft (in sq.m.)	Minimum width of the shaft (in m.)
Up to 4 floors	3.0	1.5

- *Provided further that no chajja shall be allowed in any ventilation shaft.*
- *Provided also that no ventilation shaft may be required for fully air-conditioned building, or mechanically ventilated toilet, kitchen, bath and water closet.*

40.3 Sizes of Septic Tanks

(a) Septic tanks may be constructed of brickwork, stone masonry, concrete or other suitable material as approved by the Town Committee/Executive Committee.

(b) Under no circumstance should effluent from a septic tank or toilet/latrine be allowed into an open channel, drain or body of water without adequate treatment.

(c) When the disposal of septic tank effluent into seepage pit, may be of any suitable shape with the least cross-sectional dimension of 90 cm and not less than 100 cm in depth below the invert level of the inlet pipe. The pit may be filled with stone, brick or concrete blocks with dry open joins which should be backed with at least 7.5 cm of clean coarse aggregate. The lining above the inlet level should be finished with mortar. In the case of pits of large dimensions, the top portion may be narrowed to reduce the size of the RCC cover slab, where no lining is used, especially near trees; the entire pit should be filled with loose stones. A masonry ring may be constructed at the top of the pit to prevent damage by flooding of the pit by surface run off. The inlet pipe may be taken down to a depth of 90 cm.

(d) When the disposal of septic tank effluent is to a dispersion trench, the dispersion trench shall be 50 to 100 cm deep and 30 to 100 cm wide excavated to a slight gradient and shall be provided with 15 to 25 cm of washed gravel or crushed stones. Open jointed pipes placed inside the concrete and shall have minimum internal diameter of 75 to 100 cm. No dispersion trench should be longer than 30 m and trenches should not be placed closer than 1.8 m.

- *Location of septic tank's subsurface absorption system:* A subsoil dispersion system shall not be closer than 18 m from any source of drinking water, such as 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 6 m. to avoid damage to the structure.

Table VI
Sizes of Septic Tanks

No of user	Length in Meter	Width in Meter Domestic tank	Liquid depth in Meter
5	1.50	0.75	1.00
10	2.00	0.90	1.00
15	2.00	0.90	1.30
20	2.30	1.10	1.30
50	4.00	1.40	1.30
For Housing colonies			
100	8.00	2.60	1.00
150	10.60	2.70	1.00
200	12.40	3.10	1.00
300	14.60	3.90	1.00
Hostels, Boarding Schools			
50	5.00	1.60	1.30
100	5.70	2.10	1.40
150	7.70	2.40	1.40
200	8.90	2.70	1.40
300	10.70	3.30	1.40

40.4 Mezzanine Floor

In case of a Mezzanine floor the following conditions shall be provided:

(i) It conforms to the standards of habitable rooms as regards to lighting and ventilation in case the area of mezzanine floor is 9.5 sq.m or more.

(ii) It is so constructed so as not to interfere under any circumstances with the ventilation of the space over and below it;

(iii) Such mezzanine floor is not sub-divided into smaller compartments in case of residential buildings;

(iv) Such mezzanine floor or any part of it shall not be used as a kitchen;

(v) In no case shall a mezzanine floor be closed so as to make it liable to be converted into unventilated compartments.

40.5 Plinth
The plinth of any part of a building shall be raised above ground level or road level provided adequate drainage of site is assured. In no case, this shall not be less than 0.45m. Every interior court-yard or garage shall be raised by a minimum of 0.15m above ground level and shall be satisfactorily drained.

40.6 Roof
The roof shall be so constructed to permit effective drainage of the rain water thereof by means of sufficient rain water pipes of adequate sizes, joined and fixed so as to ensure dampness does not occur in any part of the walls or foundations of the buildings or those of an adjacent building.

41. Exits and Means of Access

41.1 All exits and means of access shall be as per provisions of National Building Code 2005. Not less than two exits shall be provided for every floor

41.2 Minimum width provisions for Stairways
The following minimum clear width provisions shall be made for each stairway:

(a)	Residential building	-	1.00 m
	Other residential building e.g. flats Hostels, group housing guest houses, etc.	-	1.50 m
(b)	Assembly buildings like Auditorium theatres and Cinemas.	-	2.0 m
(c)	All other buildings including hotels	-	1.5 m
(d)	Institutional building like hospitals	-	2.0 m
(e)	Educational building like School & Colleges	-	1.5 m

41.3 Minimum width provisions for passageway/corridors
The following minimum clear width provisions shall be made for each passage way / corridor:

(a)	Residential buildings, dwelling unit type	-	1.00 m
	Residential buildings, e.g. hostels etc	-	1.20 m
(b)	Assembly buildings like Auditorium theatres and Cinemas	-	2.00 m
(c)	All other buildings including hotels	-	1.50 m
(d)	Hospital, Nursing homes etc	-	2.40 m

41.4 Provision for Lifts
Provision for lifts shall be mandatory for Hospitals, Nursing Homes having more than one storey. For all other buildings viz. apartments, flats, etc. more than 3 floors in height provision of a lift are mandatory.

41.5 Regular line of street – No portion of any building shall project beyond the prescribed set back of any street or highway.

CHAPTER – IV
Setbacks, Parking Spaces & Height Stipulation
For all types of buildings (Including Special Buildings)

42. Occupancy
The occupancy of any building or part thereof shall be governed by the following provisions. The usage of plots proposed for development/re-development shall be governed by the provisions contained in the Development Plan of the Town or Village or any detailed Town Planning Scheme prepared for the locality, provided where no such Plan exists, the Usage of Plots shall be approved by the Executive Committee/Town Committee.
42.1 The description of occupancies is given below:

42.1.1 Residential Building: These shall include any building in which sleeping accommodation is provided for normal residential/hostels/guest house purposes.

42.1.2 Residential Apartment (Flats): These shall include one or two or multi-family dwellings with residential accommodation.

42.1.3 Institutional buildings: These shall include any building or part thereof used for School, College, Primary and Nursery School, education or research purpose, Hospitals, clinics, homes for the aged and inform convalescent homes and orphanages, mental hospital etc.

42.1.4 Commercial Building: These shall include any building or part of the building, which is used for display and sale of merchandise such as shops, stores, markets etc., either wholesale or retail, banking and financial institutions, Private business houses and professional establishments of doctors, dentists, tailors etc. beauty parlour, barber shops, newsstands, milk booths, lunch counters, restaurants, Hotels and Motels.

42.1.5 Government or Semi-Public Business Buildings: These shall include any building or part of building, which is used for the transaction of public business, for records keeping, accounts and similar purposes. Local Estate and Government Offices, court houses. Public utility buildings including slaughterhouse, jails and prisons etc., will be covered by this use.

42.1.6 Assembly Buildings: These shall include any building or part of a building, where group of people (exceeding 100) congregate or gather for amusement, recreation, social, religious patriotic civil, travel and similar purposes for example, Theaters, cinemas, Assembly Halls for Educational, Dramatic or theatrical presentation, Auditorium, Exhibition Halls, Art Galleries, Museums, Libraries etc.

42.1.7 Industrial Buildings: These shall include any building or part of a building or structure in which products or materials of all kinds and properties are fabricated, assembled or processed e.g., Workshops, Assembly Plants, Laboratories, Handicrafts, Laundries, Dairies, Saw Mills, Power Plants etc.

42.1.8 Storage Buildings: These shall include any building or part of building used primarily for the storage or sheltering (including servicing, processing or repairs) of goods, wares or Merchandise except those that involve highly combustible or explosive products or materials. Examples include warehouses, freezing plants, freight etc.

42.1.9 Hazardous Buildings: These shall include any building or part of a building, which is used for the storage, handling, manufacture or processing of highly combustible, explosive, poisonous, irritants, toxic or noxious materials or products or materials producing dust.

42.1.10 Special Building: means those buildings with large scale activities at a time such as Hotel of 4 star category &above, Public Institutions, Hospitals, Shopping malls with Multiplexes, I.C.T./ BPO's, Universities having a minimum plot area of 6000 sq.m and a minimum plinth area of 3000 sq.m.

43. Parking Space

(a) No off-street parking space shall be less than 15 sq.m. (3.0 m in width and 5.0 m in length), for a motor car, with a minimum head room of 2.4 m if parked in a covered area.

(b) The minimum width of circulation driveway to be provided for adequate maneuvering of vehicles shall be 4.00 m for cars and 5.00 m for trucks exclusive of parking space referred to in (1) above. However, a projection from a height above 5.50 m from the ground level may be permitted keeping the mandatory open space open to sky

(c) The parking layout plan shall be so prepared that the parking space for each vehicle becomes directly accessible from driveway or circulation driveway or aisles. However stack car parking arrangement will be allowed in such a way that every car can be moved by shifting not more than one car.

(d) The Parking spaces shall be located beyond the mandatory setback spaces as provided in these Regulations. However, in planned developments open parking can be within the setback spaces.

(i) For building with different uses, the area of parking space shall be worked out on the basis of respective uses separately and parking space to be provided for the total number of vehicles thus required.

(ii) In case of a plot containing more than one building, parking requirement for all buildings shall be calculated on the basis of consideration of the area of respective uses.

The Minimum Off-Street Parking space shall be as shown in table-VII below.

Table- VII

Sl. No	Type of occupancy	One parking space for every	Size of parking space for motor cars
1.	Commercial	50 sq.m. of floor area.	3m x 5m
2.	Residential & Apartment Houses (flats)	100 sq.m. of floor area	3m x 5m
3.	Offices	100 sq.m. of floor area	3m x 5m
4	Hotels	4 guest room provided	3m x 5m
5.	Theater & Auditorium	**	3m x 5m
6.	Institutional	**	3m x 5m
7.	Hospital, Nursing Homes	**	3m x 5m

note_

1. For plots up to 50 sq.m, as in the case of neighbourhood shops, parking spaces need not be insisted upon.

*2. **For (5) to (7) in Table VII above, parking space requirement shall be assessed based on the proposed building and referred to the National Building Code 2005.*

44. The specific Floor Area Ratio and Plot Coverage stipulations shall be as per Table VIII below.

TABLE VIII
Floor Area Ratio and Maximum Coverage

Sl. No.	Type of Occupancy	Maximum permissible (F.A.R)	Maximum permissible (coverage percentage of plot area)	Maximum Height permissible (In meters)
1.	Residential	200	50%	12 m With floor parking 15 m
2.	Residential Apartment	200	50%	12 m With floor parking 15 m
3.	Mixed use building *(Residential and commercial)*	200	50%	12 m With floor parking 15 m
4.	Institutional	150	40%	12 m With floor parking 15 m
5.	Mercantile (Commercial)	200	60%	12 m With floor parking 15 m
6.	Neighbourhood/convenient shops	100	40%	6 m
7.	Public or Semi-Public Business	200	50%	12 m With floor parking 15 m
8.	Assembly	150	40%	12 m With floor parking 15 m
9.	Industrial	150	40%	12 m With floor parking 15 m
10.	Storage	200	70%	12 m With floor parking 15 m
11.	Hazardous	120	25%	8 m with floor parking 12 m
12.	Special Buildings	240	60%	12 m with floor parking 15 m
13.	Industrial Zone (factory)	100	40%	

notes_

(i) *If a floor is exclusively earmarked for Covered Parking purposes, an additional floor shall be permitted and the floor covered parking will not be counted for F.A.R.*

(ii) *Mumty (stair cover) over staircase on top floor, atrium / cut outs Machine room for lift on top floor as required for the lift machine room installations shall not be taken for FAR calculations. Lift shaft(s) for one floor only shall be taken for FAR calculation.*

(iii) *Rockery, well and well structures, plant, nursery, water-pool. Swimming pool (if uncovered), platform around a tree, water tank; fountain, bench, ramps, compound wall, gate, slide, steps outside building, domestic washing place, swing, fire escape staircase, overhead water tank on top of buildings, underground suction tank having roof slab 0.50*

mtr. above ground level, cooling tower of A.C. plant rest above the top roof slab and Drainage culvert, conduit, catch-pit, chamber, gutter, culvert on drains shall not be taken for FAR calculations.

(iv) **Height Exceptions:** *The following appurtenant structures shall not be included in the height of the building unless the aggregate area of such structures, including pent-houses, exceeds one-third of the area of the roof of building upon which they are erected:*

a) Roof tanks and their supports (with support height not exceeding 1m);
b) Ventilating, air-conditioning, lift rooms and similar service equipment;
c) Stair cover (MUMTY) not exceeding 3m in height; and
d) Parapet walls and architectural features not exceeding 1.2m in height.

45. The minimum setbacks would be as per Table IX below.

TABLE IX

Plot Size (in Sq. Mts.	Minimum Front Setback (in Mts.)				Minimum Setbacks other sides (in Mts.)	
	Abutting road width					
	Single lane /footpath	Double lane	Four lane	Six lane	Rear side	Other sides
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Minimum 50 sq.m (Neighbourhood/convenient shops)	2.00	2.00	-----	-----	1.00	1.00
Less than 200	3.00	3.00	4.50	4.5	1.00	1.00
Above 201 & width <8m	3.00	3.00	4.50	4.5	1.80	1.20
Above 201 & width >8m	3.00	3.00	4.50	4.5	1.80	1.80
Above 300 & up to 400	3.00	3.00	6.00	9.00	2.50	1.80
Above 400 & upto 500	3.00	3.00	6.00	9.00	3.00	1.80
Above 500 & upto 750	3.00	3.00	6.00	9.00	3.00	1.80
Above 750 & upto 1500	3.00	3.00	6.00	9.00	3.00	1.80
Above 1500 & upto 2500	3.00	3.00	6.00	9.00	3.00	1.80
Above 2500	3.00	3.00	6.00	9.00	3.00	1.80

notes_
(i) *The setbacks are to be left after leaving the affected area of the plot/site, if any, for road widening.*
(ii) *Where the lighting and ventilation of a building is through the means of a chowk or inner courtyard or interior open space, such open space shall be open to sky and of area atleast 9.00 sq.m and no side shall be less than 2.00 m.*

(iii) *In all plots 750 sq.m and above, provision shall be made for earmarking an area of 3m X 3m for the purpose of siting of public utilities like distribution transformer, etc. within the owner's site.*
(iv) *In case of plots 300 sq.m and upto 750 sq.m, it is permitted to transfer up to 1.00 m of setback from one side to the other side, and in case of plots above 750 sq m, it is permitted to transfer up to 2.00 m of setback, which needs to be uniform at any given point, subject to maintaining of minimum building envelop in the front.*

46. Requirements for Special Structures

46. 1 Special Buildings
In addition to the requirements specified under Building Regulations, the following Regulations shall also be applicable.

Minimum Requirements: The following requirement shall be provided:

46.1.1 The aggregate area of foyer exclusive of all passages shall be provided at every sitting-level at the rate of 0.1 sq.m per seat at that level, subject to minimum foyer width of 4.50 m.

46.1.2 Entry and exit passages of minimum 3 meters width shall be provided.

46.1.3 Water-room and snack-bar shall be provided.

46.1.4 The booking-office shall always be so located that intending purchasers of tickets does not have to queue up in open space.

46.2 Plinth: The plinth shall be measured at the foyer level and it shall not be less than 0.45 m.

46.3 Corridor: No landing, lobby, corridor or passage, not being an internal passage between and/or across rows of seats, intended for use as an exit; shall be less than 3m in width and there shall be no recess or projections in the walls of such passages or corridors within 1.80m of the ground.

46.4 Doors: The auditorium doors shall be provided at the rate of not less than one door of a dimension of 1.50 m in width and 2.10 m in clear height for every 150 seats or part thereof. All outside doors for the use of the public shall be made to open outwards and in such manner that when opened, they shall not obstruct any gangway, passage, stairway or landing. These doors shall be provided in such a way that they open in aisles or cross-aisles provided under these Regulations.

46.5 Balcony, its height, floor of an auditorium and arrangement of seats:

46.5.1 The height of the bottom balcony of the gallery shall not be less than 3m from the floor of the auditorium.

46.5.2 The clear distance between the backs of two successive rows shall not be less than 1m. But for seats with rocking backs it may be 0.90m.

46.5.3 The minimum width of balcony steps shall be 0.80m provided that for the front and rear steps this distance shall be 0.90m.

46.5.4 The minimum height of the roof or ceiling at the highest steps of the balcony shall be 3.00m and at no place the distance between the nodding and the lowest projection ray shall be less than 2.40m.

46.5.5 The minimum width of the seat shall be 0.50m provided that 25 percent of the total seats may permit upto the width of 0.45m to adjust the staggering of the seats. The width of the seats shall be measured from centre of hand rails or arm rests.

46.6 Aisles: Clear aisles not less than 1.20m in width shall be formed at right angles to the line of seating in such number and manner that no seat shall be more than 3.80m away from any aisles measured in the line of seating. Where all these aisles do not directly meet the exit doors, cross aisles shall be provided in such number and manner that no row of seats shall be more than 7 meters away from cross-aisles. The width of cross aisles shall be 1.20m provided further that in computing the number of cross-aisles, the door connecting the aisles with foyer shall be considered as cross-aisles.

Explanation: The first cross-aisles in such a case shall be provided after the fourteen rows from the door.

(i) Sanitary Accommodations:
(ii) Water closet at the rate one for 100 seats or part thereof and urinals at the rate of two for 75 seats or part thereof, at each seating level shall be provided.
(iii) One wash-basin for every 200 seats or part thereof shall be provided.

(iv) The above conveniences shall be suitably apportioned between two sexes.

(v) Such water-closet and urinals shall be in accessible location and shall be provided with signs plainly indicating their purpose and the sex for which they are meant.

46.7 Visibility requirement:

46.7.1 The seat nearest to the screen shall not be nearer than the effective width of the normal picture (ratio 1:1.33). This distance shall be ¾ in case of cinema scope and other wide angles techniques and one half in case of 70 mm presentations.

46.7.2 The elevation of the balcony seats shall be such that line of sight is not inclined more than 30^{O} to the horizontal.

46.7.3 The seats should preferably be staggered side-ways in relation to those in front, so that a spectator in any rows is not looking directly over the head of the person immediately in front of him.

46.7.4 The position and height of the screen shall be regulated in such a way that the maximum angle of the line of vision from the front seat to the top of the screen shall not exceed 50.

46.8 Ventilation : Every auditorium shall be lighted and ventilated by doors, ventilators and windows abutting on an interior or exterior open space which shall not be less than $1/5^{th}$ of the total floor area provided that if exhaust fans are installed or if the auditorium is air-conditioned, the requirement of this clause may be suitably relaxed.

46.9 Minimum Requirement of Stairs:

46.9.1 Except where otherwise provided under these Regulations the minimum clear width of all the stairs shall be 1.50m.

46.9.2 No stair-case shall have a flight of more than 15 steps or less than 3 steps and width of the landing between such flights shall be of the same width of the stair-case. The tread of the step shall not be less than 30cm. The riser shall not be higher than 10cm.

46.9.3 No space less than 2.4m in height shall be allowed under the floor of auditorium.

46.9.4 Except for a double-decker-cinema or theatre, the access to the auditorium from the ground floor, if it is on upper floor or on stilts shall be provided by not less than three stairs: two of which shall be exit stairs. The clear width of these next stairs shall not be less than 2m.

46.9.5 The access to balcony floor from auditorium floor shall be provided by not less than three stairs, two of which shall be exit stairs provided that if one exit stair is to be provided instead of two, its minimum width shall be 2.4m.

46.9.6 In case of double-decker cinema or theatre:

- The access to upper class auditorium from ground floor shall be provided by at least three stairs out of which two shall be exit stairs with minimum clear width of 2m.
- The access to lower class auditorium from ground floor shall be provided by at least two stairs, one of which shall be exit stair.

46.10. No permission shall be given for converting existing air-conditioned cinema theatre into non-air-conditioned cinema theatre.

47 Industrial Buildings (Factories, Workshops, etc.)

47.1.1 The relevant provisions contained in the Factory Act. 1948 shall apply for the construction of factory buildings. The minimum internal height of workrooms shall not be less than 4.5m measured from the floor level to the lowest point in the ceiling provided that this bye-law shall not apply to room intended for storage, godowns and the like purposes but only in rooms occupied by workers for purposes of manufacture.

In case of small factories, employing less than 50 workers for purposes of manufacturing and carrying on a class of manufacturing covered under the flatted factories and service industries, the Executive Committee may allow minimum height upto 3.6m.

47.1.2 Requirements of water supply, drainage and sanitary installation shall be as per National Building Code 2005 but in no case less than 1 W.C. and one urinal shall be permitted.

47.1.3 (i) Each working room shall be provided with adequate number of exits not less than two in number.

(ii) No exit shall be less than 1.2m in width and 2.1m in height and doors of such exit shall be so arrange that it can be opened easily from inside.

47.1.4 No staircase, lobby corridors or passage shall be less than 1.2m in width.

47.1.5. There shall be provided at all time for each person employed in any room of factory at least 3.5 sq. m of the floor space exclusive of that occupied by the machinery and a breathing space of at least 15 cum. (Further the provision of part VIII section 1 lighting and ventilation of National Building Code of India shall be followed).

47.1.6. The effluent from industries (industrial and biological in nature) shall be treated and shall be of quality to the satisfaction of the concerned local bodies before letting out the same into a watercourse or drain.

48. Educational Buildings (Schools/Colleges)

48.1 No classroom shall be designed, constructed, altered, converted or used for the purpose of study or instructions.
48.2 The minimum size of a classroom, study room or room used for purposes of instruction shall be 5.50m x 4.50m and no part of such room shall be distant more than 7.50m from an external wall abutting on the requisite open space. Every such room shall have minimum ventilation to the extent of $1/5^{th}$ of its floor area.

48.3 A minimum of 1.00 sq. m of net floor space per student shall be provided. A central hall will not be counted in the accommodation, nor will a classroom for cookery, laundry, manual instruction, drawing or science. The number of students in such building shall be calculated on this basis for the purpose of this clause.

48.4 Every assembly room, gymnasium shall have a minimum clear height of 3.60m except under a girder which may project 0.60 m below the required ceiling height. A clear internal height under balcony or a girder shall not be less than 3.00m. A minimum room height for classroom in all schools and other institutions shall not be less than 3.00m. The minimum head room under beams shall be 2.75m.

48.5 Exit requirements shall conform to National Building Code 2005. No door shall be less than 1.20m in width and 2.20m in height.

48.6 Requirement of water supply, drainage and sanitary installation shall conform to National Building Code 2005.

CHAPTER – V
Facilities for Persons with Disabilities

49. Applicability

These Regulations are applicable to all private and public buildings (proposed and existing) used by the public and shall not be restricted to a single floor or storey but shall allow free & full accessibility to the entire building.

50. Definitions

50.1 Non-Ambulatory Disabilities

Impairment that regardless of cause or manifestation, for all practical purpose, confines individuals to wheelchairs

50.2 Semi-Ambulatory Disabilities

Impairments that cause individuals with difficulty or insecurity, individuals using braces or crutches, arthritis, and those with pulmonary and cardiac ills may be semi-ambulatory.

50.3 Hearing Disabilities

Deafness or hearing handicaps that might make individual insecure in public area because he is unable to communicate or hear warning signals.

50.4 Sight Disabilities

Total blindness or impairments affecting sight to the extent that the individuals functioning in public areas in insecure or exposed to danger.

50.5 Wheel Chair

Chair used by disabled people for mobility. The standard size of the wheel chair shall be taken as 1050mm x 750mm.

51. Guiding/Warning Floor Materials

The floor materials to guide or warn the visually impaired persons with a change of colour or material with different texture and easily distinguishable from the rest of the surrounding floor materials is called guiding warning floor materials. The materials with different texture give audible signals with sensory warning when a person moves on this surface with walking stick. It is meant to give the directional effect or warn a person when at critical places.

52. Visual Signage

Appropriate identification of specific facilities within a building for the persons with disabilities 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, whereas visual signals benefit those with hearing disabilities.

Signs should be designed and located so that they are easily readable by using suitable letter size (not less than 20mm) high. For visually impaired persons, information board in Braille 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 construction in walking. Public address system may also be provided in busy public areas.

The symbols/information/should be in contrasting colour and properly illuminated because people with limited vision may be able to differentiate amongst primary colours.

53. Site Planning

To accommodate the persons with disabilities and elderly people each building and its site should be planned and designed as an integral unit from the very beginning of the design process.

53.1 Walks and Paths

Walking should be smooth, hard level surface suitable for walking and wheeling. The minimum walkway width should be 1200 mm. and for moderate two ways traffic should be 1650 mm -1800 mm. Longitudinal walk gradient should be 3 to 5 % (30 mm to 0.50 mm in meter). When walk exceed 60 meter in length it is desirable to provide rest area adjacent to walk at convenient intervals with space for bench seats. For comfort the seat should be between 350 mm to 425 heights but not over 450 mm. Texture change in walkways adjacent to sitting will be desirable for blind persons.

53.2 Parking

For parking of vehicles the following provisions shall be made:

53.2.1 Surface parking for two car spaces shall be provided near entrance for the persons with disabilities with maximum travel distance of 30 m from building entrance.

53.2.2 The width of parking shall be a minimum of 3.60 m

53.2.3 The information stating that the space is reserved for wheel chair users shall be conspicuously displayed.

53.2.4 Guiding floor materials shall be provided for a device, which guides visually impaired persons with audible signals, or other devices, which served the same purpose, shall be provided.

53.3 Building requirements

The specified facilities for the building for persons with disabilities shall be as follows:-

1. Approach to plinth level.
2. Corridor connecting the entrance/exit for the handicapped.
3. Stairways.
4. Lift.
5. Toilet.
6. Drinking water.

53.4 Approach to plinth level

Every building should have at least one entrance accessible to the disabled and shall be indicated by proper signage. This entrance shall be approached through a ramp together with the stepped entry.

53.5 Ramped Approached

The ramp shall be finished with non-slip materials. Minimum width of ramp shall be 1000 mm with maximum gradient 1:12 length of ramp shall not exceed 9.0 m having 800 mm. high handrails on both sides.

53.6 Exit/Entrance Door
The minimum clear opening of the entrance door shall be 900mm.

53.7 Entrance Landing
The entrance landing shall be provided adjacent to ramp with a minimum dimension of 1800 mm x 2000 mm. finishes shall have a non-slip surface with a texture traversable by a wheel chair.

53.8 Corridor connecting the entrance/exit for the handicapped
The corridor shall be provided as follows:

(a) Guiding floor materials shall be provided for device than emit sound to guide visually impaired persons.

(b)The minimum width shall be 1500 mm.

(c) In case of level difference, slope ways shall be provided with a slope of 1:2

(d) Handrails shall be provided for ramps /slope ways.

53.9 Stairways
One of the stairways near the entrance/exit for the disabled shall have the following provisions:-

(a) The minimum width shall be 1350 mm.

(b) Height of riser shall not be more than 150 mm.

(c) Maximum number of riser on flight shall be 12

(d) Handrails shall be provided on both sides.

53.10 Lifts
Wherever lifts are required as per Regulations, provision for at least 1 lift shall be made for the wheel chair user with the following cage dimensions of lift recommended for passengers lifts of 13 persons capacity.

Clear internal depth -1100 mm
Clear internal width -2000 mm.
Entrance door width -900 mm.

(a) A handrail not less than 600 mm long at 900mm – 1000mm above floor level shall be fixed adjacent to the control panel

(b) The lift lobby shall be of minimum 1800mm x 1800mm or more.

(c) The time of an automatically closing door should be a minimum of 5 seconds and the closing speed should not exceed 0.25m/sec.

(d) The cage interior should be provided with a device that audibly indicates the floor the cage has reached and indicates that the cage door for entrance/exit is either open or closed.

53.11 Toilets

One special W.C. in a set of toilet shall be provided for the use of disabled with essential provision of wash basin near the entrances for the handicapped. The minimum size of a toilet shall be 1500 mm x 1750 mm. The minimum clear opening of the door shall be 900 mm and the door shall swing out. Suitable arrangement of vertical horizontal handrails with 50 mm clearance from wall shall be made in the toilet. The W.C. seat shall be 500 mm from the floor.

53.12 Drinking Water

Suitable provision of drinking water shall be made for the disabled near the special toilet provided for them.

53.13 Designing for Children

In the buildings meant for the pre-dominant use of the children, it will be necessary to suitably alter the height of the handrails and other fittings and fixtures etc.

CHAPTER – VI
Requirements of Group Development, Group Housing/Cluster Housing/Residential Enclaves and Row Housing

54. General Requirements

Such developments shall be considered where the site developed includes all amenities and facilities together with building constructions and are not disposed as open plots.

54.1 All Group Development, Group Housing/Cluster Housing applications shall in addition to the requirements under these Regulations, be accompanied by:

54.2 A Services and Utilities Plan as per standards for water supply system, drainage and storm water disposal system, sewerage system, rain water harvesting structures, and for other utilities.

54.3 A landscaping plan including rain water harvesting/water recycling details.

54.4 Parking & internal circulation plan along with common pool parking area plan, if any.

54.5 In case of housing in large plots or blocks, the proposals should be promoted with the immediate improvement of the accessibility of the site from the nearest main road by way of an approved Road Development Plan by the Executive Committee with a minimum width of 9m which should be implemented by the licensed developer within a period of three years.

54.6 All Group Housing/Group Development/Cluster housing/Residential Enclaves and row type development schemes shall be developed with complete infrastructure facilities and amenities as stated at 54.1 - 54.4 above.

55. Group Development & Group Housing

Group Housing are reckoned as Apartment blocks in two or more blocks. These could be high-rise or simple walk-up units. Group Development are reckoned as Building in two or more blocks in a campus or site.

55.1. The open spaces/setbacks for such type of development shall be as follows:

Table X

Height of building block	Distance to be maintained from periphery to building block	Distance between two blocks
Up to 3 floor	3 m	2 m
4 floors	4 m	3 m

55.2 Common amenities and facilities like shopping center, community hall or center/club house etc., are required to be provided in up to 5 % of the area and shall be planned and developed in cases where the units are above 50 in number and not be part of the residential blocks.

55.3 A through public access road of 9m width with 2-lane black-topped is to be developed on any one side at the periphery/as per suitability and feasibility for the convenience of accessibility of other sites and lands located in the development.

55.4 In case of blocks up to 12m height, access through pathways of 6m width branching out from the internal roads/loop road would be allowed. All internal roads and pathways shall be developed as per standards.

55.5 Minimum of 10% of site area shall be earmarked for organised open space and be utilized as greenery, tot-lot or soft landscaping, etc., and shall be provided over and above the mandatory open spaces. This space may be in one or more pockets.

56. Row type housing

56.1 Minimum and maximum site area
The minimum site area shall be 1000 sq.m while the maximum site area shall be 4000 sq.m.

56.2 Minimum size of individual plots for row houses: 50 sq.m

(i) Not more than 8 plots shall be developed in a row.

(ii) Separation between two blocks shall not be less than 6m, which may be an open space or an alley.

(iii) Only internal staircase would be allowed.

56.3 Minimum width of internal roads: 9m
Internal cul-de-sac road width of 6m with maximum length of 50m is allowed.

56.4 Minimum open space: 10 % of site area

56.5 Minimum setbacks: Front 3m; Rear 1.8m
The setbacks in a row can be interchangeable.

56.6 In case of very large projects involving more than 5 acres, common amenities and facilities like shopping center, community hall/club house etc., are required to be provided in 5% of the area.

57. Cluster Housing

57.1 Minimum site area: 1000 sq.m; **Maximum site area:** 4000 sq.m.

57.2 Minimum plot size for cluster house: 25 sq.m with maximum number of 20 houses in a cluster.

57.3 Minimum size of cluster open space: 36 sq.m with a minimum width of 6m.

57.4 Minimum access road to the Cluster Housing Complex: 9m.

57.5 Internal access may be through pedestrian paths of 6m.

57.6 Minimum space between two clusters: 6m. This may be utilized as a pathway/alley.
57.7 Building setbacks

No setbacks are needed for interior clusters as the lighting and ventilation is either from the central open space of cluster and the surrounding pedestrian pathway/ access road of the cluster. However, interior courtyards may be provided for larger plots and building areas to facilitate lighting and ventilation. For end clusters sides that are abutting peripheral thoroughfare roads, setbacks shall be as given in Table X.

58. Residential Enclaves

58.1 These would be allowed as gated-developments that are exclusive housing areas with common compound wall with access control through gates and having their own facilities and amenities. The housing units may comprise of row houses, semi-detached, detached or Apartment blocks or a mix or combination of the above. The building requirements would be as per the given type of housing.

58.2 Residential enclaves would be permitted only in those sites that give through access of minimum 9m peripheral road for the neighbouring plots or lands that are located in the interior. They would be governed by good design standards and not impinging on the overall accessibility and circulation network of the area.

58.3 Minimum size of site: 4000 sq m. **Maximum size of site:** 10.00 hectares in Towns and 5.00 hectares in other upcoming towns.

58.4 Size of plots and height permissible: as per type of housing and requirements as given above for the respective type of housing.

58.5 Minimum Common Open space: 10% of site area.

58.6 Building setbacks
These shall be as per type of housing & requirements given above for the said type of housing and as per Table X.

58.7 Internal Road requirements

(i) 9m to 18 m for main internal approach roads;

(ii) 9m for other internal roads and

(iii) 8m for cul-de-sacs roads between 50-100m length;

(iv) 9m for looped roads

CHAPTER – VII
Miscellaneous Provisions

59. Installation of Communication Towers

59.1 Definition
Communication tower shall include antennae fixtures, fabricated antenna, tower to install the telephone lines and transmission towers. This will not include the antennas installed for domestic purpose, namely television antennas or dish antennas.

59.2 Application for permission

59.2.1 Location
The telecommunication infrastructure shall be either placed on the building roof tops that are structurally viable or the ground or open space within the premises.

59.2.2 Type of structure:

(i) Steel fabricated tower or antennas on M.S. pole

(ii) Pre-fabricated shelters of fibre glass or P.V.C. on the building roof top/terrace for equipment.

(iii) Masonry Structure/Shelter on the ground for equipment.

(iv) D.G. Set with sound proof cover to reduce the noise level.

59.2.3 Requirement
Every applicant has to furnish the following:

(i) Obtain/procure the necessary permission from the "Standing Advisory Committee on Radio Frequency Allocation" (SACFA) issued by Ministry of Telecommunications.

(ii) Site plan in the scale of 1:200

(iii) Agreement with the owner of the land/building containing his consent along with proof of ownership including structural drawings of the building.

(iv) Drawing of tower with complete details including specifications of foundations and design parameters.

(v) Height of the tower along with its elevation.

(vi) In case the tower is in the vicinity or adjoining to high or low tension line then the distance from the same shall be clearly indicated in the drawings. NOC from the MeECL has to be furnished accordingly.

(vii) Produce the structural stability certificate from the registered structural engineer which shall be the liability of both parties i.e. the engineer and the company erecting the tower.

(viii) In case it is a Roof Top Tower (RTT), the applicant has to produce/submit approved buildings plans along with the structural safety certificate from the registered structural engineer that the building can take the additional load of the tower.

(ix) For Ground Based Tower (GBT), a soil test report has to be submitted.

(x) Indemnity bond to take care of any loss or injury due to accident caused by the tower (including a declaration to the effect that the application shall take special precaution for fire safety and lightning and he shall be solely responsible for paying all kinds of compensation and damages and would be responsible for ant civil or criminal case arising therefrom.

(xi) Mobile companies shall indicate the capacity of tower or antenna in megawatt.

(xii) In case the tower is proposed in residential areas or in the vicinity thereof or near public or semi-public buildings, No-objection Certificate (NOC) from owners of adjoining buildings and requisite stakeholders shall have to be obtained.

(xiii) No towers shall be permitted to be erected within 100m radius of schools, colleges, hospitals, nursing homes, religious institutions, lifeline buildings and the like. Antenna should not face hospitals nursing homes, religious institutions, lifeline buildings and the like and should be placed at a minimum of 3mts above the base.

(xiv) In case the mobile tower is proposed to be installed in the vicinity of any airport, No-objection Certificate (NOC) from the Airport authorities shall be submitted.

59.2.4 Projections

(i) No Pager and/or Telephone Tower shall project beyond the existing building envelop of the building on which it is erected in any direction.

(ii) The distance of the tower from the electric line or pole or tower thereof shall not be less than the height of tower plus requisite distance from respective high or low tension line.

59.2.5 Any other information/data required by the Executive Committee

59.3 Sharing of tower

The telecom operators may share the towers for fixing their respective antennas. The same are required to adhere to the prescribed technical requirements, so as to curtail multiplicity of towers as well as to optimize the use of the existing ones.

60. Gasoline (Motor Fuel) Filling Stations and Gasoline Filling-cum-Service Stations

60.1 Definitions

60.1.1 The term “Filling station” is a piece of retail business engaged in supplying and dispensing of Gasoline (Motor Fuel) and motor oil essential for the normal operation of automobiles.

60.1.2 The term “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 Gasoline and Motor oil the sales and services of tyres, 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.

60.2 Clearance of installation of the Petrol Pump under provisions of the Petroleum Act, 1934 read with Petroleum rule, 1973 rules 155 of the Petroleum Rule 1937 is to be sanctioned by the Concerned Authority.

60.3 No-objection Certificate (NOC) is to be obtained from Public Works Department for all proposals whether in the National Highway, State Highway etc. While No-objection Certificate (NOC) is issued, due consideration are to be given on factors like congestion of the locality, movement of vehicles traffic in the particular road etc.

60.4 Layout plans for installation of the facilities at the retail outlet such as underground tank, pipeline, dispensing pump. Sale room/office. drainage, toilets, electrical layout are to be approved by the Explosive Department, Government of India.

60.5 The distance to be kept from the dispensing pump of the three side i.e., side and rear should not be less than 15 meters distance from a residential house. The frontage should conform as per the Indian Road Congress 13 – 1967 (IRC – 13. 1967). For installation of Petrol Pump the recommended practice for location and layout of roadside, motor filling and motor fuel filling-cum-service station should conform as per the Indian road congress 12-1983 and 13-1967 (IRC – 12 – 1983), (IRC – 13 – 1967).

60.6 The following shall be applicable for locating the petrol pump cum service stations.

60.6.1 Minimum distance from the road intersections.

(a) For minor roads having less than 30m road width: 50 m.

(b) For major roads having road width 30m or more : 100 m.

60.6.2 The minimum distance of the property line of pump from the center line of the road should not be less than 15 meters on roads having less than 30m road width. In case of roads having 30m or more road width the road width or the road should be protected.

Plot Size

(a) Only filling stations 30m x 17m and small size 18m x 15m (for two and three wheelers)

(b) Filling-cum-service station minimum size 36m x 30m and maximum 45m x 33m.

(c) Frontage of the plot should not be less than 30m.

(d) Longer side of the plot should be the frontage.

60.6.4 Other Controls

60.6.4.1 Filling-cum-service station (size 30m x 36m x 45m)

i.	Ground coverage	:	20%
ii.	FAR	:	20
iii.	Max. Height	:	6m
iv.	Canopy Equivalent to permissible ground coverage within setback line.		
v.	Front Setback	:	Min. 6 mt.

60.6.4.2 Filling Station (size 30 mt. x 17 mt. and 18 mt. x 15 mt.)

i.	Ground coverage	:	10%
ii.	FAR	:	10
iii.	Max.Height	:	6 mt.
iv.	Canopy Equivalent to permissible ground coverage within setback line.		
v.	Front Setback	:	Min. 3m

60.6.5 Other Regulations

(i) Shall be acceptable to explosive/Fire Dept.
(ii)Ground coverage will include canopy area
(iii)Mezzanine if provided will be counted in FAR

60.7 Compressed Natural gas (CNG) Mother Station

(i)	Plot Size (Max.)	:	36m. x 30m.
(ii)	Maximum ground coverage	:	20%
(iii)	Maximum Height	:	45m. (single storey)
(iv)	Building Component Control room/office/Dispensing room Store, pantry and W.C.		

61. Environmental Graphics: Advertising Signs and Signages

61.1 The urban environment may be susceptible to confusion and chaos due to improper graphics, hoardings and advertisements. Therefore, the signage should be installed following requisite guidelines laid down keeping the functional, safety and aesthetic aspects in view. The scale of the project should also be considered for implementing signage design. In urban design/planning projects and landscape projects on a large scale, the following criteria should be followed for signs and outdoor display structures:

a) The aesthetic and harmonious development of the visual environment.
b) Signage for the handicapped at all grade changes, entry points to buildings and public conveniences and facilities. Braille strips used should be displayed not above 1.5 m height for the benefit of the visually impaired at all important nodes, entrances and routes. Ramps for the people on wheelchair should be highlighted with the appropriate international sign of the wheelchair. These need to be lighted adequately even for night time.

c) Environmental graphics should be creatively designed to cater to the basic function of information, identity and way finding, with the objective of improvement of urbanscape.
d) Safety aspects.
e) Protection of trees and other vegetation from harm due to signs.

61.2 Types Of Signs

a) Electric and illuminated signs (*see* 61.4);
b) Ground signs (*see* 61.5);
c) Roof signs (*see* 61.6);
d) *VERANDAH* signs (*see* 61.7);
e) Wall signs (*see* 61.8);
f) Projecting signs (*see* 61.9);
g) Marquee signs (*see* 61.10);
h) Sky signs (*see* 61.11); and
j) Miscellaneous and temporary signs (*see* 61.12).

61.3 General Requirements for All Signs

61.3.1 Loads

Every advertising sign shall be designed so as to withstand safely the wind, dead, seismic and other loads as set out in Part 6 ‘Structural Design, Section 1 Loads, Forces and Effects’ of the NBC.

61.3.2 Illumination

No sign shall be illuminated by methods other than electrical means and electrical devices and wiring shall be installed in accordance with the requirements of Part 8 ‘Building Services, Section 2 Electrical and Allied Installations’ of the NBC. In no case, shall any open spark or flame be used for display purposes unless specifically approved by the Executive Committee.

61.3.3 Design and Location of Advertising Signs
a) Sign should not obstruct any pedestrian movement, fire escape, door or window, opening used as a means for egress or fire fighting purposes.

b) No sign shall in any form or manner interfere with openings required for light and ventilation.

c) When possible signs should be gathered together into unified systems. Sign clutter should be avoided in the landscape.

d) Signs should be combined with lighting fixture to reduce unnecessary posts and for ease of illuminating the signs.

e) Information signs should be placed at natural gathering spots and included in the design of sight furniture.

f) Placement of sign should be avoided where they may conflict with pedestrian traffic.

g) Sign should be placed to allow safe pedestrian clearance vertically and laterally.

h) Braille strips may be placed along sign edges or raised letters may be used for readability for the blind and partially sighted.

j) No sign shall be attached in any way to a tree or shrub.

61.3.4 Use of Combustibles

61.3.4.1 ***Ornamental Features***
Wood or plastic or other materials of combustible characteristics similar to wood may be used for mouldings, cappings, nailing blocks, letters and latticing where permitted and for other purely ornamental features of signs.

61.3.4.2 ***Sign Facings***
Sign facings may be made of approved combustible materials provided the area of each face is not more than 10 m^2 and the wiring for electric lighting is entirely enclosed in metal conduit and installed with a clearance of not less than 5 cm from the facing material.

61.3.5 Damage or Defacement by Removal of Advertising Signs
Whenever any advertising sign is removed, whether in consequence of a notice or order under the Regulation or otherwise, any damage or defacement to the building or site on or from which such sign was displayed, shall be made good to the satisfaction of the Executive Committee.

61.3.6 Alteration to Ground Level
Whenever any alteration is made to the ground level adjacent to any advertising sign, the owner of the site on which sign is erected, shall be responsible for the alteration of the height of such sign so as to conform to the requirements of this Section.

61.3.7 Traffic Control Interference
No advertising sign shall be erected or maintained which interferes with or is likely to interfere with any sign or signal for the control of traffic.

61.3.7.1 No advertising sign shall be placed particularly in bends and curves so as to obstruct the view of traffic at intersecting streets.

61.3.8 Draining of Signs
Adequate provision for drainage shall be made in every advertising sign, where the possibility of collection of moisture exists.

61.3.9 Glass in Signs
All glass used in advertising signs, other than glass tubing used in gas discharge or similar signs, shall be of safety glass conforming to accepted standards [10-2(2)] of the NBC at least 3 mm thick. Glass panels in advertising signs shall not exceed 6 m^2 in area, each panel being securely fixed in the body of the sign independently of all other panels. Glass signs shall be properly protected from the possibility of damage by falling objects by the provisions of suitable protecting metal canopies, or by other approved means.

Use of for signs placed overhead.

61.3.10 Interference to Fire Hydrants
Advertising signs shall be so placed as not to obstruct the use of the hydrants or other fire fighting appliances.

61.3.11 Serving Devices
Ladders, platforms, hooks, rings and all other devices for the use of servicing personnel shall have safety devices and suitable design loadings (reference may also be made to Part 7 'Constructional Practices and Safety' of the NBC).

61.3.12 Animated Devices
Signs which contain moving section or ornaments shall have fail-safe provisions to prevent the section or ornaments from releasing and falling or shifting its centre of gravity more than 450 mm. The fail-safe device shall be in addition to the mechanism and its housing which operate the movable section or ornament. The fail-safe device shall be capable of supporting the full dead weight of the section or ornament when moving mechanism releases.

61.4 Electric Signs and Illuminated Signs

61.4.1 Material for Electric Signs
Every electric sign shall be constructed of noncombustible material except where the sign is purely a flood-lit sign.

61.4.2 Installation of Electric Signs and Illuminated Signs
Every electric sign and illuminated sign shall be installed in accordance with Part 8 'Building Services, Section 2 Electrical and Allied Installations'.

61.4.3 No illuminated sign in red, amber or green colour shall be erected or maintained within a horizontal distance of 10m of any illuminated traffic sign.

61.4.4 All advertising signs illuminated by light other than a white light at height of less than two storeys or 6 m above the footpath, whichever be the greater height, shall be suitably screened so as to satisfactorily prevent any interference with any sign or signal for the control of traffic.

61.4.5 Intense Illumination
No person shall erect any sign which is of such intense illumination as to disturb the residents in adjacent or nearby residential buildings. Notwithstanding any permission given for such erection, any such sign which after erection is, in the opinion of the Executive Committee, of such intense illumination as to disturb the occupants of adjacent or nearby buildings shall, on the order of the Executive Committee, be suitably altered or removed by the owner of the site concerned within such reasonable period as the Executive Committee may specify.

61.4.6 Hours of Operation
No electric sign, other than those necessary in the opinion of the Executive Committee in the interest of public amenity, health and safety, shall be operated between midnight and sunrise.

61.4.7 Flashing, Occulting and Animated
No flashing, occulting or animated advertising signs, the periodicity of which exceeds 30 flashes to the minute, shall be erected so that the lowest point of such signs is less than 9m above the ground level.

61.4.8 For illuminated signs in the vicinity of airports, the Directorate General of Civil Aviation should be consulted.

61.5 Ground Signs

61.5.1 Material
Every ground sign exceeding 6m in height together with frames, supports and braces shall be constructed of non-combustible material except as in 61.3.4.

61.5.2 Dimensions
No ground sign shall be erected to a height exceeding 9m above the ground. Lighting reflectors may extend beyond the top or face of the sign.

61.5.3 Supports and Anchorage
Every ground sign shall be firmly supported and anchored to the ground. Supports and anchors shall be of treated timber in accordance with good practice [10-2(3)] of the NBC, or metal treated for corrosion resistance or masonry or concrete.

61.5.4 Site Cleaning
The owner of any site on which a ground sign is erected shall be responsible for keeping such part of the site as is visible from the street, clean, sanitary, inoffensive and free of all obnoxious substances and unsightly conditions to the approval of the Executive Committee.

61.5.5 Obstruction to Traffic
No ground sign shall be erected so as to obstruct free access to or egress from any building.

61.5.6 Set Back
No ground sign shall be set nearer to the street line than the established building line.

61.5.7 Bottom Clearance
The bottom line of all ground signs shall be at least 0.6 m above the ground, but the intervening space may be filled with open lattice work or platform decorative trim.

61.5.8 Ground painted signs shall conform to the requirements of 61.3 and 61.4 where applicable.

61.6 Roof Signs

61.6.1 Material
Every roof sign together with its frames, supports and braces, shall be constructed of non-combustible material, except as in 61.3.4. Provision shall be made for electric grounding of all metallic parts; and where combustible materials are permitted in letters or other ornamental features, all wiring and tubing shall be kept free and insulated therefrom.

61.6.2 Dimensions
No roof sign shall exceed the following heights on buildings of heights:

Height of Building	*Height of Sign, Max*
Not exceeding four storeys or 15 m	2 m

61.6.3 Location
a) No roof sign shall be so placed on the roof of any building as to prevent free passage from one part of the roof to another.

b) No roof sign shall be placed on or over the roof of any building unless the entire roof construction is of non-combustible material.

61.6.4 Projection
No roof sign shall project beyond the existing building line of the building of which it is erected or shall extend beyond the roof in any direction.

61.6.5 Supports and Anchorage
Every roof sign shall be thoroughly secured and anchored to the building on or over which it is erected. All loads shall be safely distributed to the structural members of the building.

61.6.6 For roof signs near the airports the Directorate General of Civil Aviation should be consulted.

61.6.7 Painted roof signs shall conform to the requirements of 61.3 and 61.4, where applicable.

61.7 *Verandah* Signs

61.7.1 Material
Every verandah sign shall be constructed entirely of non-combustible material except as in 61.3.4.

61.7.2 Dimensions
No *VERANDAH* sign exceed 1 m in height. No *VERANDAH* sign hanging from a *VERANDAH* shall exceed 2.5 m in length and 50 mm in thickness, except that *VERANDAH* box signs measuring not more than 200 mm in thickness, measured between the principal faces of the sign and constructed entirely of metal wired glass may be erected.

61.7.3 Alignment
Every *VERANDAH* sign shall be set parallel to the building line, except that any such sign hanging from a *VERANDAH* shall be set at right angles to the building line.

61.7.4 Location
VERANDAH signs, other than hanging signs only, shall be placed in the following locations:
a) Immediately above the eaves of the *VERANDAH* roof in such a manner as not to project beyond the rear of the roof gutter;

b) Against but not above or below the *VERANDAH* parapet or balustrade provided such parapet or balustrade is solid and the sign does not project more than 20cm from the outside face of such parapet or balustrade; or

c) On the *VERANDAH* beams or parapets in the case of painted signs.

61.7.5 Height of Hanging *VERANDAH* Signs
Every *VERANDAH* sign hanging from a *VERANDAH* shall be fixed in such a manner that the lowest point of such sign is not less than 2.5 m above the pavement.

61.7.6 Projection
Except as provided for in 61.7.4, no *VERANDAH* sign shall extend outside the line of the *VERANDAH* to which it is attached.

61.8 Wall Signs

61.8.1 Material
Every wall sign exceeding 4 m^2 in area shall be constructed of non-combustible material except as in 61.3.4.

61.8.2 Dimensions
a) The total area of any wall sign shall not exceed 20 m^2 for every 15 m of building frontage to the street to which such sign faces; except that in the case of a wall sign, consisting only of the name of a theatre or cinema, the total area of such sign shall not exceed 200 m^2.

b) No wall sign which exceeds 30 m^2 in area shall be located on any wall not directly facing the road; provided that any such sign or signs shall not exceed 25 percent of the side wall area visible from the street.

61.8.3 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 thereto shall not project more than 7.5cm therefrom within a height of 2.5m measured from the level of such place.

61.8.4 Supports and Attachment
Every wall sign attached to walls shall be securely attached. 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.

61.9 Projecting Signs
61.9.1 Material
Every projecting sign and its support and framework shall be constructed entirely of non-combustible material.

61.9.2 Projection and Height
No projecting sign or any part of its supports or frame work shall project more than 2m beyond the building; however it shall not project beyond the plot line facing the street; when it projects into the street it shall be at clear height of 2.5m from the road (*see* Part 3 'Development Control Rules and General Building Requirements' of the NBC):

a) The axes of all projecting signs shall be at right angles to the main face of the building. Where a V-construction is employed for the faces, the base of the sign against the building shall not exceed the amount of the overall projection.

b) No projecting signs shall extend above the eaves of a roof or above the part of the building face to which it is attached.
c) The maximum height of a projecting sign shall be related to the height of the building to which it is attached in the following manners:

Sl No.	*Height of Building*	*Height of Sign, Max*
	Not exceeding four storeys or 15m	9 m

61.9.3 Supports and Attachment
Every projecting sign shall be securely attached to a building so that movement in any direction is prevented by corrosion-resistant metal brackets, rods, anchors, supports, chains or wire ropes so designed and arranged that half the number of such fixing devices may safely support the sign under all circumstances.

61.9.3.1 Staples or nails shall not be used to secure any projecting sign to any building.

61.9.4 Additional Loads
Projecting sign structures which could be used to support an individual on a ladder or other servicing device whether or not specifically designed for the servicing device shall be capable of supporting the anticipated additional load but in no case less than 500 kg concentrated horizontal load and 1 500 kg vertical concentrated load applied at the point of assumed loading or point of most eccentric loading. The building component to which the projecting sign is attached shall also be designed to support the additional loads.

61.10 Marquee Signs

61.10.1 Materials
Marquee signs shall be constructed entirely of metal or other approved non-combustible materials.

61.10..2 Height
Such sign shall not exceed 2 m in height nor shall they project below the fascia of the marquee nor lower than 2.5 m above the footpath.

61.10.3 Length
Marquee signs may extend the full length but in no case shall they project beyond the ends of the marquee.

61.11 Sky Signs

61.11.1 In the case of the sky signs, the regulations laid down by the Executive Committee concerned shall apply.

61.12 Temporary Advertising Signs, Travelling Circus Signs, Fair Signs and Decorations During Public Rejoicing

61.12.1 Types
None of the following advertising signs shall be erected or maintained, other than as temporary signs erected in accordance with 61.12.2:
a) Any advertising sign which is painted on or fixed on to or between the columns of a *VERANDAH*;

b) Any advertising sign which projects above or below any fascia, bearer, beam or balustrade of a *VERANDAH* or balcony;

c) Any advertising sign which is luminous or illuminated and which is fixed to any fascia bearer, beam or balustrade of any splayed or rounded corner of a *VERANDAH* or balcony;

d) Any streamer sign erected across a road;

e) Any sign not securely fixed so as to prevent the sign swinging from side to side;

f) Any advertising sign made of cloth, paper mache, or similar or like material but excluding licensed paper signs on hoardings or fences;

g) Any advertising sign on a plot used or intended to be used exclusively for residential purposes, other than a brass plate or board preferably not exceeding 600 mm x 450 mm in size, affixed to the fence or entrance door or gate of a dwelling, and in the case of a block of flats, affixed to the wall of the entrance hall or entrance door of any flat; and

h) Any sign on trees, rocks, hillsides and similar natural features.

61.12.2 Requirements for Temporary Signs

61.12.2.1 All temporary advertising, travelling circus and fair signs and decorations during public rejoicing shall be subject to the approval of the Executive Committee and shall be subjected to the approval of the Executive Committee and shall be erected so as not to obstruct any opening and to minimize fire risk.

61.12.2.2 The advertisement contained on any such sign shall pertain only to the business, industry or other pursuit conducted on or within the premises on which such sign is erected or maintained. Temporary advertising signs shall be removed as soon as torn or damaged and in any case within 14 days after erection unless extended.

61.12.2.3 The Executive Committee shall be empowered to order the immediate removal of any temporary advertising sign or decoration, where, in its opinion such action is necessary in the interests of public amenity and safety.

61.12.2.4 *Pole Signs*
Pole signs shall be constructed entirely of noncombustible materials and shall conform to the requirements for ground or roof signs as the case may be. Such signs may extend beyond the street line if they comply with the provisions for projecting signs.

61.12.2.5 *Banner and Cloth Signs*
Temporary signs and banners attached to or suspended from a building, constructed of cloth or other combustible material shall be strongly constructed and shall be securely attached to their supports. They shall be removed as soon as torn or damaged, and in no case later than 14 days after erection; except, that permits for temporary signs suspended from or attached to a canopy or marquee shall be limited to a period of 10 days.

61.12.2.6 *Maximum Size*
Temporary signs shall not exceed 10 m^2 in area.

61.12.2.7 *Projection*
Temporary signs of cloth and similar combustible construction shall not extend more than 300 mm over or into a street or other public space except that such signs when constructed without a frame may be supported flat against the face of a canopy or marquee or may be suspended from the lower fascia thereof but shall not extend closer to the footpath than 2.5 m.

61.12.2.8 *Special Permits*
All temporary banners suspended from building or hung on poles, which extend across streets or other public spaces shall be subject to special approval of the Executive Committee.

61.12.2.9 Bill boards set up by the Executive Committee shall be used for temporary signs, symbols, bills for entertainment, etc, so that other walls of the city are not defaced.

61.12.2.9.1 Bills for entertainment and other functions shall not be affixed on to building walls other than the bill boards. The organization responsible for such bills and posters shall be held responsible for any such defacement and non-removal of signs.

61.13 Permits

61.13.1 Application

61.13.1.1 *Conditions for Grant of Permit*
No sign shall be erected, altered or maintained without first obtaining a permit for the same from the Executive Committee and shall be subjected to the following conditions:

a) The written permission shall not be granted or renewed at any one time, for a period exceeding three years from the date of grant of such permission or renewal.

b) The written permission or the renewal granted by the Executive Committee shall become void:

1) if any sign or the part thereof falls either through an accident or any other causes;

2) if any addition is made except for the purpose of making it secure under the direction of the Executive Committee;

3) if any change is made in the sign or part thereof;

4) if any addition or alteration is made to the building or structure upon or over which the sign is erected and if such addition or alteration involves disturbance of the sign or any part thereof; and

5) if the building or structure upon or over which the sign is erected fixed or restrained becomes demolished or destroyed.

c) Light and ventilation of buildings, if any situated near the signs and hoardings shall not be obstructed in any way;

d) Advertisements displayed shall not be of any objectionable or obscene nature as per guidelines;

e) In the public interest the Executive Committee shall have the right to suspend the licence even before the expiry period, upon which the licencee shall remove the signs;

f) The licencee shall be responsible for the observance of all the rules and regulations laid down by the Executive Committee;

g) The signs should not mar the aesthetic beauty of the locality;

h) The signs other than pertaining to building shall not be permitted to come in front of buildings such as hospitals, educational institutions, public offices, museums, buildings devoted to religious worship and buildings of national importance;
j) Maintenance and inspection of advertising signs and their supports shall be as per guidelines;
k) No hoarding sign on the highways shall be put without the permission of the Executive Committee maintaining/incharge of flyovers, highways/ roads; and
m) In addition all signs shall conform to the general requirements given in the guidelines;
n) The signs shall not be nailed or tied to trees or any other woody vegetation.

61.13.1.2 Application for Licence or Permit and Required Drawings
Every person intending to erect, alter or display an advertising sign for which a permit or license is required, shall make application to the Executive Committee duly signed by the applicant and by the owner of the site upon which such sign is or is to be situated and shall include the following information:

a) Full specifications showing the length, height and weight of the sign, the location where it is to be erected, the manufacturer's name and address and where applicable, the number of lights and electrical details of the same.

b) Such form shall be accompanied by a location plan indicating the position of the sign on the site drawn to a scale of 1:500 and by full detail drawing drawn to a scale of 1:20 or an exact multiple thereof in ink or on prints including, if required by the Executive Committee, an elevation showing the sign in relation to the façade.

c) In the case of roof signs, projecting signs or ground signs in addition to the foregoing, the size of all members of supporting frameworks and anchorages, and, if required by the Executive Committee, the necessary design calculations shall be furnished with the application.

d) Any other particulars as may be desired by the Executive Committee covered in the guidelines.

e) In the case of sky signs, necessary information as desired by the Executive Committee may be supplied.

61.13.1.3 The Executive Committee may, on the receipt of an application for permit, either sanction or refuse such a permit or sanction with modifications as deemed necessary and shall communicate decision to the applicant. If within 30 days or receiving an application for a permit the Executive Committee fails to intimate in writing to the applicant, the permit along with the plans shall be deemed as sanctioned.

61.13.1.4 When a sign has to be altered, information only on such plans and statements, as may be necessary, shall be included in the form. However, the changing of movable parts of an approved sign that is designed for such changes, shall not be deemed an alteration provided the conditions of the original approval and the requirements of this part are not violated.

61.13.1.5 Existing Advertising Signs
Advertising signs in existence at the date of promulgation of the Regulation and covered by a valid license or permit issued by the Executive Committee shall not require to be licensed under the Regulation until such license or permit has expired, provided it is maintained in a good and safe condition.

61.13.1.6 For advertising signs application shall be submitted through a structural engineer along with necessary drawings and structural calculations. The wind load taken in the design calculations shall be in accordance with Part 4 ‘Structural Design, Section 1 Loads, Forces and Effects’.

61.13.2 Permit Exemptions

61.13.2.1 No permit shall be required for signs and outdoor display structures of the following types:

a) If the signs are exhibited within the window of any building provided it does not affect light and ventilation of the building.

b) If it relates to the trade or business carried on within the land or building upon which such advertisement is exhibited or to any sale, entertainment or meeting or lettering of such land or building or any effects therein; or to the trade or business carried on by the owner of any tramcar, omnibus or other vehicle upon which such advertisements is exhibited, *provided it is not more than* 1.2 m^2.

c) In addition no permission shall be required for the signs covered in **61.13.2.2 to 61.13.2.5**. Such exemptions, however shall not construed to relieve the owner of the sign from the responsibility of erection and maintenance in compliance with the Code.

61.13.2.2 Wall Signs
The wall signs listed in 61.13.2.2.1 to 16.13.2.2.3 shall not require a permit.

61.13.2.2.1 Store signs
Non-illuminated signs erected over a show window or over the door of a store or business establishment which announce the name of the proprietor and the nature of the business conducted therein; the sign shall not be more than 1 m in height and the width of the business establishment.

61.13.2.2.2 Government building signs
Signs erected on a municipal, state or central government building which announce the name, nature of the occupancy and information.

61.13.2.2.3 Name plates
Any wall sign erected on a building or structure indicating the name of the occupant of building, which is not more than 0.5 m^2 in area.

61.13.2.3 Ground Signs

61.13.2.3.1 Transit directions
The erection or maintenance of a sign designating the location of a transit line, a rail track, station or other public carrier when not more than 0.5 m^2 in area.

61.13.2.3.2 Highway Signs
In general, advertisements of the following classes are permissible without permission though these should reasonably conform to the principles set out in the NBC:

***Class (1) Functional Advertisements*:**
a) Official warning signs, traffic directions, sign posting and notices or advertisements posted or displayed by or under the directions of any public or court officer in the performance of his official or directed duties.

b) Direction signs to places of public amenity, such as petrol filling stations, hospitals, firstaid posts, police stations and fire stations.

c) Signs relating solely to any city, town, village or historic place, shrine, place of tourist interest
d) Signs, notices, etc, erected by the Defence Department for information of members of the armed forces or the public.
e) Signs restricting trespass of property, limited to 0.2 m^2 in area or less.
f) Signs or notices, 0.2 m^2 in area or less, placed so as to show direction to a residence and planted sufficiently away from the carriageway.

Class (2) Advertisements Relating to the Premises on which these are Displayed:
a) Advertisements for the purpose of identification, direction or warning with respect to the land or building on which they are displayed, provided not exceeding 0.2 m^2 in area in the case of any such advertisement.

b) Advertisements relating to any person, partnership or company separately carrying on a profession, business trade at the premises where any such advertisement is displayed; limited to one advertisement not exceeding 0.3 m^2 in area in respect of each such person, partnership or company.

c) Advertisements relating to any institution of a religious, educational, cultural, recreational, medical or similar character or any hotel, public house, dark bungalow, block of flats, club, boarding house or hostel situated on the land on which any such advertisement is displayed; limited to one advertisement not exceeding 1.2 m^2 in area in respect of each such person, partnership or company.

Class (3) Advertisements of Temporary Nature
a) Advertisements relating to the sale or letting of the land on which they displayed; limited in respect of each such sale or letting to one advertisement not exceeding 2 m^2 in area.

b) Advertisements announcing sale of goods or livestock, and displayed on the land where such goods or livestock are situated or where such sale is held, limited to one advertisement not exceeding 1.2 m^2 in area.
c) Advertisements relating to the carrying out of building or similar work on the land on which they displayed exceeding 2 m^2 in area.

d) Advertisements announcing any local event of a religious, educational, cultural, political, social or recreational character, not being an activity promoted or carried on for commercial purposes; limited to a display of advertisements occupying an area not exceeding 0.6 m^2 on any premises.

61.13.2.4 Temporary Signs

61.13.2.4.1 Construction site signs

Construction signs, engineers' and architects' signs and other similar signs which may be authorized by the Executive Committee in connection with construction operations (*see* Table 1).

61.13.2.4.2 Special displays signs

Special decorative displays used for holidays, public demonstrations or promotion of civic welfare or charitable purposes, on which there is no commercial advertising, provided that the Executive Committee is not held responsible for any resulting damage

61.13.2.5 See Table XI below

Table Advertising Signs for Which No Permit or Licence is Required

Class (with Sample)		Area of Each Separate Sign (or Aggregate)	Maximum Height Above Ground Floor Level to Top of Sign	Illumination Provided	Description of Sign		Remarks
					Number Permitted	Maximum Dimension of Letters, Symbols, etc	
(1)		(2)	(3)	(4)	(5)	(6)	(7)
1) Functional signs of certain authorities statutory undertakings, public transport undertakings, and fire rigades, etc	BUS STATION	As may be reasonably required for the safe and efficient performance of the function	As stated in col 2	As stated in col 2	As stated in col 2	As stated in col 2	
2) Miscellaneous signs relating to premises on which they are displayed	X-RAY UNIT	Not more than 4 m^2	Not more than 5 m (in area of special control 4 m)	Only to indicate that medical or similar services or supplies are available on premises where advertisement is displayed*	Any number	Not more than 750 mm (in area of special control 300 mm)	
a) Identification, direction, or warning	MIND THE STEP						
b) Person partnership or company carrying profession business, or trade; name or private person	CHAWLA & CO. LTD. S. BOSE	Not more than 0.3 m^2 each	Not more than 5 m (in area of special control 4 m)	Only to indicate that medical or similar services or supplies are available on premises where advertisement is displayed*	One at each entrance	Not more than 750 mm (in area of special control 300 mm)	
c) Relating to any institution of a religious, educational, cultural, or medical character; name of building or premises	COLLEGE OF COMMERCE XYZ FLATS	Not more than 1.2 m^2 each	Not more than 5 m (in area of special control 4 m)	Only to indicate that medical or similar services or supplies are available on premises where advertisement is displayed*	One on each frontage	Not more than 750 mm (in area of special control 300 mm)	
3) Temporary signs (cloth banners)	HOUSE FOR SALE	Not more than 2.4 m^2 (ratio of width to depth 2:1) in aggregate area. No sign to project more than 1 m when displayed on a building (within the site)	Not more than 5 m (in area of special control 4 m)	None	Any number but aggregate area not to exceed that given in col 2	Not more than 750 mm (in area of special control 300 mm)	Shall not be displayed earlier than 28 days before the sale or other matter is due to start and shall be removed within 14 days after the conclusion of such sale or matter
a) Signs relating to the sale or letting off the land (within the site of the building) on which they are displayed							

Table — *Concluded*

Class (with Sample)		Area of Each Separate Sign (or Aggregate)	Maximum Height Above Ground Floor Level to Top of Sign	Illumination Provided	Description of Sign		Remarks
					Number Permitted	Maximum Dimension of Letters, Symbols, etc	
(1)		(2)	(3)	(4)	(5)	(6)	(7)
b) Signs relating to the carrying out of building or similar operations on the land where sign is displayed	THIS FACTORY IS BEING ERECTED BY XYZ CONSTRUCTION CO. Building and Engineering Contractor	Not more than 4 m^2	Not more than 5 m (in area of special control 4 m)	None	One for each road frontage for each ontractor or sub-contractor	Not more than 750 mm (in area of special control 300 mm)	May be displayed only while such works are in progress
c) Signs announcing any local event in connection with an activity promoted for non-commercial purposes by various local organizations	DIWALI MELA	Not more than 1.5 m^2 (in aggregate area 4 m)	Not more than 5 m (in area of special control 4 m)	None	Any number but aggregate area not to exceed that given in col 2 on any premises	Not more than 750 mm (in area of special control 300 mm)	Shall not be displayed earlier than 28 days before the event is due to start and shall be removed within 14 days of its conclusion
d) Signs and business premises for areas of special control, signs on business premises with reference to the business, the goods sold, or the services provided, etc, in these premises and the name and qualifications of the person carrying on such activity	XYZQR BANK	Not to exceed one-twelfth of area of each face up to a height of 4 m	Not more than 4 m	Only to indicate that medical or similar services or supplies are available where advertisement is displayed*	Any number but aggregate area not to exceed that given in col 2	Not more than 300 mm	Area to be computed as if the advertisement were laid flat against the face of the building

* or where connected with danger.

61.13.3 Unsafe and Unlawful Signs

61.13.3.1 Notice of Unsafe and Unlawful Signs
When any sign becomes insecure, or in danger of falling, or otherwise unsafe, or if any sign shall be unlawfully installed, erected or maintained in violation of any of the provisions of the Code, the owner thereof, or the person or firm maintaining the same, shall upon written notice of the Executive Committee, forthwith in the case of immediate danger and in any case within not more than three days, make such sign conform to the provisions of this part or shall remove it. If within three days the order is not complied with, the Executive Committee may remove such sign at the expense of the owner.

61.13.3.1.1 Notwithstanding the above, it shall be the responsibility of the owner to ensure the safety of the advertising signs, even without a reference from the Executive Committee. The owner shall also ensure to remove the remnant structures of the abandoned sign.

61.13.3.2 The following signs may not be permitted under any circumstances:
Any sign which in the opinion of the Executive Committee is an obscene, repulsive, revolting, or objectionable character or prejudicial to the municipality or savouring political propaganda or of a nature calculated to produce pernicious or injurious effect on public or any particular class of persons, or is displayed in such a place, in such a manner or by any such means as, in the opinion of the Executive Committee, could be likely to
affect injuriously the amenities of, or to disfigure any neighbourhood.

61.13.4 Area of Special Control

61.13.4.1 Whenever in the opinion of the Executive Committee it is likely that any advertising device otherwise permitted in terms of the Code may affect injuriously or disfigure any particular area within the jurisdiction of the Executive Committee it may proclaim such area as an area of special control. Parks and land for public use may also be included as areas of special control.

61.13.4.2 Subject to the provisions of **61.13.4.1** within such area, the erection and display of any advertising sign shall be prohibited or restricted in any manner deemed necessary by the Executive Committee. The Executive Committee shall publish its intention of proclaiming such an area in one or more newspapers circulating in the area of jurisdiction of the Executive Committee. Any owner of property within such area who may feel aggrieved by such proclamation may appeal within one month from such publication against proclamation of such an area to the Executive Committee whose decision shall be final.

61.13.4.3 The wording on any *VERANDAH* sign, permitted by the Executive Committee, in any area of special control, shall be restricted to the name of the proprietor or firm occupying the premises, the name of the building or institution, the general business or trade carried on, such as 'JEWELLER', 'CAFÉ', 'DANCING', or information regarding the location of the building entrance, box office or regarding the theatre programme or similar information. No *VERANDAH* sign in any area of special control shall advertise any particular article of merchandise nor shall any such sign refer to price or reduction in price.

61.13.4.3.1 Normally no other advertising sign shall, except as for **61.13.4.3**, be within a distance of 30m from the area of special control.

61.13.5 Prohibition of Advertising Signs on Certain Sites
Where the Executive Committee is of the opinion that any site is unsuitable for display of advertising signs by virtue of the general characteristics of the locality in regard to historic, architectural, cultural or similar interest, or by virtue of its position, the display of such signs is likely to affect in any way the safety of any form of transport, erection of advertising signs on such a site shall be prohibited.

61.13.5.1 Highways and Roads
In general the following advertisements should not be permitted:
a) At or within 100 m of any road junction, bridge or railway crossing or another crossing. In urban areas, this distance may be reduced to 50 m, provided there is no conflict with the requirements stated further on;
NOTE — The safe stopping distance for a vehicle travelling at a speed of 50 km/h is 60 m. This should be the 'uninfluenced distance' for a driver approaching a junction. Assuming that 3 seconds is the time during which the influence of an advertisement board persists, the distance travelled in this time will be about 40 m. The sign should, therefore, be more than 100 m away from the junction. Hence 100 m is suggested.
b) In such manner and at such places as to obstruct or interfere with the visibility of approaching, merging or intersecting traffic;

c) Within 10 m of the edge of a carriageway;
NOTE — A distance of 10 m may be taken as the normal minimum setback from the edge of the carriageway, the maximum area of the advertisement being 0.3 m^2 for every metre of setback.

d) Within 50 m along the road, of any sign board erected for the regulation of traffic under the orders of a Public Authority, such as a Traffic Authority, a Public Transport Authority, or a Local Authority;

e) In such a form as will obscure or hinder interpretation of any sign, signal or other device erected for traffic control by the Public Authorities. For instance, the advertisements should not imitate or resemble, in colour or shape, the standard legal traffic signs, or employ such words as 'STOP' in the same manner as used on traffic signs;

f) On boards, placards, cloth banners or sheets (except traffic signs) hung across a road as they distract the attention of driver and are, therefore, hazardous;
NOTE — Any advertisement allowed on the sides of a foot over bridge or flyover across the carriage-ways shall be restricted in size and shape such that no part of the advertisement board projects beyond the top, bottom and sides of the parapet of foot over bridge or flyover.

g) In such form as will obstruct the path of pedestrians and hinder their visibility at crossings;

h) Within right-of-way of the road; and

i) When these will affect local amenity.

61.13.5.2 Illuminated advertisements of the following description are objectionable from the angle or traffic safety and should not be allowed:
a) Advertisements which contain, include or are illuminated by any flashing, intermittent or moving light or lights except those giving public service information, such as time, temperature, weather or date;

b) Illuminated advertisements of such intensity or brilliance as to cause glare or impair vision of the driver or pedestrians, or which otherwise interfere with any operations of driving; and

c) Advertisements illuminated in such a way as to obscure or diminish effectiveness of any official sign, device or signal.

62. Landscape Planning & Waste Disposal

62.1 Protection of Landscape during Construction
Development projects involve disturbance to the existing soil conditions, removal of existing trees and overall change in the microclimate and drainage pattern. Measures to minimize hazardous effects should be put into effect as explained below.

62.2 Pre-Construction Measures
Measures for the prevention of soil erosion, sediment control and management of storm water shall be implemented as given in **62.2.1** to **62.2.5**.

62.2.1 Timing of Construction
Construction work and erosion control applications shall be scheduled and sequenced during dry weather periods when the potential for erosion is the lowest. Slope protection techniques to control erosion shall be used when construction during wet season is unavoidable. Sedimentation collection systems, drainage systems, and runoff diversion devices shall be installed before construction activity. The Landscape Architect/Architect/Engineer-in-charge shall monitor the site conditions and progress of work and schedule appropriate timing and sequencing of construction.

62.2.2 Preservation of Existing Vegetation

62.2.2.1 Protection of existing vegetation (including trees, shrubs, grasses and other plants) where possible, by preventing disturbance or damage to specified areas during construction is recommended. This practice minimizes the amount of bare soil exposed to erosive forces. All existing vegetation shall be marked on a site survey plan. The landscape plan should indicate trees, which have been preserved, and also those, which had to be transplanted or removed clearly differentiating between these three categories.

62.2.2.2 Trees retained on the project site shall be protected during the construction period by following measures:

a) Damage to roots shall be prevented during trenching, placing backfill, driving or parking heavy equipment, dumping of trash, oil, paint, and other materials detrimental to plant health by restricting these activities to outside the area of the canopy of the tree.

b) Trees will not be used for support; their trunks shall not be damaged by cutting and carving or by nailing posters, advertisements or other material.

c) Lighting of fires or carrying out heat or gas emitting construction activity within the ground, covered by canopy of the tree shall not be permitted.

d) Young trees or saplings identified for preservation (height less than 2.00 m, 0.10 m trunk girth at 1.00 m height from finish ground, 2.00 m crown diameter) within the construction site have to be protected using tree guards of approved specification.

e) Existing drainage patterns through or into any preservation area shall not be modified unless specifically directed by the Landscape Architect/Architect/Engineer-in-charge.

f) Existing grades shall be maintained around existing vegetation and lowering or raising the levels around the vegetation is not allowed unless specifically directed by the Landscape Architect/Architect/Engineer-in-charge.

g) Maintenance activities shall be performed as needed to ensure that the vegetation remains healthy.

h) The preserved vegetated area shall be inspected by the Landscape Architect/Architect/Engineer-in-charge at regular intervals so that they remain undisturbed. The date of inspection, type of maintenance or restorative action followed shall be recorded in the logbook.

62.2.3 Staging Areas
Measures shall be followed for collecting runoff from construction areas and material storage sites; diverting water flow away from such polluted areas, so that pollutants do not mix with storm water runoff from undisturbed areas. Temporary drainage channels, perimeter dike/swale, etc shall be constructed to carry the pollutant-laden water directly to treatment device or facility. The plan shall indicate how the above is accomplished on site, well in advance of the commencing of the construction activity.

62.2.4 Preservation of Topsoil
Topsoil removal and preservation shall be mandatory for development projects larger than 1.00 hectare. Topsoil shall be stripped to a depth of 200 mm from areas proposed to be occupied by buildings, roads, paved areas and external services. Topsoil is rich in organic content and is essential to establish new vegetation. It shall be stockpiled to a height of 400 mm in designated areas and shall be re-applied to site during plantation of the proposed vegetation. Topsoil shall be separated from sub-soil debris and stones larger than 50 mm diameter. The stored topsoil may be used as finished grade for planting areas.

62.2.5 Spill Prevention and Control
Spill prevention and control plans shall be made, clearly stating measures to stop the source of the spill, to contain the spill, to dispose the contaminated material and hazardous wastes, and stating designation of personnel trained to prevent and control spills. Hazardous wastes include pesticides, paints, cleaners, petroleum products, fertilizers and solvents.

62.3 Measures During Construction
During construction soil becomes unconsolidated due to removal of stabilizing material such as vegetation and disturbance of stabilized existing grade resulting in loss of topsoil and also deposition in undesirable places. A soil erosion and sedimentation control plan to be prepared prior to construction. The soil erosion, sediment control and storm water practices should be considered whilst construction is proceeding, in accordance with **62.2.1** to **62.2.4**.

62.3.1 Sedimentation Basin
A temporary dam or basin at the lowest point of the site has to be constructed for collecting, trapping and storing sediment produced by the construction activities, together with a flow detention facility for reducing peak runoff rates. This would allow most of the sediments to settle before the runoff is directed towards the outfall.

62.3.2 Contour Trenching
Contour trenching is an earth embankment or ridge-and-channel arrangement constructed parallel to the contours along the face of the slope at regular intervals on long and steep slopes (in sloping areas with slopes greater than 10 percent) (*see* Fig. 1). They are used for reducing runoff velocity, increasing the distance of overland runoff flow, and to hold moisture and minimize sediment loading of surface runoff. Vegetative cover of tree and native grasses in the channels may be planted to stabilize the slopes and reduce erosion.

62.3.3 Mulching
Mulching shall be used with seeding and planting in steep slope areas (slopes greater than 33 percent) that are prone to heavy erosion. Netting or anchoring shall be used to hold it in place. Other surface runoff control measures like contour terracing to break up concentrated flows shall be installed prior to seeding and mulching. Materials such as straw, grass, grass hay and compost shall be placed on or incorporated into the soil surface. In addition to stabilizing soils, mulching will reduce the storm water runoff over an area. Together with seeding or planting, mulching aids plant growth by holding the seed, fertilizers and topsoil in place. It retains moisture and insulates the soil against extreme temperatures.

62.3.4 Geo-grids
A deformed or non-deformed netlike polymeric material used with foundation, soil, rock, earth or any other geo-technical engineering-related material as an integral part of the human-made project structure or system, called geo-grids may be used as control measure. On filling with lightly compacted soil or fine aggregate, a monolithic structure is created providing an effective means of confinement for unconsolidated materials within the cells and preventing their movement even on steep slopes. If required the area can then be seeded to maintain 'green' environment. The junctions have a central opening through which water can permeate ensuring that organic material receives moisture for rapid growth.

62.4 Soil and Water Conservation
The soil conservation, sediment control and storm water management practices as given in 62.4.1 to 62.4.3 shall be followed after construction is completed.

62.4.1 Vegetative Measures
The vegetative measures shall include the following:

62.4.1.1 Topsoil Laying
This includes the placement of topsoil or other suitable plant material over disturbed lands to provide suitable soil medium for vegetative growth. Topsoil laying shall involve replacing fertile topsoils that were stripped and stockpiled during earlier site development activities; the laid soil shall be stabilized before the next monsoon by planting grass, shrubs and trees.

The following guidelines shall apply to the placement of topsoil:

a) The existing or established grade of sub-soil should be maintained.

b) A *p*H of 6.0 to 7.5 and organic content of not less than 1.5 percent by mass is recommended for topsoil. Where *p*H is less than 6.0, lime shall be applied to adjust *p*H to 6.5 or higher up to 7.5. Any soils having soluble salt content greater than 500 parts per million shall not be used.

c) Prior to spreading the topsoil, the sub-grade shall be loosened to a depth of 50 mm to permit bonding. Topsoil shall be spread uniformly at a minimum compacted depth of 50 mm on grade of 1:3 or steeper slopes; a minimum depth of 100 mm on shallower slopes is essential. A depth of 300 mm is preferred on relatively flatter land.

62.4.1.2 Planting/Vegetation Cover
The most effective way to prevent soil erosion, sedimentation and to stabilize disturbed and undisturbed land is through the provision of vegetative cover by effective planting practices. The foliage and roots of plants provide dust control and a reduction in erosion potential by increasing the infiltration, trapping sediment, stabilizing soil, and dissipating the energy of hard rain. Temporary seeding shall be used in areas disturbed after rough grading to provide soil protection until final cover is established. Permanent seeding/planting is used in buffer areas, vegetated swales and steep slopes. The vegetative cover also increases the percolation of rain-water thereby increasing the ground water recharge.

62.4.1.2.1 Planting for Shelter and Soil Conservation
The use of vegetation for controlling wind is widely recognized as an effective way of conserving soil and reducing erosion by wind. Vegetation may therefore be used for modifying the microclimate, by obstructing, guiding, deflecting or filtering wind current. Vegetation areas designed to fulfill these general functions are usually classified as windbreakers and shelterbelts. Windbreaker is grown protective planting around gardens and orchards. Windbreakers generally consist of single or double row of trees. Shelterbelt provides an extensive barrier of trees with several rows of trees. Plant species are chosen with particular regard to their physical and growth characteristics, and their effectiveness in achieving the desired results. Both windbreakers and shelterbelts have considerable visual impact in the landscape in which they are situated, they therefore need to be designed so that they make a positive visual and aesthetic contribution to their environment.

62.4.1.2.2 Air Pollution Control by Plants

Air pollution may be caused by areas or point sources such as cities, industrial areas, factories or by linear sources such as highways. Vegetation buffers can minimize the build-up of pollution levels in urban areas, by acting as pollution sinks. Studies have established that air pollution, smoke and sulphur dioxide leads to an exacerbation of chronic respiratory diseases and they are linked to lung cancer, pnemonia, tuberculosis, chest disease in children, stomach cancer and cardiovascular diseases. Lead from vehicle exhausts may have an adverse effect on mental health of children, asbestos from disintegrating clutch and brake linings has been considered as a causal factor in lung cancer.

62.4.2 Storm Water Management and Filtration Techniques

The surface water flow is increased in urban areas due to predominance of hard surfaces. Storm water management techniques assure conservation of water thereby increasing the ground water recharge. Filters facilitate draining pollutants out from surface water runoff through straining before discharge into the drainage way.

62.5 Paved Surfaces in External Areas

The paved areas that are used for movement of vehicles, pedestrians, and wheel chair users in outdoor environment have to be designed to facilitate easy accessibility, with well drained surface, and good visual clues achieved with varied colour and texture of finishing materials. The following guidelines may be applied for the design of paved outdoor spaces:

a) Roads should provide clear access to fire fighting vehicles, ambulance, sanitation vehicles, etc and also allow safe movement for vehicles, pedestrians and wheel chair users.

b) Kerbs are required on all roads to adequately control drainage within the road, prevent moisture from entering the sub-grade, separate the road from the pedestrian area, and provide adequate lateral support for the pavement structure.

c) Pedestrian circulation path consists of sidewalks, wheelchair ramp, and landings. Pathways of minimum width 1.50 m are required along the length of road for any public or private building where pedestrian traffic is excepted.

d) Pathway should be physically separated by means of kerb, graded separation, barrier, railing, or other means. The cross slope of sidewalk will not exceed two percent. The longitudinal slope of path should not exceed 1 in 20, unless the longitudinal slope of the road exceeds this maximum, in that case the standards that conform to a ramp should be applied.

e) Benches, shelters, poles, signs, bus stops, etc should be located on edge of the sidewalk with clear minimum width of 1.20 m for circulation path.

f) All ramps should have minimum width of 1.20 m, excluding edge protection. The cross slope of ramp should not exceed 1 in 50. And longitudinal slope of ramp should not exceed 1 in 12. All ramps should have an unobstructed level landing both at top and bottom of the ramp. The landing should have the minimum width as the ramp. The landing should be minimum 1.50 m in length. Any ramp beside the road should be located in such a way so that vehicles cannot park blocking the access.

g) Handrail would be required for any ramp with greater vertical height than 300 mm to prevent pedestrians and wheelchair users slipping from the ramp. The height of the top handrail should be 900 mm from the top surface of the ramp. The ramp surface should be rough finished. All ramp and landing should be designed so that water does not collect on the surface of the ramp or landing.

h) Stone not less than 40 mm in thickness should be used as paving finish in external areas. Adequate slope and drainage facility to be considered for all external paved surface integrating it with the pavement design.

j) Smooth finish is not recommended for external areas except to convey any design concept.
k) Change in levels and steps may be depicted in different texture or colour as a visual clue.

62.6 Street Furniture
The design elements for outdoor spaces may be classified under the following categories:
a) *Pavement and other pedestrian movement spaces, covering*
1) Footpath with heavy pedestrian traffic,
2) Footpath with light pedestrian traffic,
3) Plaza and public assembly spaces,
4) Kerb to footpath, and
5) Steps and ramps.

b) *Parking and vehicular movement corridor, covering*
1) Parking unit,
2) Median and road divider,
3) Road marking, and
4) Speed breaker.

c) *Traffic management units, covering*
1) Bollards,
2) Barriers,
3) Crash guard,
4) Gate/Access control,
5) Vehicular height restrictors, and
6) Traffic separators.

d) *Outdoor public conveniences, covering*
1) Seating,
2) Drinking fountains, and
3) Toilet/Wash rooms.
e) *Shelter and kiosks, covering*
1) Bus shelters,
2) Police booth,
3) Telephone booth,
4) Milk booth/Food stall,
5) Florist,
6) Information desk, and
7) Snack and coffee stall.

f) *Outdoor illumination, covering*
1) Street light,
2) Facade light, and
3) Bollard light.

g) *Tree protection units, covering*
1) Tree guard,
2) Tree grate, and
3) Planter.

h) *Garbage collection units, covering*
1) Litter bin, and
2) Spittoons.

j) *Service utilities, relating to*
1) Water supply network,

2) Storm water network,
3) Sewerage network,
4) Electrical network,
5) Telephone lines,
6) Cable e-net, and
7) Gas.

k) *Display and Signage*

Location of the street furniture has to coordinate with the traffic flow pattern of vehicles and pedestrians and external services.

62.7 Waste Disposal

62.7.1 Special Wastes

62.7.1.1 General

These are wastes having characteristics which may be detrimental to the pipes in which it is disposed as well as to the persons handling it. Such wastes used in a building need to be specially identified and a suitable and safe method of its disposal installed to ensure that the piping system is not corroded nor the health and safety of the occupants is affected in any way. Whenever the occupant or the user of any wastes is unaware of the dangers of the consequences of disposing the waste, he shall be made aware of the dangers of his action along with providing suitable warning and instruction for correct disposal be provided to him. Piping system for all special wastes should be separate and independent for each type of waste and should not be connected to the building drainage system. Other applicable provisions for installation of soil and waste pipe system shall be however be followed.

62.7.1.2 Laboratory wastes

A study of the possible chemical and corrosive and toxic properties of wastes handled and disposed off in a laboratory need to be ascertained in advance. The relevant statutory rules and regulation regarding the method of disposal of strong and objectionable wastes shall be followed. All sinks, receptacles, traps, pipes, fittings and joints shall of materials resistant to the liquids disposed off in the system. In laboratories for educational, research and medical institutions, handling mildly corrosive and toxic wastes, they may be neutralized in chambers using appropriate neutralizing agents. The chamber shall be provided with chambers at inlet and outlet for collecting samples of the incoming and outgoing waste for monitoring its characteristics.

62.7.1.3 Infected wastes

Infected liquid wastes are generated in hospitals from patient excreta; operation theatres; laboratories testing samples of stools, urine, blood, flesh; etc which shall not be disposed off into the drainage system. Such waste shall be collected separately and pre-treated before disposal into the building drainage system. Soiled and linen from infectious patients needs to be collected from the respective areas of the hospital in separate linen bins and pre-washed and sterilized in the laundry before final wash in the hospital laundry. Liquid wastes from the washing operations shall be neutralized to prevent any cross contamination before disposal in the building's drainage system.

62.7.1.4 Research laboratory wastes

Research laboratories conducting research in all areas of science and technology, for example chemical industry, pharmacy, metallurgy, bio-sciences, agriculture, atomic energy, medicine, etc, shall follow the established procedures laid down by statutory bodies to handle, treat and dispose wastes which are highly toxic, corrosive, infectious, inflammable, explosive and having bacterial cultures, complex organic and inorganic chemicals. Such wastes shall not be disposed off in a building drainage system or the city sewerage system unless they are pre-treated and meet the disposal criteria in accordance with the relevant rules/regulations.

62.7.2 Grease Traps

Oil and grease is found in wastes generated from kitchens in hotels, industrial canteens, restaurant, butcheries, some laboratories and manufacturing units having a high content of oil and greases in their final waste. Waste exceeding temperature of 600 C should not be allowed in the grease trap. When so encountered it may be allowed to cool in a holding chamber before entering the grease trap.
Oil and greases tend to solidify as they cool within the drainage system. The solidified matter clogs the drains and the other matter in the waste stick to it due to the adhesion properties of the grease. Oil and greases are lighter than water and tend to float on the top of the waste water. Grease traps shall be installed in building having the above types of wastes. In principle the grease laden water is allowed to retain in a grease trap which enables any solids to be settled or separated for manual disposal. The retention time allows the incoming waste to cool and allow the grease to solidify. The clear waste is then allowed to discharge into the building's drainage system.

62.7.3 Oil Interceptors

Oils and lubricants are found in wastes from vehicle service stations, workshops manufacturing units whose waste may contain high content of oils. Oils, for example, petroleum, kerosene and diesel used as fuel, cooking, lubricant oils and similar liquids are lighter than water and thus float on water in a pipe line or in a chamber when stored. Such oils have a low ignition point and are prone to catch fire if exposed to any flame or a spark and may cause explosion inside or outside the drainage system. The flames from such a fire spread rapidly if not confined or prevented at the possible source. Lighter oils and lubricants are removed from the system by passing them through an oil interceptor/petrol gully. They are chambers in various compartments which allow the solids to settle and allow the oils to float to the top. The oil is then decanted in separate containers for disposal in an approved manner. The oil free waste collected from the bottom of the chamber is disposed in the building drainage system.

62.7.3 Radioactive Waste

Scientific research institutions, hospital and many types of manufacturing processes use radioactive material in form of radio isotopes and other radioactive sources for their activities. Manufacture, sale, use and disposal of radioactive material is regulated by the statutory rules and regulation. Proposal for usage and disposal of radioactive materials shall be done in consultation with and prior permission of the Executive Committee by the users of the materials. No radioactive material shall be disposed off in any building drainage system without the authorization of the Executive Committee.

62.8 Re-Use of Recycled/Wastewater

Every group housing scheme/apartment houses and commercial complexes/institutional buildings shall be provided with installation of system of recycling of wastewater from bathrooms and kitchen sinks (excluding water closets). The final treatment plant should recycle water which should be re-used for purposes other than drinking such as gardening, landscaping, and washing of roads/pathways and so on.

Accordingly the space for a wastewater treatment plant is mandatory to be proposed in the layout and constructed as per the approved norms and specifications in case of-

(a) residential layouts, areas measuring 4000 sq.m or more;

(b) group housing / Apartment houses if the area measures 2000 sq.m and above or if the consumption of water is 20000 liters per day or if it is a multi-storied building with 20 or more apartments houses;

(c) commercial Complexes / Institutional / Hotel and Lodges/Industrial Buildings etc. if the built-up area is 1500 Sqm and more or water consumption is 20,000 liters per day;

(d) hospitals/Nursing Homes with 40 or more beds.

62.8.1 System of Recycling Of Wastewater for Reuse

Every group housing schemes/apartment houses etc. shall make provisions of facilities and infrastructure to recycle the Wastewater (Grey Water) from bath rooms and kitchen sinks in following manner:

(a) Each building shall have a separate downward pipeline to collect waste water from bath and wash basins and the collected waste water shall be treated adequately by organic or mechanical recycling and taken to a Settling tank for onward pumping to the exclusive overhead tank or to a separate collection unit of over head tank for exclusive use of toilet flushing through cisterns. The excess waste water not reused for toilet flushing shall be suitably connected to the rain water recharge structures for ground water recharge.

Note: For the purposes of this Regulation in so far as the regard to recycling systems are concerned, any other modifications, additional structures, alternative designs furnished by the applicant shall be considered for approval, if it conforms to recycling concept to the satisfaction of the competent authority for building plan approval.

(b) Settling Tanks: The tank should be large enough to hold twice the expected daily flow of wastewater plus 40% to allow sludge accumulation and surge loading. One type of settling tank well-suited for grey water treatment is a septic tank with aeration facility.

(c) Disinfection Facility: Two chemicals viz. Chlorine and Iodine may be used to disinfect water. Organic material in grey water may combine with Chlorine to reduce amount available for disinfection;

(d) Filters: Type of filter required depends on amount of grey water to be filtered and type of contaminates present. Viz., simple drain filter, activated charcoal, cellulose or ceramic cartridge, slow and or multimedia filters etc., could be used based on specific requirement;

(e) Separate Collection Units and Overhead Tank: Grey water for reused to be collected in separate unit and provision is made for a separate Overhead tank for storage of recycled grey water for use of toilet flushing and gardening / landscaping purposes only;

(f) Dual Pipelines: Laying of dual pipe lines is necessary viz., one for carrying potable water and other for carrying grey water duly marked in orange colour and laid separately for the ease of identifying the pipe carrying grey water;

(g) If separate point to draw water for gardening, landscaping and washing is provided it should be provided with an adequate warning that the water is not fit for drinking.

63. Temporary Buildings or Structures

63.1 Temporary buildings and structures shall be permitted only in identified zones/locations according to the purpose for which these are to be used, by special permit from the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar for a limited period and subject to such conditions as may be imposed in the permit.

63.2 Such buildings and temporary structures shall be completely removed on the expiry of the period specified in the permit.

63.3 Adequate fire precautionary measures in the construction of temporary structures and pandals shall be taken in accordance with good practice [4(4)] of the NBC.

64. Acquisition of Land

The Executive Committee may refuse to grant permission for any construction or addition or alteration of building if any site is intended to be acquired by the Government for any public purpose for which a Notification under the provisions of The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 has been published. In the case of plots, proposed to be sub-divided the sanction of the Executive Committee for such sub-division shall be obtained as under:

(i) Every person who intends to sub-divide any plot of land within the Scheduled area shall give notice in writing to the Executive Committee of his said intention and such notice shall be accompanied by the Plans and statement in triplicate.

(ii) All plans for sub-division of land shall be in accordance with the standards prescribed by the Executive Committee.

65. New Plot

65.1. Addition to existing Plot: When one or more new plots of land are added to one or more premises by way of amalgamation or otherwise, the existing buildings on any such plots may be considered to be in accordance with these Regulations at the material time when the building/buildings was/were sanctioned are satisfied considering amalgamated plot to be one parcel of land. Addition and alteration to the sanctioned building or addition of a new building or new block or newly added land/lands may be permitted as per prevailing Regulations considering amalgamated land to be one parcel of land.

65.2 Sub-Division of Plots

When a plot has fully utilised its coverage & F.A.R., further sub division is not permissible. However if some percentage of coverage & F.A.R.is left after sub-division, the sub-divided plots are entitle only the balance coverage & F.A.R.

66. Linking of two blocks

If there are two adjacent plots or adjacent buildings belonging to the same owner, gangways between these two buildings may be permitted at any level, subject to the condition that it does not obstruct movement of vehicles or fire vehicles, as the case may be, the minimum width of the gangway being not less than that of a stairway.

67. Applicability of Regulations to existing buildings

The provisions of these Regulations shall not apply to the existing building, however in case of any addition, alteration, erection or re-erection in the existing building, the provision of this bye law shall apply.

CHAPTER – VIII
Structural Safety and Services

68. Structural Design

For any building construction work under the jurisdiction of these Regulations, structural design/retrofitting shall only be carried out by a Structural Engineer on Record (SER) or Structural Design Agency on Record (SDAR). Proof checking of various designs/reports shall be carried out by the Executive Committee as per Table-VI wherever applicable.

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

68.1 For General Structural Safety

i) IS: 456:2000"Code of Practice for Plain and Reinforced Concrete
ii) IS: 800-1984 "Code of Practice for General construction in Steel
iii) IS: 801-2975 "Code of Practice for Use of Cold formal Light Gauge Steel Structural Members in General Building Construction
iv) IS 875 (Part 2): 1987 Design Loads (other than earthquake) for buildings and structures Part 2 Imposed Loads
v) IS 875 (Part 3): 1987 Design Loads (other than earthquake) for buildings and structures Part 3 Wind Loads
vi) IS 875 (Part 4): 1987 Design Loads (other than earthquake) for buildings and structures Part 4 Snow Loads
vii) IS 875 (Part 5): 1987 Design Loads (other than earthquake) for buildings and structures Part 5 special Loads and Load Combination
viii) IS: 883:1966 "Code of Practice for Design Structural Timber in Building
ix) IS: 1904:1987 "Code of Practice for Structural Safety of Buildings: foundation"
x) IS: 190:1987 "Code of Practice for Structural Safety of Buildings: Masonry Walls
xi) IS: 2911 (Part I): Section 1: 1979 "Code of Practice for Design and Construction of Pile Foundation Section 1
    - Part 1: Section 2 Based Cast-in-situ Piles
    - Part 1: Section 3 Driven Pre-cast concrete Piles
    - Part 1: Section 4 Based Pre-cast Concrete Piles
    - Part 2: Timber Piles
    - Part 3: Under Reamed Piles
    - Part 4: Load Test on Piles

68.2 For Cyclone/Wind Storm Protection

IS: 875 (3)-1987 "code of Practice for Design Loads (other than earthquake) for Buildings and Structures, Part 3, Wind Loads Guidelines (Based on IS 875 (3)-1987) for improving the Cyclonic Resistance of Low rise houses and other building

68.3 For Earthquake Protection

xiv) IS: 1893-2002 "Criteria for Earthquake Resistant Design of Structures (Fifth Revision)
xv) IS: 13920-1993 "Ductile Detailing of Reinforced Concrete Structures subjected to Seismic forces-Code of Practice"
xvi) IS: 4326-1993 "Earthquake Resistant Design and Construction of Buildings-Code of Practice (Second Revision)"
xvii) IS: 13828-1993 "Improving Earthquake Resistant of Low Strength Masonry Buildings-Guidelines"
xviii) IS: 13827-1993 "Improving Earthquake Resistant of Earthen Buildings-Guidelines"
xix) IS: 13935-1993 "Repair and Seismic Strengthening of Buildings-Guidelines"

68.4 For Protection of Landslide Hazard

xx) IS: 14458 (Part 1): 1998 Guidelines for retaining wall for hill area: Part 1 Selection of type wall.

xxi) IS: 14458 (Part 2): 1997 Guidelines for retaining wall for hill area: Part 2 Design of retaining/breast wall.
IS: 14458 (Part 3): 1998 Guidelines for retaining wall for hill area: Part 3 Construction of dry stone walls
IS: 14496 (Part 2): 1998 guidelines for preparation of landslide-Hazard zonation maps in mountains terrains: Part 2 Macro-zonation.

Note: Whenever an Indian Standard including those referred in the National Building Code or the Indian National Building Code is referred; the latest revision of the same shall be followed except specific criteria, if any, mentioned above against that code.

69. Structural Design Basis Report

In compliance of the design with the above Indian Standard, the Structural Engineer on Record will submit a structural design basis report in the format given in *Appendix B* covering the essential safety requirements specified in the Standard.

70. Seismic Strengthening/Retrofitting

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

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

71. Review of Structural Design

(i) The Executive Committee shall create a Structural Design Review Panel (SDRP) consisting of Senior Structural Design Engineers on Record and Structural Design Agencies on Record, whose task will be to review and certify the design prepared by Structural Engineer on Record or Structural Design Agency on Record whenever referred by the competent authority.

(ii) The Reviewing Agency shall submit addendum to the certificate or a new certificate in case of subsequent changes in structural design

(iii) Table-VI Gives requirements of SDRP for structures of different complexities.

Table XII
Proof Checking Requirements for Structural Design

Sl. No.	TYPE OF STRUCTURE	SUBMISSION FROM SER OR SDAR	TO BE PROOF-CHECKED
1	HIGHRISE BUILDING, BUILDINGS ABOVE 2000M^2 PLINTH AREA AND MORE THAN GROUND + 3 (RCC/STEEL FRAME STRUCTURE)	SDBR*	TO BE CHECKED
		Preliminary design	TO BE CHECKED
		Structural design/drawings	TO BE CHECKED
2	PUBLIC BUILDINGS WITH MORE THAN 1000 M^2 PLINTH AREA GROUND + 3 AND ABOVE	SDBR*	TO BE CHECKED
		Preliminary design	TO BE CHECKED
		Structural design/drawings	TO BE CHECKED
3	A. SPECIAL STRUCTURES B. SPECIAL BUILDINGS	SDBR*	TO BE CHECKED
		Preliminary design	TO BE CHECKED
		Structural design/drawings	TO BE CHECKED

*** SDBR- STRUCTURAL DESIGN BASIS REPORT**

Notes:
Public building means assembly of large number of people including schools, hospitals, courts etc.

Special structure means large span structures such as stadium, assembly halls, or tall structures such as water tanks, TV tower, chimney, etc. and the requirement by the Executive Committee for third party verification will depend on the type of structure.

72. Supervision
All construction including load bearing buildings upto 3 storeys shall be carried out under supervision of the Construction Engineer on Record (CER) or Construction Management Agency on Record (CMAR).

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

74. Quality Of Materials And Workmanship
All materials and workmanship shall be of good quality conforming generally to accepted standards of Bureau of Indian Standards Specification and codes as included in Part V Building Materials and part VIII Constructional Practices and Safety of National Building Code of India 2005.

75. Quality Control and Inspection
Inspection: - All the construction for buildings in Grade I and II, public buildings and special structures 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).

76. Certification of safety in quality of construction
Quality auditor on Record (QAR) or Quality Auditor Agency on Record (QAAR) shall give a certificate of quality control as per proforma given in *Appendix D*. Quality Inspection Programme to be carried on the site shall be worked out by Quality Auditor on Record/Quality Audit Agency on Record, in consultation with the owner, builder, Construction Engineer on Record/Construction Management Agency on Record.

77. Building Services
The planning, design and installation of lifts and escalators shall be carried out in accordance of part VIII Building Services, section 2 Electrical Installations, Section3-Air Conditioning and heating, Section V Installation of lifts and Escalators of National Building Code of India 2005.

78. Plumbing Services
The planning, design, construction and installation of water supply, drainage and sanitation and gas supply system shall be in accordance with Part IX Plumbing services Section I-Water supply, section 2-Drainage and sanitation and Section 3 – Gas supply of National Building Code of India 2005.

79. Fire Safety Detection And Extinguishing System
(i) The Executive Committee while according permission shall follow the Code of Practice and Standards of Requirements recommended in the National Building Code of India.

(ii) Fire protection and extinguishing system shall conform to accepted standards and shall be installed as recommended in the National Building Code of India and to the satisfaction of Directorate of Fire Services.

80. Protection against Hazards

80.1 Protection of Areas from Earthquakes
i) In those areas where there are no dangers of soil liquefaction or settlements or landslides, all building structures and infrastructures in such areas should be designed using the relevant Indian Standards as provided in the Building Regulations and the National Building code.

ii) 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.

iii) Buildings and structures could be founded on deep bearing piles going to non-liquefiable dense layers.

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

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

Note: The protective action given under (ii) and (v) 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 by Land Use Zoning.

80.2 Protection from Cyclonic Wind Damage

i) Buildings, structures 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.

ii) 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 pressure, suctions and uplifts.

iii) In case the buildings, structures and infrastructures are founded 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, using a very low bearing pressure.

iv) Wherever the topsoil could become slushy due to flooding, the top layer of 30 cm depth of soil should not be considered for providing lateral stability.

v) 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, construct the community structures on stilts with no masonry or bracing upto the probable maximum surge level.

80.3 Protection of Areas from Floods

This may require one or more of the following actions:

i) Construction of embankments against the water spills from the source of flooding like rivers, large drains etc.

ii) Construction of high enough embankments/bund around the planning area.

iii) Raising the planning area above the high flood level.

iv) Construction/improvement of drainage paths to effectively drain the water from the planning area.

v) Construction of buildings and structures on deep foundations going below the depth of scour or on stilts with deep enough foundations under water.

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;

ii) Provision of additional waterways;

iii) Clearing of clogged cross drainage works;

iv) Providing Human and Animal Shelters for population living within embankments in the form of raised platform or use of available high ground.

v) Anti-erosion actions in affected areas.

vi) Any other suitable measure.

Note: Similar protection methods could be used against flooding caused in cyclone prone areas by high intensity rains or by the storm surge. 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.

Appendix A
Structural Design Basis Report

Structural Design Basis Report

1. This report to accompany the application for Building Permission.

2. In case information on items 3, 10, 17, 18 and 19 cannot 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	Address of the building Name of the building Plot number Subplot number TPS scheme a. Name b. Number Locality / Township District		
2	Name of the 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 storey to be added later, if any)		
8	Number of basements below ground level		
9	Type of structure Load bearing R.C.C frame R.C.C frame and shear walls Steel frame		
10	Soil data Type of soil Design safe bearing capacity		 IS: 1893 Cl.6.3.5.2 IS: 1904
11	Dead load (unit weight adopted) Earth Water Brick masonry Plain cement concrete Reinforced cement concrete Floor finish Other fill materials Piazza floor fill and landscape		 IS:875 Part 1
12	Imposed (Live) loads Piazza floor accessible to Fire Tender Piazza floor not accessible to Fire Tender - Floor loads - Roof loads		IS: 875 Part 2
13	Cyclone / Wind 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 7
18	Fundamental natural period -approximate		IS: 1893 CL. 7.6
19	Design horizontal acceleration spectrum value ($A_{h)}$		IS: 1893 CL. 6.4.2
20	Expansion / Separation joints		

- Enclose small scale plans of each floor on A4sheets
- In case terrace garden is provided, indicate additional fill load and live load
- Indicate on a small scale plan on A4 sheet

….Appendix A (continued)

<table>
<tr><td colspan="4">Part 2 Load bearing masonry buildings</td></tr>
<tr><td>S. No.</td><td>Description</td><td>Information</td><td>Notes</td></tr>
<tr><td>1</td><td>Building category</td><td></td><td>IS: 4326 CL. 7 read with IS: 1893
<table>
<tr><td>Zone / Bldg</td><td>II III IV V</td></tr>
<tr><td>Ordinary</td><td>B C D E</td></tr>
<tr><td>Important</td><td>C D E E</td></tr>
</table></td></tr>
<tr><td>2</td><td>Basement provided</td><td></td><td></td></tr>
<tr><td>3</td><td>Number of floors including Ground floor (all floors including stepped floors in hill slopes)</td><td></td><td></td></tr>
<tr><td>4</td><td>Type of wall masonry</td><td></td><td></td></tr>
<tr><td>5</td><td>Type and mix of mortar</td><td></td><td>IS: 4326 CL. 8.1.2</td></tr>
<tr><td>6</td><td>Re: size and position of openings (see note No.1)
Minimum distance (b5)
Ratio $b_1 + b_2 + b_3)/1_1$ or
$(b_6 + b_7)1_2$
Minimum pier width between consequent opening (b_4)
Vertical distance (h_3)
Ratio of wall height to thickness 4
Ratio of wall length between cross wall to thickness</td><td></td><td>IS: 4326
Table 4, Fig. 7</td></tr>
<tr><td>7</td><td>Horizontal seismic band
At plinth level
At window sil level
At lintel level
At ceiling level
At eave level of sloping roof
At top of gable walls
At top of ridge walls</td><td>IP TP NA
☐ ☐ ☐
☐ ☐ ☐
☐ ☐ ☐
☐ ☐ ☐
☐ ☐ ☐
☐ ☐ ☐
☐ ☐ ☐</td><td>(See Note No. 2)
IS: 4326 CL 8.4.6
IS: 4326 CL 8.3
IS: 4326 CL 8.4.2
IS: 4326 CL 8.4.3
IS: 4326 CL 8.4.3
IS: 4326 CL 8.4.4</td></tr>
<tr><td>8</td><td>Vertical reinforcing bar
At corners and T junction of walls
At jambs of doors and window openings</td><td>☐ ☐ ☐
☐ ☐ ☐</td><td>IS: 4326 CL 8.4.8
IS: 4326 CL 8.4.9</td></tr>
<tr><td>9</td><td>Integration of prefab roofing / flooring elements through reinforced concrete screed</td><td>☐ ☐ ☐</td><td>IS: 4326 CL. 9.1.4</td></tr>
<tr><td>10</td><td>Horizontal bracings in pitched truss
In horizontal plane at the level of ties
In the slopes of pitched roofs</td><td>☐ ☐ ☐
☐ ☐ ☐</td><td></td></tr>
</table>

Notes:
1. Information in item 6 should be given on separate A4 sized sheets for all walls with large number of openings
2. IP. indicates “Information Provided”

TP indicates “Information to be provided”
NA indicates “Not applicable”
Tick mark one box.

…Appendix A(continued)

Part 3	Reinforced concrete framed buildings		
S No.	Description	Information	Notes
1	Type of building 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	Horizontal floor system Beams and slabs Waffles Ribbed floor Flat slab with drops Flat plate without drops		
5	Soil Data Type of soil Recommended type of foundation - Independent footings - Raft -Piles Recommended bearing capacity of soil Recommended, type, length, diameter and load capacity of piles Depth of water table Chemical analysis of ground water Chemical analysis of soil		IS: 1498
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles		
7	System of interconnecting foundations Plinth beams Foundation beans		IS: 1893 Cl.7.12.1
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	Base shear 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	Clear minimum cover provided in Footing Column Beams Slabs Walls		IS: 456 CL. 26.4
16	Ductile detailing of RC frame Type of reinforced used Minimum dimension of beans Minimum dimension of columns Minimum percentage of reinforcement of beans 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 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: 13920 CL. 7.1.2 IS: 456 CL. 26..5.1.1. (a) IS: 13920 CL. 6.2.1 IS: 456 CL. 26.5.1.1. (b) IS: 13920 CL. 6.2.2 IS: 13920 CL. 6.3.5 IS: 456 CL. 26.5.3.1 IS: 13920 CL. 7.4

General 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.
Foundations

3. In case raft foundation has been adopted indicate K value used for analysis of the raft.

4. In case pile foundations have been used give full particulars of the piles, type, dia, length, capacity

5. In case of high water table indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

6. Idealization for Earthquake analysis.

- 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

- Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches;

- Submit framing plans of each floor;

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

Appendix A (continued)

Part 4	Buildings in structural steel		
1	Adopted method of Design	○ Simple ○ Semi-rigid ○ Rigid	IS: 00; CL. 3.4.4 IS: 800; CL. 3.4.5 IS: 800; CL 3.4.6
2	Design based on	○ Elastic analysis ○ Plastic analysis	IS: 00; Section-9 SP: 6(6)
3	Floor construction	○ Composite ○ Non composite ○ Boarded	
4	Roof construction	○ Composite ○ Non-composite ○ Metal ○ Any other	
5	Horizontal force resisting system adopted	○ Frames ○ Braced frames ○ Frames and shear walls	Note: Seismic force As per IS:1893 would depend on system
6	Slenderness ratios maintained	Members defined in Table 3.1, IS: 800	IS: 800; CL. 3.7
7	Member of deflection limited to	Beams, Rafters Crane Girders Purlins Top of columns	IS: 800; CL. 3.13
8	Structural members	○ Encased in concrete ○ Not encased	IS: 800; Section-10
9	Proposed materials	○ General weld-able ○ High strength ○ Cold formed ○ Tubular	IS: 2062 IS: 8500 IS: 801, 811 IS: 806
10	Minimum metal thickness Specified for corrosion protection	○ 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	○ Rivets ○ CT Bolts ○ SHFG 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
12	Minimum fire rating Proposed with method	○ Rating……. hours ○ Method proposed- - In tumescent painting -Spraying -Quilting -Fire retardant boarding	IS: 1641, 1642, 1643

Appendix B
Structural Inspection Report

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

I. Description by title and location of the property including T.P. No., F.P. No etc:

II. Name of the present owner:

III. Description of the structure:

Class I or Class II (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) R.W. Pipes 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 :
vii) 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 judgement.

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

(Signature of the Registered Structural Engineer)

Date: _____

Name of the registered structural Engineer:

Registration No. Address:

Appendix C
Model Proforma for Technical Audit Report

1. Design

	COMMENTS
1.1. Design/Drawings available?	Y/N
Design category Type design? ***Specific design?***	 **Y/N** Design to be collected to refer to Design Consultant/H.O.
Drawings prepared / checked by competent Authority?	Y/N
Design drawings / details Structural detailed included Earthquake/cyclone resistant features included?	 Y/N 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/brick/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 upto plinth : _____cm

2.2.7.If stone mason

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 : 23cm/35/>35cm

2.3.4. Mortar used	:	Cement-sand/lime/mud
2.3.5. Mix 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 material	:	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	Coarse 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 drawings	:	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/Ply board/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 Aggregates

5.9.4 Bricks

5.9.5 PCC blocks

6 Seismic resistance features

Masonry Structures

Provision of bands at

	Provided	Adequate
6.1.1.1 Plinth level	Yes/No	Yes/No
6.1.1.2 Skill 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

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

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

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

Framed Structures

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

Any testing carried out by Owner / Engg. 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

Appendix D
Registration, Qualifications and Duties of Professionals

1. Registration of professionals:
The Executive Committee 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 Audit Agencies (RQAA), Developers (RD), Owner wherever applicable, till such time there is no legislative frame for the professionals like engineers and others similar to Architects Act 1973.

Application for registration shall be submitted by these professionals to the Competent Authority. Registration shall be valid for a period of one year and shall be renewable.

2. Registered Architect (RA)
Qualification and Experience:-
The person/firm/company acting as Architect shall be registered with Council of Architecture and shall be bound by the terms & conditions as prescribed under the professional rules by the Council of Architecture to render professional services.

3. Registered Town Planner (RTP)
The qualifications, responsibility and the professional charges shall be applicable as prescribed by the Institute of Town Planners, India for rendering professional services.

4. Registered engineer
Registered Engineers are those graduate Engineers who are registered by local bodies to prepare drawings and other documents for obtaining development permission.

5. Registered Structural Engineer (RSE)
On the basis of their academic qualifications and experience, Structural Engineers shall be “Registered” in three “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.

This registration shall be renewed every three years.

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

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

Eligibility:
(i) B. E. Civil or equivalent with minimum 10 years experience (after attaining the degree) in structural design work at a responsible position as a structural designer OR
(ii) M. E. Structures/ Earthquake Engineering or Ph.D. in Structural Engineering with minimum 5 years of experience (after attaining the degree) in structural design work at a responsible position a structural designer
(iii) The experience as stated above shall be under a Structural Engineer on Record. (This requirement shall be waived for the first ten years of the promulgation of these Regulations)

Grade-II
Scope of work: To prepare structural design and structural drawings of various buildings having more than ground floor + 2 upper floors (Plinth area upto 5000 sq.m)

Eligibility:
(i) B. E. Civil or equivalent with minimum 5 years experience (after attaining the degree) in structural design work at a responsible position as structural designer OR
(ii) M. E. Structures/ Earthquake Engineering or Ph.D. in Structural Engineering with minimum 3 years of experience (after attaining the degree) in structural design work at a responsible position a structural designer
(iii) The experience as stated above shall be under a Structural Engineer on Record. (This requirement shall be waived for the first five years of the promulgation of these Regulations)

Grade-III
Scope of work: To prepare structural design and structural drawings of Low rise buildings excluding above mentioned structures for Grade-I and Grade-II.

Eligibility:
(i) B. E. Civil or equivalent with minimum 2 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 Structural Engineering with minimum 1 years of experience (after attaining the degree) in structural design work at a responsible position as a structural engineer
(iii) The experience as stated above shall be under a Structural Engineer on Record. (This requirement shall be waived for the first three years of the promulgation of these Regulations)

Grade-III A
Scope of work: To prepare structural design and structural drawings of various buildings G+2 and upto 250 sq.meters total floor area.

Eligibility:
(1) M.E (2) B.E (Civil) (3) Diploma in Civil engineering + AMIE

Grade III B
Scope of work: To prepare structural design and structural drawings of various buildings G+2 and upto 150 Sq.meters total floor area.

Eligibility:
(1) M.E (2) B.E (Civil) (3) Diploma in Civil engineering + AMIE (4) Diploma in civil engineering + 10 years experience.

Grade IV
To prepare structural design and structural drawings of various buildings G+1 and upto 100 Sq.meters total floor area.

Eligibility:
(1) M.E (2) B.E (Civil) (3) Diploma in Civil engineering +AMIE (4) Diploma in civil engineering + 5 years experience.
v) The experience as stated above shall be under a Structural Engineer on Record (This requirement shall be waived for the first three years of the promulgation of these Byelaws.

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

(B) The registration shall be renewed every three years.

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

7. Registered Construction Management Agency (RCMA)
(A) The requirement for registration shall be
i) Owner of a proprietary firm shall be an RCE
ii) Fifty percent partners of a partnership firm shall be RCE
iii) A designated officer of a limited company shall be RCE

(B) The registration shall be renewed every one year.

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

8. 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 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 Executive Committee.

(B) The registration shall be renewed after every one year.

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

9. Registered Quality Audit Agency (RQAA)
(A) The requirement for registration shall be:
i) Owner of a proprietary firm shall be RQA.
ii) Fifty percent partners of a partnership firm shall be RQA.

iii) A designated officer of a limited company shall be RQA.

(B) The registration shall be renewed every three years.

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

10. Registered Geo-Technical Agency (RGA)

For foundation work, where required as per Regulation services of a Geo-Technical Agency on Record

(A) The requirement for registration shall be:

i) Owner of a propriety firm shall be M.E (or equivalent) in Geo-Technical Engineering with minimum 10 years of experience.

ii) Fifty percent of a partnership firm 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 Executive Committee shall be of minimum ten years of standing.

v) The agency has a Registered Laboratory. Any individual possessing qualifications as in (i) and hiring services of either GAR or Registered Testing Laboratory shall also be eligible for registration.

(B) The registration shall be renewed every one year.

(C) The registration may be cancelled for unprofessional conduct permanently or for a specified period

11. Appointment of Professionals

11.1 The Owner/Developer shall appoint the following professionals, out of the registered professionals described in B.1 above for every 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)

11.2. The Owner/Developer shall submit a list of the appointed professionals on Record with the application for building permission to the Authorities. (Consent/undertaking from these professionals needed in the required format at the time of seeking building permission).

11.3. 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.

12. General Duties and Responsibilities Applicable to all Professionals

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

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

13. 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 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) a) To prepare a report of the structural design.

b) To prepare detailed structural design and to prescribe the method and technique of its execution strictly on the basis of National Building Code or relevant Indian Standard Specifications.

c) To prepare detailed structural drawings and specifications for execution indicating thereon, design live loads, safe soil bearing capacity, specifications of material, assumptions made in design, special precautions to be taken by contractor to suit the design assumptions etc whatever applicable.

d) To supply two copies of structural drawings to the supervisor.

e) To advise the Owner/Architect/Engineer for arranging for tests and their reports for soil, building material etc. for his evaluation and design consideration.

f) To prepare the revised calculations & drawings in case of any revision with reference to the earlier submission of drawings & design in a particular case.

g) To inform in writing the Competent Authority within 7 days, if for any reason, he/she is relieved of his appointment/responsibilities as the registered Structural designer for the development.

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

Duties and Responsibilities:
a) To adhere strictly to the structural drawings, specifications and written instructions of the Structural Engineer on Record and Architect on Record/Engineer on Record.

b) To follow the provisions of N.B.C. or I.S. specifications as regards materials, components, quality control and the process of construction.

c) To provide for safety of workers and others during excavation, construction and erection.

d) TO provide safe and adequate temporary structure required for construction and erection.

e) To bring to the notice of the structural designer and Architect/Engineer any situation of circumstances which in his opinion are liable to endanger the safety of the structure.

f) To deposit with the Competent Authority one set of working drawings of the works executed along with the progress certificates before proceeding with the next stage of the work.

g) He/she shall be in overall charge of the site and responsible for overall supervision of the work.

h) He/she shall ensure that all the work under his charge is carried out in conformity with the approved drawings and as per the details and specifications supplied by the registered Architect/Engineer.

i) He/she shall take adequate measures to ensure that no damage is caused to the work under construction and adjoining properties.

j) He/she shall also ensure that no undue inconvenience is caused in the course of his/her work to the people in the neighborhood.

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

15. 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:

(1) the CMAR agrees to accept the assignment to execute the project as per designs, drawings and specifications

(2) 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 is put in italics as it 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.

16. 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.

17. 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 an 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 or special structures CMAR shall submit an undertaking from 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 Executive Committee.

(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.

18. Geo-Technical Agency on Record (GAR)
All buildings described in Table-1 shall have, for foundation work, services of a Geotechnical Agency on Record.

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.

19. Professional Fees for SER/SDAR and CER/CMAR

(i) Considering the responsibility of structural safety of a building falls on the shoulders of the "SER/SDAR" for its proper design and the "CER/CMAR" for proper construction, it is imperative that selection and appointment of these professionals is made carefully after verification of their antecedents and past experience.

(ii) The fees to be paid to SER/SDAR for structural design may be specified keeping in view the size and complexity of the project, which may vary, based on the cost of the items of the structure enumerated below. "Excavation, dewatering, diaphragm wall, piling, base concrete, waterproofing of basement and other underground structures, all grades of concrete, reinforcement, pre-stressing cables or tendons, structural steel, load bearing masonry, parts of structural glazing or curtain walls to be designed against earthquake and wind forces, clamps for stone cladding".

(iii) Similarly, fees for construction management to CER/CMAR may be specified keeping in view the size and complexity of the project and the duration for which construction management services have to be provided on the basis of the total cost of the project.

(iv) Proof checking: Fees for Proof checking where carried out may vary based on the cost of the structural items enumerated in (ii) above.

20. Developer

Duties and Responsibilities

The responsibilities of developers shall be:

1. To obtain and submit to the Competent Authority, along with application for development permission, each progress report and application for occupation certificate.

2. To appoint an Architect on Record/Engineer on Record and Structural Engineer on Record.

3. To obtain at relevant stages certificates from them, for submission to the Competent Authority, that in designing the real estate development and providing detailed drawings and specifications for it, they have complied with requirements as laid out in the Regulations.

4. To appoint a registered CER as site supervisor.

5. To obtain and adhere to the quality assurance procedure prepared by the registered site supervisor.

6. To adequately enable the site supervisor to carry out his responsibilities.

7. To certify along with the site supervisor that construction of the real estate development has been carried out as per the design, detailed drawings and specifications provided by the Architect on Record/ Engineer on Record and Structural Engineer on Record.

8. To obtain development permission from the Competent Authority prior to commencement of construction of the real estate development

9. To regularly submit progress reports and certificates as required by the Competent Authority.

10. To inform in writing the Competent Authority within 7 days, if for any reason he ceases to be the developer or is relieved of his responsibilities as the developer of the real estate development.

11. To inform in writing the Competent Authority within 7 days, if for any reason any of the registered professionals appointed by him have been relieved of their responsibilities or have resigned.

12. The appointment of the registered Architect/ Engineer on Record shall mean that he (the Developer) has authorized the Architect on Record /Engineer on Record to do all things necessary and to take all

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

13. He shall not cause or allow any deviations from the approved drawings in the course of the execution of the project against the instruction of Architect on Record /Engineer on Record /Site Supervisor on Record /Clerk of Works on Record / Structural Engineer on Record and shall bear all responsibility for any irregularity committed in the use and function of the building or its parts for which the approval has been obtained.

14. When no registered construction contractor or site supervisor is required to be appointed and not appointed he shall be responsible for their duties and responsibilities under the Regulations.

15. He shall not commence the use of building or shall not give the possession to occupy the building to any one before obtaining the occupancy certificate from the Competent Authority.

16. He shall provide adequate safety measures for structural stability and protection against fire hazards likely from installation of services like electrical installation, plumbing, drainage, sanitation, water supply etc. wherever required under the regulations.

17. He shall exhibit the names of registered persons only, on site and no additional names will be exhibited/displayed.

18. He shall explain the construction design and its intended use as per approved plan only, to the prospective purchaser of the premises under construction.

19. He shall make available copies of titles for the land, approved plans and all certificates issued to the Competent Authority under these Regulations.

21. 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.

Duties and Responsibilities
Every owner shall:

1. Permit the Executive Committee to enter the building or premises for which the permit has been granted at any reasonable time for the purpose of enforcing the Code;

2. Submit a document of ownership of the site;

3. Obtain, where applicable, from the Executive Committee, permits relating to building, zoning, grades, sewers, water mains, plumbing, signs, blasting, street occupancy, electricity, highways, and all other permits required in connection with the proposed work;

4. Give notice to the Executive Committee of the intention to start work on the building site (Form 5);

5. Give written notice to the Executive Committee intimating completion of work up to plinth level;

6. Submit the certificate for execution of work as per structural safety requirements; and give written notice to the Executive Committee regarding completion of work described in the permit (Form 6);

7. Give written notice to the Executive Committee in case of termination of services of a professional engaged by him; and

8. Obtain an occupancy permit from the Executive Committee prior to any:
   i) occupancy of the building or part thereof after construction or alteration of that building or part, OR
   ii) change in the class of occupancy of any building or part thereof.

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

Duties and Responsibilities
1. To appoint a Site Supervisor (Diploma) and Site Engineer (Civil) for site supervision.

2. To obtain and adhere to the quality assurance procedure including testing of materials for quality prepared by the registered Construction Engineer and to get the materials e.g. cement, steel, bricks, water, cement motar and cement concrete of every batch, tested from an approved lab and properly maintain the records.

3. To certify along with the RCE/Site Supervisor/Site Engineer that construction of the real estate development has been carried out as per the design, detailed working drawings and specifications provided by the Architect on Record/Engineer on Record and Structural Engineer on Record.

4. To regularly submit progress report and certificates as required by the Competent Executive Committee.

5. To inform in writing to the Competent Authority within 7 days, if for any reason he ceases to be the Builder/Contractor or is relieved of his responsibilities of the real estate development.

6. To inform in writing to the Competent Authority within 7 days, if for any reason any of the professionals appointed by him have been relieved of their responsibilities or have resigned.

7. The appointment of the Site Engineer shall mean that he has authorized the him to do all things necessary and to take all adequate measures for construction as per architectural/structural design, working drawings, quality of materials and workmanship for the project and to appoint appropriate persons to act as clerk of work/site supervisor, required for the proper execution of the project and to retain on behalf of him any other specialist or expert required on the work of the project.

8. He shall not cause any deviations from the approved drawings in the course of the execution of the project against the instruction of Architect on Record Construction Engineer on Record/Site Supervisor Clerk of Works Structural Engineer on Record unless a written permission is obtained by him and he shall bear all responsibility for any irregularity committed in this behalf.

9. He shall provide adequate safety measures for all labourers/technical, staff, material, timbering, scaffolding, shuttering and other stability and protection against fire hazards like from installation of services like electrical installation etc.

10. He shall submit the certificate for execution of work as per structural safety requirements and give written notice to the Executive Committee regarding completion of work described in the permit.

11. Any other condition as per local laws of the Executive Committee.

FORM 1
FORM FOR FIRST APPLICATION TO DEVELOP, ERECT, RE-ERECT OR TO MAKE ALTERATION IN ANY PLACE IN A BUILDING

To
.....
.....
.....

Sir/Madam,

I hereby give notice that I intend to develop, erect, re-erect or to make alteration in the building No…..... or to.....on/in Plot No..... in ..... and in accordance with the Khasi Hills Autonomous District (Building Land Development) Regulation, 20…… and I forward herewith the following plans and specifications (4 copies each) duly signed by me and …… ….....
the Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer[1]),
Registration No. ..... who will direct/supervise its erection.
(Name in block letters)

1. Key plan
2. Site plans
3. Sub-division/layout plan
4. Building plans
5. Services plans
6. Specifications, general and detailed2)
7. Title of ownership of land/building
8. Certificates for structural sufficiency and supervision

I request that the development/construction may be approved and permission accorded to me to execute the work.

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

Date: .....

_____
[1)] Strike out whichever is not applicable.

FORM 1A
STATEMENT OF THE PROPOSAL AND CERTIFICATE
By the Owner and Registered Architect/Engineer/Town Planner

Classification of the Proposal .....(To erect/re-erect/demolition/subdivide)
Building of.....situated at.....
Plot Area .....sq.m (size in square metres)

Area Statement

Description	**Permissible**	**Proposed Sq.mt.**	**Remarks Sq.mt.**
Max.Ground coverage			
Ground Floor			
First Floor			
Second Floor			
Third Floor			
Fourth Floor			
Total Floor area			
Floor Area Ratio			
No.of Dwelling Units			

Maximum height (in meters)

Setbacks	**Permissible**	**Proposed (mt.)**
Front		
Rear		
Left		
Right		

Parking spaces

Open Parking	G/1/2/3/4 Floor Covered parking	Total Parking (sq.mt)

We hereby certify that
1. Plot is lying vacant and no construction shall be started before sanction.
2. The plot is free from all encumbrances (owner responsibility).

Signature of Owner(s)

Name .....
(in block letters)
.....

Address.....

.....
Date .....

Signature of Registered Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer

Name .....
(in block letters)
Registration No.....

Address.....

.....
Date.....

FORM 1B

Form for specifications of Proposed Building above 250 sq.m in addition to Form I(A)

The purpose (Residence, Office, Restaurant, Hotel, School, Hostel Cinema, Shop, Factory, Others) for which it is intended to be used.....

.....

.....

Details of coverage on respective floor are given below:

	Existing(sq.mt)	***Proposed(sq.mt)***	***Total (sq.mt)***
1. Ground Floor			
2. Mezzanine Floor			
3. First Floor			
4. Second Floor			
5. Third Floor			
6. Fourth Floor			
(a) Approximate number of inhabitants proposed to be accommodated			
(b) The number of latrines, Urinals, Kitchens, Baths to be provided			

.....

(c) The source of water to be used in the construction .....

.....

(d) Distance from public sewer .....

(e) The materials to be used in construction Walls/Columns/Foundations/Roof/ Floors .....

Signature of Registered Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer

Name.....
Registration No.....
Address .....
.....

FORM 1C
FORM FOR FIRST APPLICATION TO DEVELOP, ERECT, RE-ERECT OR TO MAKE ALTERATION IN ANY PLACE IN A BUILDING
(FOR KUTCHA BUILDINGS)

To

.....
Rangbah Shnong,
Dorbar Shnong .....

.....

.....

Sir,

I hereby give notice that I intend to develop, erect, re-erect or to make alteration in the building No…..... or to.....on/in Plot No..... in ..... and in accordance with the Khasi Hills Autonomous District (Building Land Development) Regulation, 20……

I request that the development/construction may be approved and permission accorded to me to execute the work.

Signature of Owner.....

Name of the Owner .....
(in block letters)
Address of Owner .....

.....

.....

.....

.....

Date: .....

FORM 2
CERTIFICATE OF UNDERTAKING

To

Ref : Proposal work of _____
(Title of the project)
Situated at _____

Village _____

Scheme No. _____ of _____
(Village)

For_____
(Name of Owner/Developer/Builder)

Address: _____

Tel.No.:_____

I am registered with the Council of Architecture or I am licensed by the District Council as Town Planner. I hereby certify that I am appointed as the _____ to prepare the plans, sections and details as required under the provisions of Regulations for the above mentioned project and that I have prepared and signed the same and that the execution of the project shall be carried out under my direction, and supervision of a Site Engineer as per the approved drawings. I am fully conversant with the provisions of the Regulations, which are in force, and about my duties and responsibilities under the same and I undertake to fulfill them in all respects, except under the circumstances of natural calamities.

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

Signature : _____
Architect/Engineer/Town Planner/Landscape Architect/Urban Designer
Reg. No. _____

Name : _____

Address : _____

_____

Tel. No. : _____

Date :

FORM 2A
CERTIFICATE OF UNDERTAKING

To

Ref : Proposal work of _____
(Title of the project)
Situated at _____

Village _____

Scheme No. _____ of _____
(Village)

For_____
(Name of Owner/Developer/Builder)

Address: _____

Tel.No.:_____

I am Registered Structural Engineer (RSE). 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 the above mentioned project. I am fully conversant of my duties and responsibilities under the Regulation and assure that I shall fulfill them in all respects. The construction will be done as per my directions but under the supervision of the site engineer.

I have prepared and signed a structural design basis report (SDBR).

I undertake to supply the owner and the supervisor the detailed structural drawings. If my services are terminated, I undertake to intimate the Executive Committee in writing.

Signature : _____
Registered Structural Engineer

Reg. No. _____

Name: _____

Address: _____

_____

Tel. No.: _____

Date:

FORM 2B
CERTIFICATE OF SUPERVISION

To

Ref : Proposal work of _____
(Title of the project)
Situated at _____

Village _____

Scheme No. _____ of _____
(Village)

For_____
(Name of Owner/Developer/Builder)

Address: _____

Tel.No.:_____

I am registered with the Council of Architecture or I am licensed by the District Council as Junior Engineer/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer

I hereby certify that I am appointed as the Supervisor for the execution of the project and shall be carried out under my direction and supervision as a Site Engineer as per the Guidelines (Chapter IV: Structural Safety and Services). I am fully conversant with the provisions of the Regulations, which are in force, and about my duties and responsibilities under the same and I undertake to fulfill them in all respects, except under the circumstances of natural calamities.

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

Signature : _____
Architect or (Licensed Personnel)

Reg. No. _____
Name : _____

Address : _____

_____

Tel. No. : _____

Date :

FORM 3
FORM FOR BUILDING PERMISSION SANCTION

Permission No.

To,

Subject : Sanction u/s.....

Sir/Madam,

With reference to your application dated ..... for the grant of sanction to erect/re-erect/add to/alteration in the building to carry out the development specified in the said application situated in/at ..... I have to state that the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar subject to the following conditions and corrections done in the plans has sanctioned the same on .....

1. The plans are valid up to ..... 20…….

2. The construction will be undertaken as per sanctioned plan only and no deviation from the Regulations will be permitted without prior sanction. Any deviation done against the Regulations is liable to be demolished and the supervising Architect/ License technical Personnel engaged on the job will run the risk of being black listed.

3. Violation of building Regulations will not be compounded.

4. It will be the duty of the owner of the plot and the Architect/Licensed technical personnel preparing the plans to ensure that the sanctioned plans are as per the Building Regulations. In case of any infringement of Regulations, the concerned Executive Committee reserves the right to amend the plans as and when infringement comes to the notice and the concerned Authority will stand indemnified against any claim on this account.

5. A notice in writing shall be sent to Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar before commencement of the constructions of the building as per Regulations. Similar notice will be sent to Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar when the building has reached up to foundation/foundation base/plinth level and at any other level as desired by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

6. The owner shall not occupy or permit to occupy the building or use or permit to use the building or any part thereof affected by any such work until occupancy certificate is issued by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

7. No Civil Suit or legal proceedings shall lie before any Court of Law against any order or action taken or anything done in good faith under any of the provisions of this Regulation.

8. The sanction will be void if auxiliary conditions mentioned above and other conditions imposed hereunder are not complied.

9. The owner will use the premises for the use which has been sanctioned and shall not change the building usage before prior permission from the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

10. The owner will not proceed with the construction without having the direction/supervision of an Architect/Engineer as the case may be. If he/she changes his Architect/Engineer,he/she shall inform the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar about the appointment of new Architect/Engineer within 48 hours, with a proper certificate from him.

11. OTHER CONDITIONS are as follows:

Yours faithfully,

Office Stamp .....

.....

Signature of the authorized person/officer of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar

Office (Communication) No. .....

Name, Designation and Address of the authorized person/officer

Date: .....

.....

.....

Encl: A set of sanctioned drawings.

FORM 3A
FORM FOR BUILDING PERMISSION SANCTION
(FOR KUTCHA BUILDINGS)

Permission No.

Shri/Smt./Kum……..from……..is hereby granted permission for the construction of…….. *(as applicable)* as per his/her application submitted in triplicate/duplicate.

One copy of the application concerned, with the approval carrying the seal of this Dorbar Shnong or Executive Dorbar and duly signed is returned to the interested party, who shall comply with the following conditions:

1. To limit himself/herself to the plan approved and statements therein.

2. The construction shall be as per plan approved by the Executive Dorbar and condition imposed on it.

The permission shall be valid for a period of five years from…….to……. He/she has paid the respective fees to the tune of Rs…….. by Receipt No……. dated……..…….

This carries the seal or of the Dorbar Shnong or Executive Dorbar of ……..…. 20……..

Signature of the Rangbah Shnong

Dorbar Shnong…….

Name and Address .....

.....

.....

Tel. No. .....

Date: .....

FORM 4
FORM FOR REFUSAL OF DEVELOPMENT/BUILDING PERMIT

To
.....
.....
.....

Sir/Madam,

With reference to your application .....dated .....for grant of permit for the development, erection, re-erection or material alteration in the building No..... or to.....on/in Plot No. ..... in .....

I have to inform you that the sanction has been refused by the Executive Committee on the following grounds:
1.
2.
3.
4.
5.
6.
7.
8.
9.

Office Stamp .....

.....

Office (Communication) No. .....

Date: .....

Signature of the authorized person/officer of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar

Name, Designation and Address of the authorized person/officer

.....

.....

.....

FORM 5
FORM FOR NOTICE FOR COMMENCEMENT OF BUILDING WORK

To,

Sir,

I/We hereby certify that the erection, re-erection or material alteration in/ of building belonging to .....situated at ..... will commence on …….. at.....a.m., as per your building permission sanction No…… dated ……in the presence of the Architect/Junior Engineer/ Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer.

Signature of Owner(s)

_____
Name (s) of the Owner(s) (in block letters)
Address:……..

……

CERTIFICATE FROM ARCHITECT/JUNIOR ENGINEER/ENGINEER/STRUCTURAL ENGINEER/SUPERVISOR/TOWN PLANNER/LANDSCAPE ARCHITECT/URBAN DESIGNER ON RECORD

1. I shall be present at site on the above date and time and alignment will be given as per the approved building envelop/ setbacks.

Signature of Architect/Junior Engineer/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer

Reg. No. _____
Name : _____

Address : _____

_____

Tel. No. : _____

Date :

FORM 6
FORM OF NOTICE FOR COMPLETION OF WORK

To

Dear Sir,

I/We hereby give notice that I/We have completed the erection of building/execution of …… …….. in my/our building situated at.....in pursuance of the sanction granted by the Executive Committee vide BPS No..... dated ..... I/We are enclosing the Certificate of the Architect/Licensed Technical Personnel.

Yours faithfully,

Signature of owner.....

Name of owner.....
(In Block letters)

Address of the owner .....

.....

Date: .....

Encl: As above

FORM 6A
FORM FOR COMPLETION CERTIFICATE

I hereby certify that the development, erection, re-erection or material alteration in/of building No..... at..... has been supervised by me and has been completed on .....
..... according to the plans sanctioned, vide No. ..... dated ..... The work has been completed to my best satisfaction, the workmanship and all the materials (type and grade) have been used strictly in accordance with general and detailed specifications. No provisions of the Code, no requisitions made, conditions prescribed or orders issued thereunder have been transgressed in the course of the work.

The land is fit for construction for which it has been developed or re-developed OR the building is fit for use for which it has been erected, re-erected or altered, constructed and enlarged[1].

Signature of Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer [1]) .....

Name of Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer [1]) .....
(in block letters)

Registration No. of Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/UrbanDesigner [1]) .....

Address of Architect/Engineer/Structural Engineer/Supervisor/Town Planner/Landscape Architect/Urban Designer [1]) .....

Date: ..... Signature of the Owner

Encl: A copy of final revised drawings (if any).

---

[1]) Strike out whichever is not applicable

FORM 7
FORM FOR OCCUPANCY CERTIFICATE

To,

_____

_____

_____

Sir/Madam,

i) **This is to certify the part / full development work / erection / re-erection or alteration in / of building / part building in Patta No. _____ situated at _____ Road / Street completed under the supervision of _____ licensed Architect / Engineer / Structural Engineer, License No. _____ is permitted to be occupied to the following condition.**

1. _____

2. _____

3. _____

4. _____

Yours faithfully,

Office Stamp .....

.....

Office (Communication) No. .....

Date: .....

Signature of the authorized person/officer of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar

Name, Designation and Address of the authorized person/officer

.....

.....

.....

FORM 8
INSPECTION REPORT

I ..... working as .....with .....have carried out the inspection of Building belonging to Shri/Smt.....situated at ..... in accordance with building permission sanction No ..... dated .....

Alignment of the building as per approved plans has been given.

Accepted by:
1)Owner (name and signature).....date.....

2)Architect/License Technical Personnel (name and signature).....date.....

For the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar:
Asst Engineer/Enforcement Inspector (i/c)

(Name and signature).....date.....

FORM 9
INTIMATION OF COMPLETION AT DIFFERENT STAGES OF CONSTRUCTION WORK

To,

Sir,

The construction up to footing trench/column up to plinth/plinth/slab level has been completed in the building of Shri/Smt.....situated at .....in accordance with your building permission sanction No .....dated..... under my supervision and in accordance with the sanctioned plan.

You may please fix a convenient date and time to confirm the same

Yours faithfully,

Signature of Owner and Architect/Engineer

Name .....
(In Block letters)
Address .....

.....

The following deviation(s) from the sanctioned plans have been noticed which are against the provision of Master Plan/ Regulations are of non-compoundable nature.

Description of deviation(s) noticed:
1.
2.
3.
4.
5.

You may not proceed with further work till such time the deviations made are rectified and construction brought in conformity to sanction plans.

Yours faithfully,

For ..... Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar

Date:……

Schedule I (Towns)

Guidelines for all proposed New Land Development/Master Plan

1. All private land owners who desire to dispose off their land in the form of plots shall need prior permission from the Executive Committee if their original plot is 600 sq.m or more.

    1a. All division of plots shall be drawn by a certified engineer or architect or town planner.
    1b. The plot layout has to be a scaled contoured survey map.
    1c. The plot layout has to indicate approach roads, drainage, solid and waste water disposal, electric posts, telecommunication towers, etc.
    1d. For further details, one should refer to bye-laws and regulations.

2. All Sordars, Lyngdohs and Syiemships who desire to lease out plots from community lands or Raid Lands have to consult an architect or planner to prepare plots and future development.

3. All lease plots by Sordars, Lyngdohs and Syiemships shall have a clear set back of 100 metres (or as determined by the Town/Executive Committee from time to time) from water bodies, streams or rivers and law kyntang /law adong.

4. All lease plots by Sordars, Lyngdohs and Syiemships shall incorporate sound urban planning showing ways for waste and solid disposals, roads, plot size of not less than 300 sq.m.

5. All private owners, Sordars, Lyngdohs and Syiemships who desire to lease/sell their plot for the purpose of educational and health institutions, cultural and religious institutions, sports facilities, hotels/resorts, commercial housing shall need prior permission from the Building Permission Department of the Authority.

6. Any conversion of existing forest and agricultural land to any type of land use shall need the prior permission from the Executive Committee.

7. All private and clan land should be recorded with the Executive Committee.

8. Dismantling and renovation or any development plan of any heritage/archaeological structure or site, built forms like building structures, monoliths / mawbynnas, living root bridges, sacred groves, traditional bridges etc., shall need prior permission from the Executive Committee. Permission for the above work shall be based on drawings submitted by registered architects in consultation with technical experts of respective fields.

9. Intervention on natural resources like felling of trees, quarrying , community fishing shall need a permission from the Executive Committee.

10. Natural Hazard Prone Areas including unbuildable areas could be allocated for burial grounds, cemeteries, reserved forests, parks, green belts, etc., under the purview of the Raid.

S1.2 *Sub-Division/Layout Plan*
In the case of development work, the notice shall be accompanied by the sub-division/layout plan which shall be drawn on a scale of not less than 1:500 containing the following:

a) Scale used and north point;

b) The location of all proposed and existing roads with their existing/proposed/prescribed widths within the land;

c) Dimensions of plot along with building lines showing the setbacks with dimensions within each plot;

d) The location of drains, sewers, public facilities and services, and electrical lines, etc;

e) Table indicating size, area and use of all the plots in the sub-division/layout plan;

f) A statement indicating the total area of the site, area utilized under roads, open spaces for parks, playgrounds, recreation spaces for parks, playgrounds, recreation spaces and development plan reservations, schools, shopping and other public places alongwith their percentage with reference to the total area of the site proposed to be subdivided; and

g) In case of plots which are subdivided in built-up areas in addition to the above, the means of access to the sub-division from existing streets.

1. Minimum Plot Sizes
(i) *Residential and residential apartment/housing*: The minimum plot size shall be 300 sq.m. In case of govt. lease properties the minimum plot size shall be as determined by the govt. from time to time.

(ii) *For commercial*: - The minimum plot size shall be 50 Sq.m with a minimum width of 6 metres.
(a) Neighbourhood/convenient shops shall have a minimum plot size of 50 sq.m.
(b) Commercial centres shall have a minimum plot size of 400 sq.m.

(iii) *For mixed use development (residential and commercial):* The minimum plot area shall be the same as (i) above.

(iv) *For services like cottage and handloom industries:* The minimum size of plot shall not be less than 200 sq.m.

(v) *For automobile workshop:* The minimum plot size shall be 300 sq.m.

(v) *For medium industry:* The minimum size of the plot shall be 10,000 sq.m.

(vi) *For hostels, motels or inns, guest house:* The minimum plot size shall be 300 sq.m.

(vii) *For auditorium, museum, library:* The minimum plot size shall be 1000 sq.m.

2. Compound wall: - Any construction of compound wall along the district roads, state or national highways shall be permitted on temporary basis i.e. that part of the plot affected by the proposed R/W compound walls in such cases shall be of the approved design, with 1.00 metres height and construction material of a temporary nature. This compound wall erected along the above category of the roads, and other roads shall be demolished by the owners when the notice is served to them without any compensation for the same.

Schedule II (Villages)

Guidelines for all proposed New Land Development/Master Plan

1. All private land owners who desire to dispose off their land in the form of plots shall need prior permission from the Executive Committee if their original plot is 600 sq.m or more.

    1a. All division of plots shall be drawn by a certified engineer or architect or town planner.
    1b. The plot layout has to be a scaled contoured survey map.
    1c. The plot layout has to indicate approach roads, drainage, solid and waste water disposal, electric posts, telecommunication towers, etc.
    1d. For further details, one should refer to bye-laws and regulations.

2. All Sordars, Lyngdohs and Syiemships who desire to lease out plots from community lands or Raid Lands have to consult an architect or planner to prepare plots and future development.

3. All lease plots by Sordars, Lyngdohs and Syiemships shall have a clear set back of 100 metres or as determined by the Town/Executive Committee from time to time from water bodies, streams or rivers and law kyntang /law adong.

4. All lease plots by Sordars, Lyngdohs and Syiemships shall incorporate sound urban planning showing ways for waste and solid disposals, plot size of not less than 300 sq.m.

5. All private owners, Sordars, Lyngdohs and Syiemships who desire to lease/sell their plot for the purpose of educational and health institutions, cultural and religious institutions, sports facilities, hotels/resorts, commercial housing shall need prior permission from the Building Permission Department of the Authority. *(Refer Khasi Hills Autonomous District Council Draft Building Bye-laws and Land Development Guidelines For Urban and Sub-Urban Areas, Special Buildings.)*

6. Any conversion of existing forest and agricultural land to any type of land use shall need the prior permission from the Executive Committee.

7. All private and clan land should be recorded with the Executive Committee.

8. Dismantling and renovation or any development plan of any heritage/archaeological structure or site, built forms like building structures, monoliths / mawbynnas, living root bridges, sacred groves, traditional bridges etc., shall need prior permission from the Executive Committee. Permission for the above work shall be based on drawings submitted by registered architects in consultation with technical experts of respective fields.

9. Intervention on natural resources like felling of trees, quarrying, community fishing shall need a permission from the Executive Committee.

10. Natural Hazard Prone Areas including unbuildable areas could be allocated for burial grounds, cemeteries, reserved forests, parks, green belts, etc., under the purview of the Raid.

S2.2 *Sub-Division/Layout Plan*
In the case of development work, the notice shall be accompanied by the sub-division/layout plan which shall be drawn on a scale of not less than 1:500 containing the following:

a) Scale used and north point;

b) The location of all proposed and existing roads with their existing/proposed/prescribed widths within the land;

c) Dimensions of plot along with building lines showing the setbacks with dimensions within each plot;

d) The location of drains, sewers, public facilities and services, and electrical lines, etc;

e) Table indicating size, area and use of all the plots in the sub-division/layout plan;

f) A statement indicating the total area of the site, area utilized under roads, open spaces for parks, playgrounds, recreation spaces for parks, playgrounds, recreation spaces and development plan reservations, schools, shopping and other public places alongwith their percentage with reference to the total area of the site proposed to be subdivided; and

g) In case of plots which are subdivided in built-up areas in addition to the above, the means of access to the sub-division from existing streets.

S2.3 Guidelines for Preparation for all Proposed New Land Development/Master Plan

S2.3.1 Construction of buildings on plots in land development layouts to conform to certain standards –

S2.3.1.1 Layout Plan
The distribution of land use in case of land developed as Townships by private/clan, Sordars, Lyngdohs and Syiemships for the preparation of layout plan shall be as follows:

S2.3.1.1(a) Land under each use
In the land to be developed, the layout should generally conform to the following land use:

	Land under each use
(i) Residential	50 - 60 %
(ii) Work place, Schools, Institutions, Nursing Home, Dispensary, Community places/Facilities, Veterinary Hospitals etc.	15 - 20 %
(iii) Shops, Offices, Consumer Stores, Fertilizer Depot and other bazaar's	3 - 5%
(iv) Open spaces	10 - 15%
(v) Roads, Pedestrian Paths, Drains, Cooperative Bank, P.O. and other utilities	15 - 20%

Note: In community land or Ri Raid the preference for use of such land be given to locate educational, social, health, facilities and utility services, as the Raid may be lacking in such facilities.

S2.3.1.1(b) Residential and Housing Development
The Residential plotted development, till the development plans are prepared, the following norms shall be as follows:

*All new plot sizes in new land developments should not be less than 300 sq m.

S2.3.1.1(c) Road hierarchy (excluding footpaths)

(a) Road which connects villages to nearby areas	9 m (min.)
(b) Main Village Roads	6 m
(c) Internal Village Roads	4.5 m

S2.3.1.1 (d) Social Facilities

Use	**Standard/Population**	**Area**
(a) Primary School	1 for 5000 population	0.4 to 0.6 hec
(b) High School with primary school	1 for 15000 population	1 hectare
(c) Dispensary/Health Centre	1 for 5000 population	.05 hectare
(d) Community Hall	1 for 5000 population	.05 hectare
(e) Anganwadi	1 for 5000 population	.05 hectare

S2.3.2 Space requirement
The plot size ground coverage, FAR, height and set backs of various uses shall be as per following tables.

Note: (1) The setbacks proposed here under will be limited to table 1 to 4. The setbacks along highways will be minimum as prescribed in section 29.
(2) The norms are suggestive and may be modified as per local conditions in the State.
(3) The norms of nearby urban areas may also be referred.

1.0 Residential: Plotted Housing
Table: Plot Size, Ground Coverage, FAR, dwelling units, Storeys, height and set backs

S.No.	**Plot Area in Sq m**	**Max in Ground Coverage %**	**FAR**	**No. of D/U**	**Maxm height in M**	**SETBACKS M**		
						Front	**Sides**	**Back**
1	300-400	50%	120	3	9	3.0	1.8	2.5
2	400- 500	50%	100	3	9	3.0	2.0	3.0
3	Above 500	50%	100	3	9	4.0	2.5	3.0

*All new plot sizes in new land developments should not be less than 300 sq m.

2.0 Industrial Use

(Resource based cottage industries, non-polluting and non-hazardous industries. Also refer to section on Special Buildings)

Table: Ground Coverage, FAR, height and set backs

S.No.	Plot Size in Sq m	Ground Coverage %	FAR	Height	SETBACKS in M		
					Front	Side	Back
1	300-400	55 %	120	8	3	1.5	1.8
2	401-500	50%	110	8	**3**	2	**3**
3	501 - 1000	50%	110	8	4.5	2	3
4	1001-4000	50 %	100	8	6	3	3
5	Above 4001	45 %	90	8	9	3	4.5

3.0 Institutional & Community Facilities (including markets and commercial facilities)

Table: Plot Size, Ground Coverage, FAR, height and set backs

S.No.	Plot Size in Sq m	Ground Coverage %	FAR	Height	SETBACKS in M		
					Front	Side	Back
1	400-1000	40%	120	9	4.5	3	3
2	1001-2000	33%	100	9	4.5	3	4.5
3	2001-4000	30%	90	9	6	3	4.5
4	Above 4001	25 %	90	12	9	3	6

4.0 Education & Health Facilities

Table: Plot Size, Ground Coverage, FAR, height and set backs

S.No.	Use	Minimum Plot size in sq m	Ground Coverage %	FAR	Height in M	SETBACKS in M		
						Front	Side	Back
1	Nursery School/Anganwadi	400-1500	33.3%	100	9	4.5	3	3
2	Primary School	1500-3000	30%	90	9	6	3	6
3	Senior Secondary	4000-10000	25%	100	12	9	4.5	6
4	Nursing Home Dispensary & Diagnostic Centre	250 251-500 Above 500	35% 33.33% 30%	70 100 100	6 9 12	3 3 6	1.5 2.5 3	3 3 4.5

S2.3.3. MOTELS/RESORTS

Motels are permitted in Rural Zone/ Green Belt on National Highways and Inter-State roads. Subject to a service lane, the following norms and building standards are prescribed.

Minimum plot size	1.0 Ha
Minimum Setbacks Front –	15 m.
Rear and sides –	9 m.
Maximum FAR	15
Maximum Ground Coverage	15%
Maximum Height	9 m.

S2.3.4. Parking Norms

The following equivalent car parking space (ECS) be provided as follows:

S.No.	Use	No. of Equivalent car space (ECS)
1	Residential Plotted Development	1 for 100-200 sqm Plot 2 for plots more than 201 sqm
2	Multi-family residential	1 for 75-100 sqm built-up area 1.25 for more than 101 sqm built-up area
3	Commercial Multiplex/shopping Mall	2 for every 100 sqm built-up area 1 for 10 seats and 2 for 100 sqm built-up area
4	Motel	1 for every room
5	Wholesale Mandi Godown/Cold storage	2.5 for 100 sqm built-up area 1 for 550 cu.m storage
6	Offices/Conference hall/Banquet hall	2 for 100 sqm built-up area
7	Educational	1 for 100 sqm built-up area
8	Industrial	0.5 for 100sqm built-up area

S2.3.5 Control of building activities along highways – 1) In order to regulate and control building activities along National Highways, State Highways, Major District roads and major urban roads as notified by – PWD, the persons responsible for carrying out excavation, earth work, construction, demolition or repairs to all sites within 100 m. from these roads shall apply to the Panchayat concerned for permission to carry out such work in accordance with the setback mentioned here below, subject to NOC from PWD/NHAI, wherever applicable.

Type of building activities	National Highway or State Highway	Major District Road	Village Roads
Theatres, Industrial Units etc. Major Commercial Establishments	8 m. front set back	5 m. front set back	3 m.
Residential	5 m. front set back	3 m. front set back	3 m.
Institutional	8 m. front set back	5 m. front set back	5 m.
Excavation for taking out earth	100 m. front set back	100 m. front set back	50 m.

Services

S2.3.6 Water Supply and Sanitary Installations – The requirements regarding water supply and sanitary installations of the buildings shall conform to those specified in IS: 1172 -1993.

S2.3.7 Latrines with an opening on public roads – It is prohibited to have latrines on to public roads and on lateral sides of neighboring houses.

S2.3.8 No Construction – of horse stables, cattle yards and factories of washable corrosive products prejudicial to health, can take place in less than 100 metres (or as determined by the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar from time to time) of any existing drinking well.

S2.3.9 Construction of wells – No drinking water well can be opened without prior consent of the Executive Committee/Town Committee/Dorbar Shnong or Executive Dorbar.

S2.3.10 Water Seal Latrine
No building plan shall be approved or deemed to have been completed and fit for human occupation unless provision is made for water seal latrine. No dry latrine shall be allowed. Water seal latrines can also be provided on the basis of community toilets or shared toilets. Where leaching pits are used, it should be constructed within the premises of the households. However, where, due to space constraint, construction of pits may be done in places like lanes, speeds and roads. The Water seal latrine should be properly maintained and kept in sanitary condition by the owner or the occupier. The contents of the septic tanks, soak pits, leach pits, etc. should be periodically emptied. The water hand pumps should be installed only at a distance of at least 8m and should be taken at least deeper than 15 m, in accordance with rules of the Executive Dorbar.

S23.11 Compound wall: - Any construction of compound wall along the district roads, state or national highways shall be permitted on temporary basis i.e. that part of the plot affected by the proposed R/W compound walls in such cases shall be of the approved design, with 1.00 metres height and construction material of a temporary nature. This compound wall erected along the above category of the roads, and other roads shall be demolished by the owners when the notice is served to them without any compensation for the same.

Appendix E
Guidelines for Building in Seismic Zone 5

Part B-1

EARTHQUAKE SAFE CONSTRUCTION OF MASONRY BUILDINGS

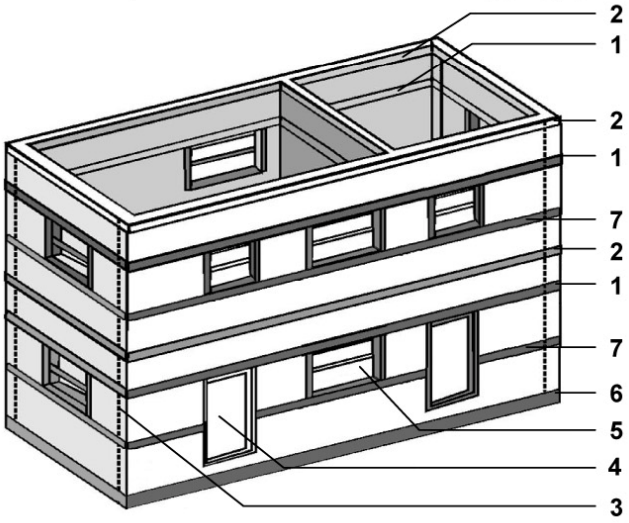
Simplified Guideline for ***All New Buildings*** in the ***Seismic Zone V*** *of* ***India*** **Zone V**

Introduction:

The Ministry of Home Affairs, Government of India and the National Disaster Management Authority are keen that **All New Buildings** should be made earthquake resistant in the first instance so that we do not add to the stock of existing unsafe buildings. Since most of the buildings are constructed using brickwork or, solid hollow concrete blocks with flat roofs, very simple illustrated guidance is provided in the attached brochure for incorporating the earthquake resistant features suitable for seismic Zone V.

Essential Elements for Earthquake Safety[1]*:*

The essential elements required to make a building earthquake safe are as given in ***Figure 1.*** Some additional requirements are detailed in the following paragraphs.



1. **Lintel Band**
2. **Roof/ Floor Band**
3. **Vertical reinforcing bar at corner**
4. **Door**
5. **Window**
6. **Plinth Band**
7. **Window Sill Bands**

Figure – 1: ***Essential Internal Elements in Buildings for Earthquake Safety***

1. GOOD CEMENT MORTAR:

The cement mortar should be used in the ratio of 1 part of cement with 4 parts of sand (1 sack of cement mixed with 4 equal sacks of sand).

2. HORIZONTAL SEISMIC BANDS:

A seismic band consists of reinforced concrete flat runner through **all external and internal masonry walls** at the following levels in the building.

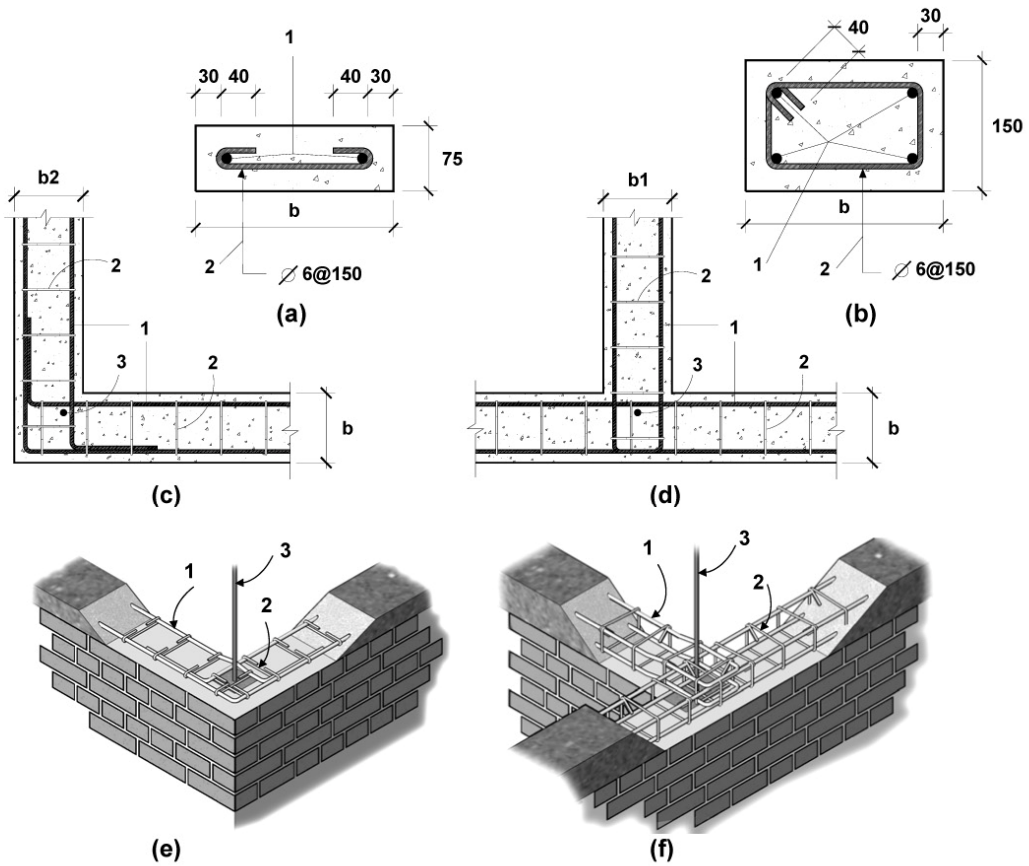
a. at the plinth level of the building

b. at the levels of lintels of doors and windows

c. at the ceiling level of roofs consisting of wooden joists or, prefabricated reinforced concrete beams or, planks. *(Such band will not be necessary if the roof consists of Reinforced Concrete or, Reinforced Brick slabs cast on the walls covering a minimum of 2/3 of the thickness of the wall.)*

The dimensions of the band and the reinforcement inside depend upon the length of the walls between the perpendicular cross walls. The table below ***(Table-1)*** shows the dimensions to be adopted for the seismic bands and the internal reinforcement details to be provided. The reinforcement and bending details of seismic bands are given in the ***Figure-2.*** Reinforcing bars will be of Fe 415 type **[**TOR or, High Yield Strength Deformed, i.e. HYSD bars**]**

[1] The details given here are extracted from **IS: 4326-1993 Code of Practice** as applicable to buildings with Brick/ Concrete block walls and R.C. flat slab roofs. Details not given here may be seen in the Code.



(a) Section of the Band with 2 longitudinal steel bars
(b) Section of the Band with 4 longitudinal steel bars
(c) Structural Plan at L- type wall junction
(d) Structural Plan at T- type wall junction
(e) 3 Dimensional view of the L - type wall junction
(f) 3 Dimensional view of the T - type wall junction

1. Longitudinal reinforcements
2. Lateral Ties
3. Vertical reinforcement at corners
b, b1, b2 Wall thickness

***Figure-2*: Reinforcement and Bending Details of Seismic Bands**

***Table-1*: Recommended size and longitudinal steel in Seismic Bands (Zone V)**

Internal length of wall	**Buildings of all types i.e., Residential buildings & Public Buildings** (Schools, Hospitals, Meeting Halls, Anganwadis, etc.)		
	Size of the band	No. of Bars	Dia *(mm)*
5 m or, less	10 cm x wall width	2	10
6 m	10 cm x wall width	2	12
7 m	15 cm x wall width	4	10
8 m	15 cm x wall width	4	12

3. VERTICAL REINFORCEMENT IN THE BRICK WALLS:

For earthquake safety in seismic zone V reinforcing bars have to be embedded in brick masonry at the corners of all the rooms and the side of the door openings. Window openings larger than 60 cm in width will also need such reinforcing bars (***Figure – 4***). The diameter of the bar depends upon the number of storeys in the building. The recommendations are given in ***Table-2***.

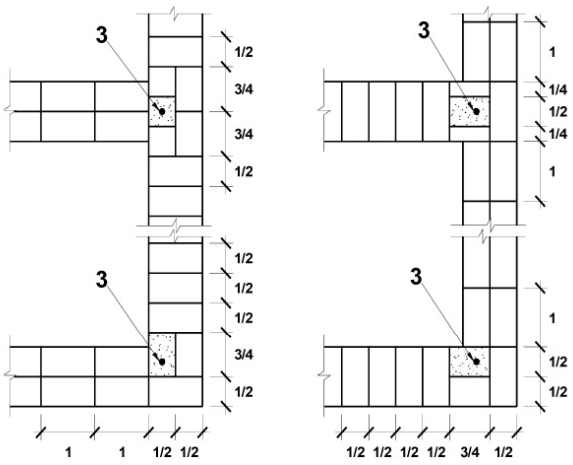
Providing the vertical bars in the brickwork and concrete blocks requires special techniques which could be easily learnt by the supervising engineers and masons will need to be trained.

These vertical bars have to be started from the foundation concrete, will pass through all seismic bands where they will be tied to the band reinforcements using binding wire and embedded to the ceiling band/roof slab as the case may be using a 300 mm 90° bend. Sometimes the vertical bars will not be made in one full length. In that case the extension of the vertical reinforcement bars are required, an overlap of minimum of ***50 times*** *the bar diameter* should be provided. The two overlapped reinforcement bars should be tied together by using the binding wires.

Table-2: Recommended size of vertical steel in Seismic Bands (Zone V)

Buildings of all types i.e., Residential buildings & Public Buildings * (Schools, Hospitals, Meeting Halls, Anganwadis, etc.)		
No. of storeys	Floor	Dia of Single HYSD(TOR) Bar at corners of room (mm)
One	-	12
Two	Top	12
	Bottom	16
Three	Top	12
	Middle	16
	Bottom	16

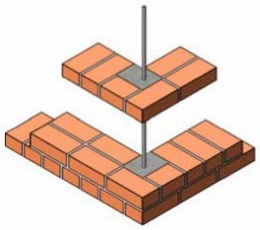
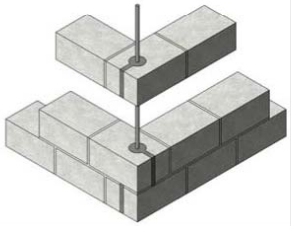
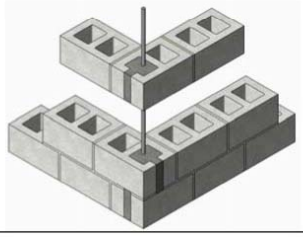
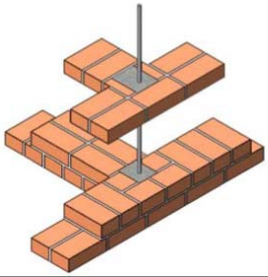
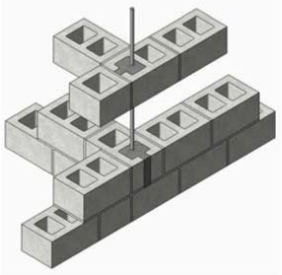
* ***Building of four storey not permitted in Zone V.***



a & b : Alternate courses in one brick wall
1 : One brick length
½ : Half brick length
¼ : Quarter of a brick length
¾ : Three quarters of a brick length
3 : Vertical reinforcement bars with Concrete/ mortar filling in pocket of M20 grade (1:1½:3 nominal mix)

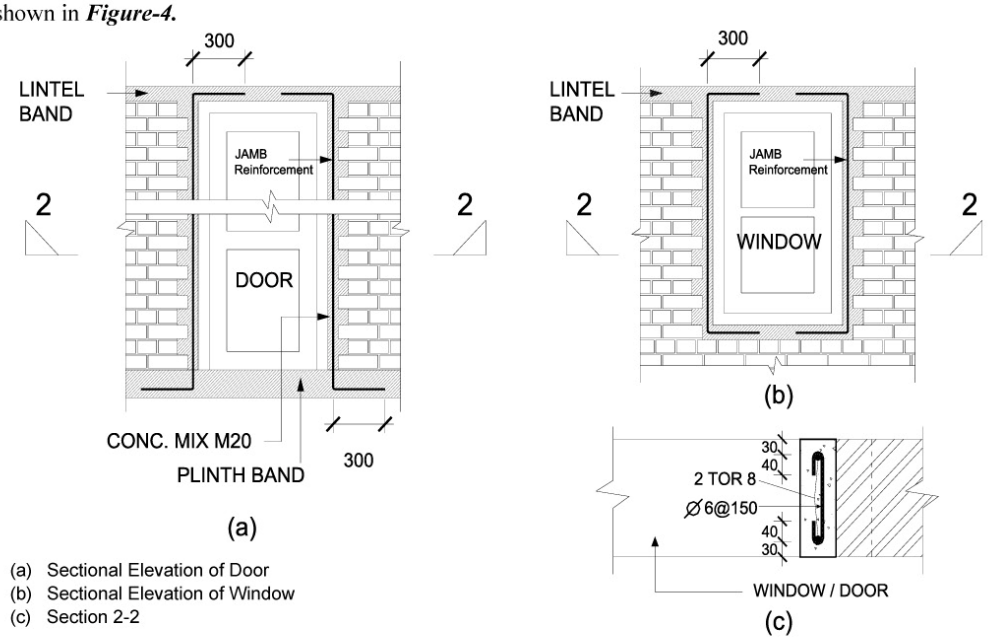
Figure-3: Typical Details of Providing Vertical Steel Bars in Brick Masonry

Table-3: Recommended joint details with the vertical reinforcement at corner for masonry walls using different kind of materials

Type of *Joint*	Corner reinforcement in case of *Brick Masonry*	Corner reinforcement in case of *Solid Concrete Block Masonry*	Corner reinforcement in case of *Hollow Concrete Block Masonry* (see the hole and slit made)
L- Joint			
T- Joint			

4. VERTICAL REINFORCEMENT AT JAMBS OF OPENINGS:

All door and window openings wider than 600 mm will have vertical reinforcement in jambs as shown in ***Figure-4.***



(a) Sectional Elevation of Door
(b) Sectional Elevation of Window
(c) Section 2-2

Figure-4: ***Typical Details of Providing Vertical Steel Bars around doors/windows***

5. FOUNDATION

Foundation width 'B' should be decided by the load coming on the foundation and the bearing capacity. Masonry width may be reduced by ½ times T in every step of 150 mm height.

NOTE:
In sandy soils with high water table within 8 m depth below ground level, which may get liquefied during earthquake of MSK intensity VIII to IX, pile foundation need to be used in consultation with the Structural/ Geotechnical Engineer.

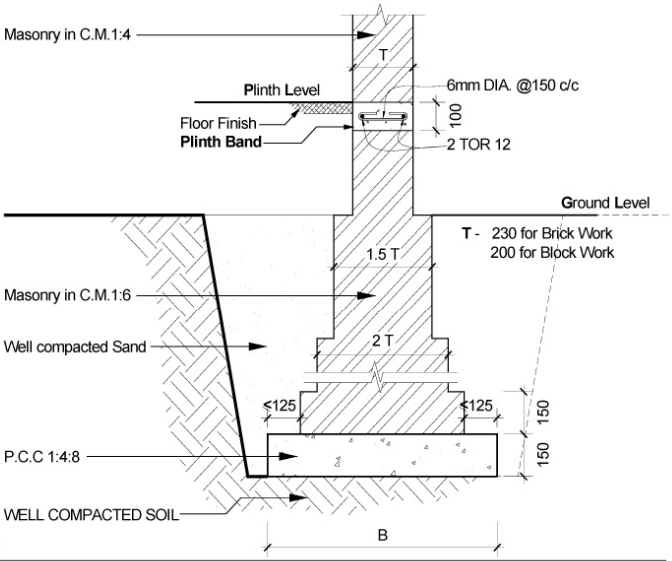


Figure-5: ***Foundation Detail with Plinth Band in Brick or, Concrete Block Masonry***

Prepared by:
Professor Anand S. Arya assisted by Jananjan Panda
GoI – UNDP, Disaster Risk Management Programme
NATIONAL DISASTER MANAGEMENT DIVISION
MINISTRY OF HOME AFFAIRS, NORTH BLOCK, NEW DELHI
Tel:91-11-23093178; Tele/fax: 23094019, Email:ndmindia@nic.in;Website:www.ndmindia.nic.in

Part B-4

EARTHQUAKE SAFE CONSTRUCTION OF STONE BUILDINGS [1]

Simplified Guideline for ***All New Buildings*** in the ***Seismic Zone III, IV & V of India***

1. INTRODUCTION

This guide cover those houses which are situated in the earthquake prone zones and whose bearing walls are built using coursed stone masonry with rooms not exceeding 7.0 meters in length and the number of storeys are no more than two or three as specified. The roof can be flat or sloping. The earthquake resistant provisions are indicated for seismic Zones III, IV and V as appropriate. Construction of Rubble stone walls using mud mortar as well as cement mortars are both dealt in this Guide.

2. FOUNDATIONS:

2.1 Rocky Ground

Weathered, jointed and fissured rock may be leveled by chiseling, in steps of about 150 mm and stepped strip footing built on it, with the foundation width of 600 mm for two storeyed houses. Boulder site may be leveled by removing small boulders but leaving large boulders in place. In all cases, the base concrete of sufficient thickness (with a minimum of 100 mm) should be used for leveling before starting the masonry.

2.2 Soil Site

Use stepped-strip foundation with minimum depth of 750 mm below ground level and width of 700 mm (upto 2 storeyed houses). For each additional storey, increase width by 300 mm.

2.3 Treatment at Plinth Level

This will depend on site-soil condition as follows:

a. Rocky Ground

The seismic band is not required. Use damp-proof course (D.P.C.) as usual on the strip foundation. It may be cement-sand mortar of 1:3 mix 25mm thick or 1:2:3 micro concrete 38mm thick, with damp proofing compound mixed in each case.

b. Boulder or Soil Site

Use RC seismic band of 75 to 100mm thickness.

3. STONE MASONRY WALLS IN MUD MORTAR

Stone masonry walls built using mud mortar and other details as given in the following paras, could be used for *housing only*, for reasons of affordability or non- availability of cement supply. Stone masonry in mud should not be used for community buildings such as schools, hospitals, mosques, etc.

3.1 Construction Control

(i) The mortar should be clay mud of good quality.

(ii) The wall thickness `t' should preferably be kept 450mm, but not to be larger than 500mm. In any case, the stones of the inner and outer wythes should be interlocked with each other as far as possible.

(iii) The masonry should preferably be brought to courses at not more than 600 mm lift so as to achieve `coursed rubble masonry'.

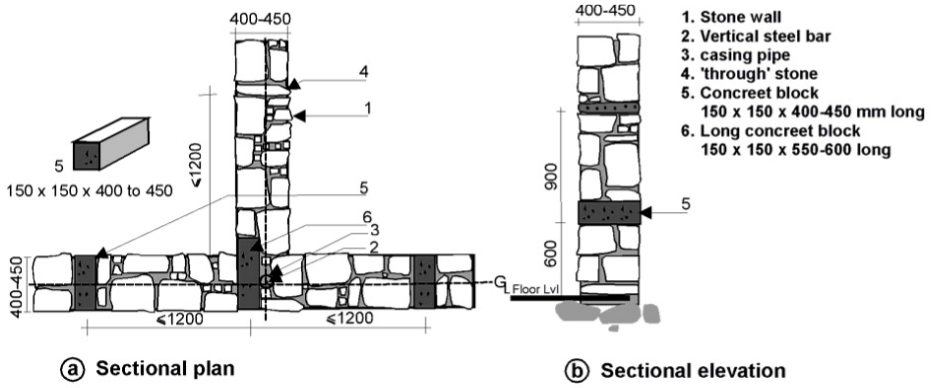


Fig. 1 `Through' stone or bond elements in stone wall built in mud mortar

[1] The details given here are extracted from **IS:13828-1993 "Improving Earthquake Resistance of Low Strength Masonry Buildings – Guidelines".** Details not given here may be seen in the Code.

(iv) `Through' stones of full length equal to wall thickness should be used in every 600 mm lift at not more than 1.2m apart horizontally (Fig.1).

(v) In place of `through' stones, `bonding elements' of concrete bars of 50mm x 50mm section with an 8mm dia rod placed centrally or solid concrete blocks of 150 x 150 x `wall thickness size' may be used. (Fig. 1). Alternatively, seasoned wooden battens of 50 mm x 50 mm size may be used as bonding element.

(vi) Long stones of 600 mm length or solid concrete blocks of 150 x 150 x 600 mm size should be used at wall corners and T-junctions every 600 mm height to connect the perpendicular walls effectively (Fig.1). Alternatively, seasoned wooden batten of 60 mm x 60 mm x 600 mm size may be used.

3.2 Control on Wall Length and Building Height

Height of the coursed rubble masonry walls in mud mortar should be restricted, with storey height to be kept 2.7m maximum, and span of walls between cross walls to be limited to 5.0 m as follows:

In Zones III and IV: preferably upto two storeys, but not more than three storeys in any case.

In Zone V : preferably One storey but not more than two storeys in any case.

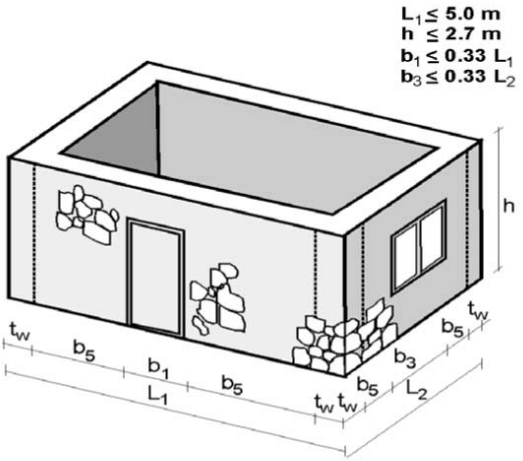


Fig. 2 Control on length, height and openings in stone walls built in mud mortar.

3.3 Control of Openings in Bearing Walls

For coursed rubble stone masonry built in mud mortar, the door and window opening may be located in the walls as follows (Fig.2)

Total length of openings in a wall = 0.33 of wall length in Zone IV & V and 0.42 in Zone III.

Distance of opening from inside corner: $b_5 \geq$ 600 mm in Zone IV & V and 450 mm in Zone III.

Pier width between consecutive openings $\geq$600mm

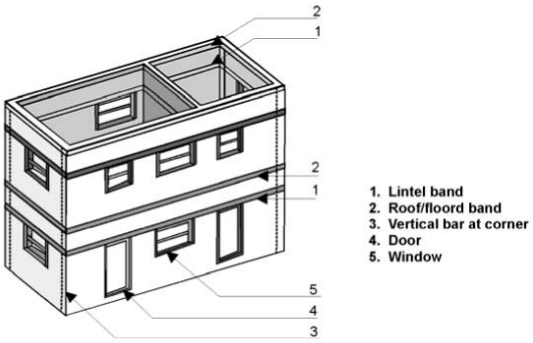


Fig. 3 Overall arrangement of earthquake resisting elements in double storeyed houses having flat roof (Roof not shown)

3.4 Seismic Bands

The overall arrangement of seismic reinforcing of masonry buildings is shown in Fig. 3 for buildings with flat roof and in Fig. 4 for building with sloping roof consisting of horizontal seismic bands and vertical bars. The seismic bands at various critical sections shall be as follows:

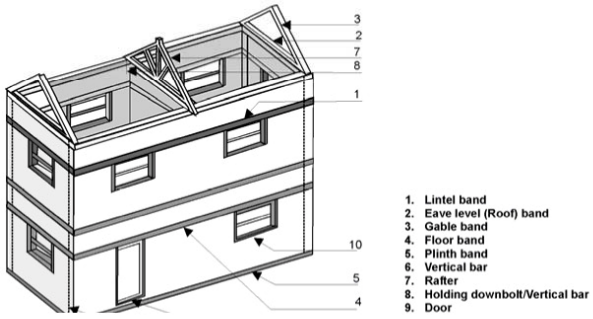


Fig. 4 Overall arrangement of reinforcing in masonry double storey building having pitched roof (Roof not shown)

(i) Seismic bands at plinth, lintel, and ceiling levels in buildings with flat roof will be provided in all internal and external walls continuously without break in all storeys. Requirement of reinforcing bars in RC bands are given in Table 1 and the details of bands are shown in Fig. 5.

(ii) In case of sloping roofs, triangular gable walls must be enclosed within eave level band and a band at the top of the gable wall. These bands must be made monolithic and continuous as shown in Fig. 6.

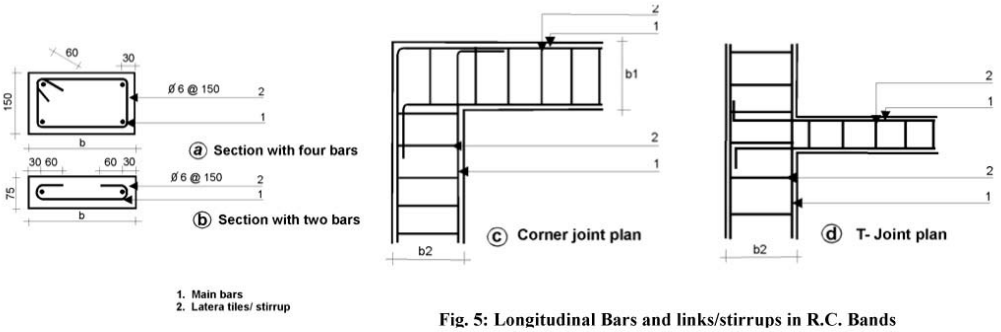


Fig. 5: Longitudinal Bars and links/stirrups in R.C. Bands

(iii) For achieving good bond with masonry, the bands should be cast directly on the masonry and its top surface should be made rough. In the case of plinth and lintel band, stones may be cast in the concrete to project out of the concrete by 50 to 75mm.

Table 1 : Longitudinal Bars* in RC Bands (Stone Masonry in Mud or Cement Mortar)

Length of wall in room (m)	Reinforcing Bars in Seismic Zones					
	Zone III		Zone IV		Zone V	
	No	Dia (mm)	No	Dia (mm)	No	Dia (mm)
≤ 5	2	8	2	8	2	10
6	2	8	2	10	2	12
7	2	10	2	12	4	10

**High Strength Deformed (Tor) bars*

3.5 Vertical Reinforcing Bars in Walls

The vertical reinforcing of walls consists of a single high strength deformed (HSD) or `TOR' bar (Table 2 for required diameters) located at each junction of walls.

Table –2: Vertical Bars at Corners of Room (Stone Masonry in Mud or Cement Mortar)

No. of Storeys	Storey	Diameter Of Single HSD (TOR) Bar at Corners of Room		
		Zone III	Zone IV	Zone V
One	---	---	10	12
Two	Top	10	10	12
	Bottom	10	12	16
Three	Top	10	Three storeyed building, nor permitted in mud mortar	
	Middle	10		
	Bottom	12		

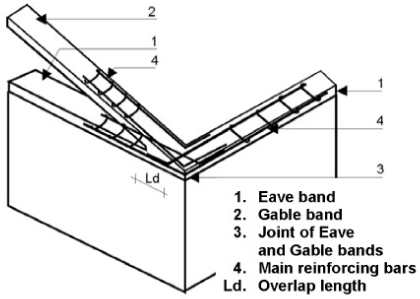
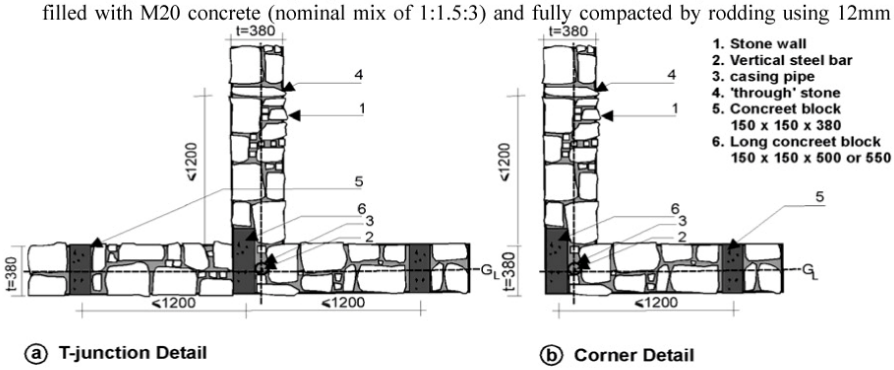


Fig. 6 Continuity of reinforcement in eave and gable bands.

3.5.1 Installation of Vertical Bars

For installations of vertical bars in stone masonry, use of PVC casing pipe of 100mm external dia, 600-750 mm long is recommended around which masonry be built to height 450-600mm (see Fig. 7) and the pipe made loose by gently rotating. As the masonry hardens, the pipe is raised and the cavity filled with M20 concrete (nominal mix of 1:1.5:3) and fully compacted by rodding using 12mm dia



t = 380 for cement mortar, 450 for mud mortar

Fig. 7: Installing vertical steel bars in stone masonry walls

bar. The vertical bar should start from foundation and terminate in roof slab (Incase of RCC roof)/terminate at eaves band (for sloping roof).

3.5.2 Keeping the Bar Vertical

Before casting the foundation, the vertical bars must be kept in correct in position horizontally and vertically. For this purpose tripods may be erected using bamboos or spare reinforcing bars.

3.6 Water Proofing

For protection of external walls against damage by water

(i) Take out roof projection beyond the walls by about 300mm, and

(ii) Use cement-sand mortar pointing on external face of walls;

4. STONE MASONRY USING CEMENT MORTAR

Stone masonry using cement mortar and other details as set out in the following paras may be used for all building categories in the area.

4.1 Construction Control

- *Mortar.* The mortar in superstructure masonry should be cement-sand (1:6 in Zones III & IV and 1:4 Zone V). In the foundation masonry upto plinth, the mix 1:6 may be kept in all cases.
- *Composite Mortar.* In place of cement–sand 1:6 and 1:4 mortars, cement–lime–sand mortar may be used as 1:2:9 and 1:1:6 respectively.
- *Wall Thickness.* The wall thickness should not be larger than 380 mm (not more than 450 mm in any case) and the stones on the inner and outer wythes should be interlocked with each other.
- *Coursed*. The masonry should preferably be brought to courses at not more than 600 mm lift.
- *'Through' Stone'* 'Through' stones of full length equal to wall thickness should be used in every 600 mm lift at not more than 1.2 m apart horizontally. In place of 'through' stones, 'bonding elements' of concrete bars of 50mm x 50mm section with an 8 mm dia rod placed centrally or solid concrete blocks of 150 x 150 x walls thickness, can also be used. Detail similar to fig.1.
- *Corner Stones*. Long stones of 500-600mm length should be used at wall corners and T-junctions of walls. Alternatively use of 150x150x(500 to 600) solid concrete blocks to connect the perpendicular walls effectively (Detail similar to fig.1).

4.2 Control on Wall Length and Building Height

The height of the coursed-rubble masonry walls in cement mortar should be restricted as follows:

(i) *For Zones III & IV*: Three storeys with flat roof or two storey plus attic.

(ii) *For Zone V*: Two storeys with flat roof or one storeys plus attic for pitched roof.

The storey height to be kept 3.2m maximum, and span of walls between cross walls to be limited to 7.0m. If rooms longer than 7m are needed, buttresses may be used at intermediate points not farther apart than 5.0m. The size of the buttress be kept of uniform thickness with top width equal to the thickness of main wall and the base width equal to one sixth of wall height.

4.3 Control of Openings in Bearing Walls

For stone masonry built in cement mortar and brought to courses, the door and window openings should be controlled as follows:

Ratio of total length of openings in a wall to length of the wall in a room should not exceed 0.5 in single storeyed, 0.42 in 2-storeyed and 0.33 in 3 storeyed buildings.

Distance of opening from inside corner	≥	450mm
Pier width between consecutive openings	≥	600mm

4.4 Seismic Bands

The seismic bands at various critical sections should be as provided in sub-para 3.4 (Figs. 5, 6).

4.5 Vertical Reinforcement

The vertical bars to be provided at corners of rooms and the jambs of large openings should be as specified in **3.5** (See Fig. 7).

Part B-5

Earthquake Safe Construction of Earthen Houses [1]

Simplified Guideline for ***All New Buildings*** in the ***Seismic Zone III, IV & V of India***

1. INTRODUCTION

The earthen houses suffer a great deal when impacted by earthquakes due to inherent weakness of the material in tension and shear. Earthquake experience shows that earthen buildings may be cracked in seismic zone II (MSK Intensity VI), wide cracks and even partial collapse may occur in zone III (MSK Intensity VII) and collapses are widespread under zone IV (MSK Intensity VIII). Damage is always much more severe in two storeyed buildings than in one storeyed ones.

The main object of this brochure is to indicate such simple and affordable improvements in construction and addition of earthquake resisting elements which will make the earthen buildings safe against total collapse in seismic zones III & IV. Use of earthen houses in seismic zone V may not be permitted.

2. GENERAL CONSIDERATIONS

2.1 Any of the three forms of earthen construction i.e. hand-formed or sun dried mud blocks (called Adobe) or rammed earth may be used for construction of houses but the safety elements suggested need to be incorporated in all.

2.2 Experience in Intensity areas of MSK VIII in Zone IV has shown the high vulnerability of two-storeyed houses, hence only one storey construction should *preferably* be adopted in seismic Zones III & IV. Important building as for community gathering, school, primary health centre etc. should not be constructed with earthen walls

2.3 Sites with sandy loose soils, poorly compacted clays, and fill materials should generally be discarded due to their excessive settlements during seismic vibrations. Also, sites with very high water table and those in flood prone areas should be avoided to be free from liquefaction and saturation effects on mud walls.

2.4 Site should be above high flood level or the ground shall be raised to this effect.

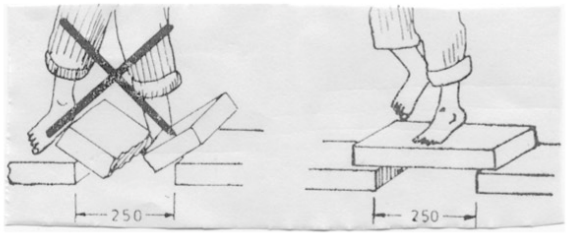
3. SUITABILITY OF SOIL

The following qualitative tests may be used for determining the suitability of a soil for earthen construction.

3.1 Strength Test of clay block (Adobe):- The strength of adobe may be qualitatively ascertained as follows:

After 4 weeks of sun drying, it should be strong enough to support in bending the weight of a person 60 – 70 kg (see Fig. 1). If it breaks, more clay and fibrous material is required to be added.

Quantitatively, the compressive strength may be determined by testing 100 mm cubes of clay after completely drying them. A minimum value of 1.2 N/mm^2 (12 kg/cm^2) will be desirable.



(i) Poor Strength *(ii) Good Strength*

Fig.1 Field Testing of Adobe Strength

4. ADEQUATE CONFIGURATION OF EARTHEN BUILDINGS

Taking the various planning measures into account, a configuration of earthen buildings, which will be suitable in seismic zones, is shown in Fig. 2. Here a sloping roof is sketched, but could be replaced with a flat, using a wall plate under the wood logs or joists. The following is mainly recommended:-

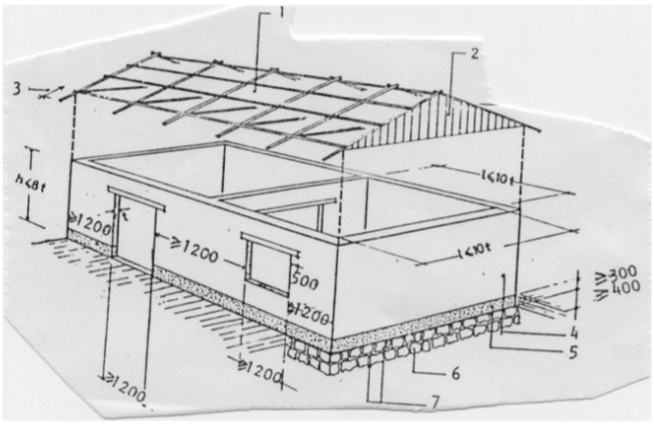
- One floor construction
- Roughly square room
- Symmetric distribution of walls
- Small openings <1200 mm width

5. HOUSE SITE IN SEISMIC ZONES

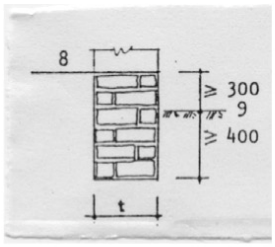
(i) Foundation

(a) Width of strip footings of the walls may be kept as follows:

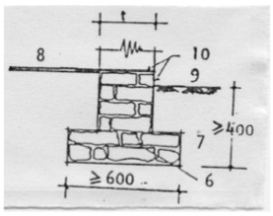
[1] The details given here are extracted from **IS:13827-1993 "Improving Earthquake Resistance of Earthen Buildings - Guidelines",** Details not given here may be seen in the Code.



1 – Light roof, 2 – Light gable wall (matting or boarding),
3 – Rain protection overhang about 500 mm, 4 – Stable plaster,
5 – Plinth height for flood protection, 6 – Stable foundation,
7 – Good mortar preferably non-clay, 8 – Floor level,
9 - Ground level, 10 – Water proof layer , t = wall thickness



a) Firm Soil



b) Soft Soil

Fig. 2:- Adequate Configuration of Earthen Buildings

- One storey on firm soil - 1.5 t where t = thickness of wall
- One storey on soft soil - 2.0 t

(b) The depth of foundation below existing ground level should at least be 500 mm.
(c) The footing should preferably be built by using stone, fired brick, or concrete block, using cement or lime mortar. Alternatively, it may be made in lean cement concrete with plums (cement : sand : gravel : stones as 1:4:6:10) or without plums as 1:5:10. Lime could be used in place of cement in the ratio lime:sand:gravel as 1:4:8.

(ii) **Plinth Masonry:-** The wall above foundation up to plinth level should preferably be constructed using stone or burnt bricks laid in cement or lime mortar. *Clay mud mortar may be used only as a last resort*. The height of plinth should be above the flood water line or a minimum of 300 mm above ground level.

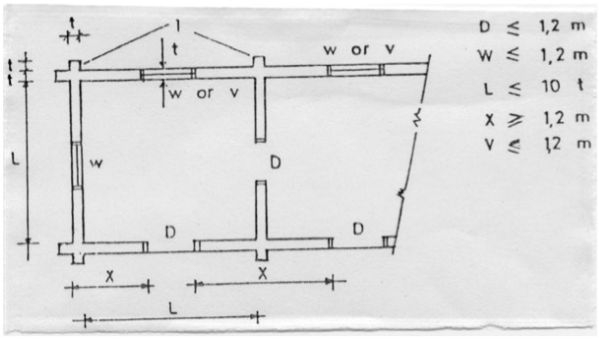
(iii) **Damp Proof Course:-** It will be preferable to use a water-proofing layer in the form of waterproof mud or heavy black polythene or polyethylene sheet at the plinth level before starting the construction of superstructure wall. If Adobe itself is used for plinth construction, the outside face of plinth should be protected against water-damage by suitable burnt-brick facia or lime plaster.

(iv) **Drainage:-** A water drain should be made 900 to 1200 mm away from the wall to save it from seepage.

(v) **Length of Wall:-** The length of a wall, between two consecutive walls at right angles to it, should not be greater than 10 times the wall thickness t, nor greater than 8t in height of wall.

(vi) **Thickness of Wall:-** Hand-formed walls could preferably be made tapering upwards, keeping the minimum thickness 300 mm at top and increasing it with a batter at bottom to 500 mm.

(vii) **Openings in Walls:-** The width of an opening should not be greater than 1.20 m (see Fig. 3). The distance between an outside corner and the opening should be not less than 1.20 m.



1. – Pillaster, D= Door, W= Window, V= Ventilator

2 **Fig. 3 Wall Dimensions, Pilaster at Wall Junctions**

The sum of the widths of openings in a wall should not exceed 1/3 of the total wall length in seismic zone III & 2/5 in zone IV.

(viii) Providing outside pillasters at all corners and junctions of wall are recommended as these increase the seismic stability of the buildings a great deal (see Fig.3).

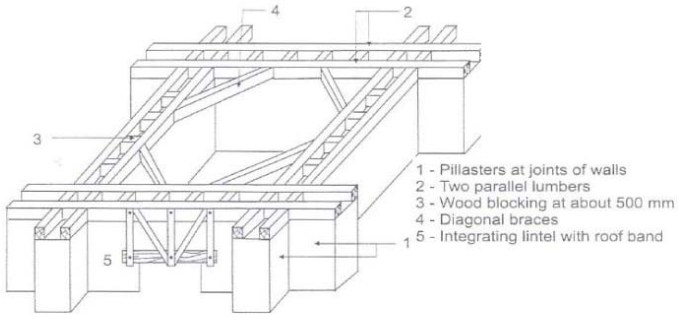


Fig.5:-Seismic band using timber on pillastered walls

(ix) **Lintels:-**The bearing length (embedment) of lintels on each side of an opening should not be less than 300 mm.

6. SEISMIC STRENGTHENING OF BEARING WALL BUILDINGS

6.1Collar Beam or Horizontal Seismic Band

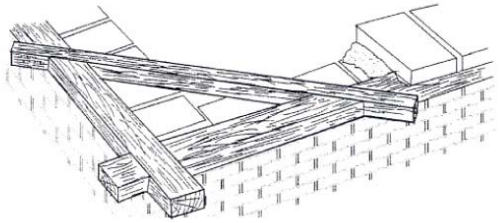
Three horizontal continuous reinforcing and binding beams or *seismic bands* should be used in seismic zones III & IV as follows:

(i) **Lintel Band:-** This wooden band will be provided coinciding with lintels of door and window openings. Separate window lintels will not be necessary.

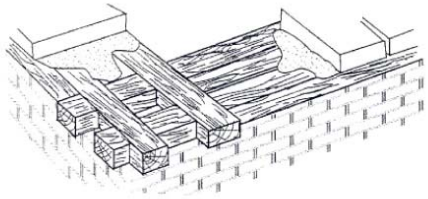
(ii) **Ceiling Band:-** This band will be provided just below the roof or floor. This will also serve as wall plate for supporting the floor/roof wood logs or joists, or rafters/trusses in case of pitched roofs which should be nailed/spiked to this band for ensuring their stability during earthquakes.

Note.

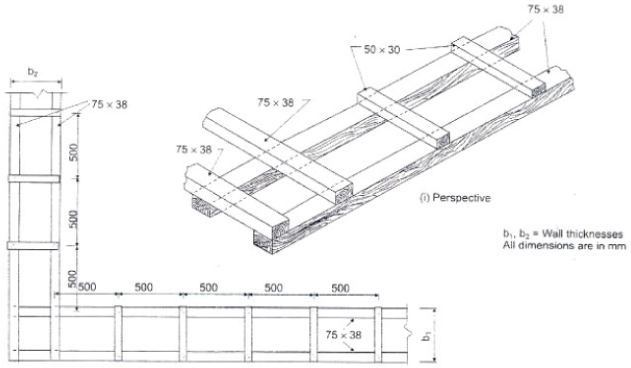
1. *Where the height of wall is not more than 2.5 m, the lintel band can be avoided, but the lintels should be connected to the roof band (see fig.5).*
2. *Only one such band below the roof and floor each may be used in Zone II.*



a) Rough cut lumber in single piece with corner diagonal



b) Rough cut lumbers in parallel



c) Details of timber seismic bands

Fig.4:- Wood bands at Lintel and Ceiling Levels

6.2 Details of Bands

The bands in earthen walls and walls made of stone or burned bricks laid in mud mortar could be in the following forms:

(i) Unfinished rough cut or sawn (50 x 125 mm in section) lumber in single pieces provided with diagonal members for bracing at corners (see Fig.4a).

(ii) Unfinished circular sawn into halves (from 90-100 mm dia log) or fully sawn (75 x 38 mm in section) lumber in two pieces placed in parallel with halved joints at corners and junctions of walls (see Fig. 4b and 4c). The longitudinal pieces will be braced by cross pieces 50x30, (or circular halves, 60 mm dia) with nailed joints.

Alternatively, bamboos in ladder form may be used as seismic bands.
In each case, the lengthening joint in the elements shall be made using framed joints with overlapping strips or iron-straps with sufficient nails/screws to ensure the strength of the original lumber or bamboo at the joint.

6.3 Pillasters and Buttresses

Where pillasters or buttresses are used, as recommended earlier at corners and T-junctions, the collar beam or band should cover the buttresses as well, as shown in Fig. 5. Use of diagonal struts at corners will further stiffen the collar beam.

6.4 Dowels/Band at Window Sill Level

In the severe seismic zone IV, a seismic band should be provided at window sill level going through all the walls except at door locations. Alternatively, dowels may be provided at all corners and T-junctions of walls as shown in Fig. 6.

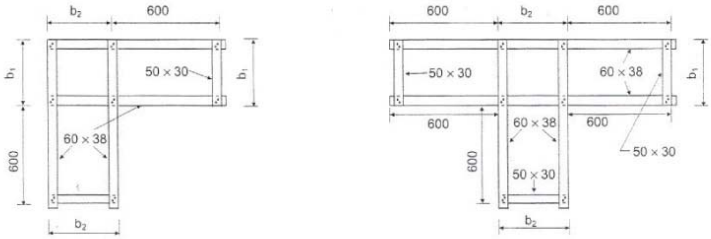
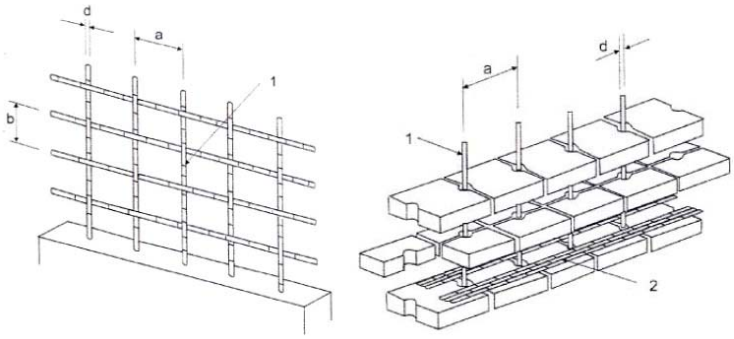


Fig.6:- Wood bands at lintel and ceiling levels

6.5 Vertical Reinforcement in Walls

In the highest seismic zone V, mesh form of reinforcing embedded in the walls is recommended. Here the whole walls are reinforced by a mesh of canes or bamboos as shown in Fig. 7 along with the collar beams or seismic band which may in this case be made from canes or bamboos themselves. The vertical canes must be tied to the horizontal bamboos as well as the collar beams at lintel and the ceiling levels.



(a) Pattern of mesh in hand made or rammed earthen walls

(b) Pattern in Adobe walls (note preformed notches in adobe for receiving cane)

1 – Cane or bamboo, 2 – Crushed cane or split bamboo every four layers of adobe.
a – Spacing of canes, 400 mm maximum, d – Diameter of cane or bamboo about 20

Fig.7:- Best earthquake reinforcing arrangement for earthen walls

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PART-I

GOVERNMENT OF MEGHALAYA

LAW (B) DEPARTMENT

ORDERS BY THE GOVERNOR

NOTIFICATION

The 25th August, 2015.

NO.LJ (B) 83/93/255 - In exercise of the powers conferred by sub-section (1) of Section 20 of the Code of Criminal Procedure, 1973 the Governor of Meghalaya hereby appoint the following Non-MCS Officer as Executive Magistrate in connection with illegal rat hole mining and monitoring during transport of coal for a period upto 30.11.2015 from the date of issue.

SL. NO.	Name of Officer and Designation	Jurisdiction of the conferment of the power of Executive Magistrate	To be placed with District/Sub-Division
1.	Shri P.R.Marwein, Supdt Engineer, PWD (Road), Jowai Circle	West Jaintia Hills District, Jowai	Deputy Commissioner, West Jaintia Hills District, Jowai
2.	Shri M.Nongpluh, E.E, P.W.D South Division, Jowai	-do-	-do -
3.	Shri Y.Passah, E.E, PWD, Mechanical Division, Jowai	-do-	-do -
4.	Shri M.Marbaniang, E.E. PWD (Rds) Central Division	-do-	-do -
5.	Smti J.F.Lyngdoh, E.E Water Resources, Jowai	-do-	-do -
6.	Shri C. Najiar, E.E PHE, Rural Water Supply Division, Jowai	-do-	-do -
7.	Shri P.Synnah, SDO, PHE, Electrical Division, Jowai	-do-	-do -
8.	Shri K.Nongrum, E.E., DRDA, Jowai	-do-	-do -
9.	Shri P.Prakash, E.E. Urban Affairs, Jowai	-do-	-do -
10.	Shri B.Lato, District Urban Planner, District Urban Planner, Jowai	-do-	-do -
11.	Shri D.Challam, D.S.C.O, Divisional Soil Conservation Office (T), Jowai	-do-	-do -
12.	Shri L.Laloo, District Agril. Officer, District Agriculture Office, Jowai	-do-	-do -

13.	Shri A.M.Lyngdoh, Block Dev. Officer, Thadlaskein C & RD Block, Thadlaskein	-do-	-do -
14.	Shri G.Rani, Asstt. Director, Border Areas Development, Jowai	-do-	-do -
15.	Shri D.Pyrbot, Asstt. Agril. Officer,, District Agriculture Office, Jowai	-do-	-do -
16.	Dr. G.Chyrmang, MFS, Asstt Conservator of Forest (T), Divisional Forest Office, Jowai	-do-	-do -
17.	Shri N.Mukhim, District Statistical Officer,, District Statistical Office, Jowai	-do-	-do -
18.	Shri G.Dkhar, Supdt of Excise,, D.C's Office, Excise Branch, Jowai	-do-	-do -
19.	Shri D.Toi, SDO,PHE Office, Amlarem	-do-	-do -
20.	Shri B.Sungoh, BDO, Amlarem C & RD Block, Amlarem	-do-	-do -
21.	Shri L.Hinge, SDAO, Agriculture Office, Amlarem	-do-	-do -
22.	Shri B.Niangti, A.E.E, PWD Border Road, Amlarem	-do-	-do -
23.	Shri B.Kharmon, BADO, Border Areas Development Office, Dawki	-do-	-do -
24.	Shri L.Kharmawlong, E.E PWD North Division, Jowai	-do-	-do -
25.	Smti A.Sumer, A.E.E PWD(R) Shangpung Sub-Division, Shangpung	-do-	-do -
26.	Shri I.Najiar, A.E.E Urban Sub-Division Jowai (PWD Campus)	-do-	-do -
27.	Shri P.Lhuid, A.E E, N.H Division, Jowai	-do-	-do -
28.	Shri O.Thubru, A.E,.E PWD(R) Nartiang Sub-Division, Nartiang	-do-	-do -
29.	Shri H.Lamare, A.E E. Jowai Building Sub-Division, Jowai	-do-	-do -
30.	Shri K.K.Mawa, E .E, TC,SE Office, Jowai	-do-	-do -
31.	Smti S.Pohsnem, DSWCO (CC) Division, Divisional Soil Conservation Office (C), Jowai	-do-	-do -
32.	Shri O.Kardewsaw, ASWCO, Jowai (T) Division, Divisional Soil Conservation Office (T), Jowai	-do-	-do -
33.	Shri J.J.Lakiang, ASWCO Jowai (T) Division, Divisional Soil Conservation Office (T), Jowai	-do-	-do -
34.	Shri L.Pohktai, ASWCO Jowai (T) Division, Divisional Soil Conservation Office (T), Jowai	-do-	-do -
35.	Shri C.Najiar, Range Forest Officer, Divisional Forest Office (T), Jowai	-do-	-do -
36.	Smti E.Shullai, MFS, ACF (Social Forestry), Divisional Forest Office, (SF), Jowai	-do-	-do -

37.	Shri Emdor Passah, Range Forest Officer, Namdong Range (Social Forestry)	-do-	-do -
38.	Shri S.Tarfdar, Range Forest Officer, Jowai Range (Social Forestry)	-do-	-do -
39.	Shri S.P.R.Shullai, Range Forest Officer, Amlarem Sub-Division, Amlarem	-do-	-do -
40.	Shri C.Challam, Fishery Officer, Amlarem Sub-Division, Amlarem	-do-	-do -
41.	Shri E.F.Pyngrope, Range Officer (Territorial) Amlarem Sub-Division, Amlarem	-do-	-do -
42.	Shri P.Toi, General Manager, DCIC, Jowai	-do-	-do -
43.	Smti H.Lato, Divisional Forest Officer, (WL), Divisional Forest Office, (T) Jowai	-do-	-do -
44.	Smti N.Laloo, Divisional Forest Officer (SF), Divisional Forest Office (SF), Jowai	-do-	-do -

A. K. SANGMA,
Joint Secretary to the Govt. of Meghalaya,
Law (B) Department.

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